

Appendix E

July 2007 Final EIR; May 2007 Draft EIR

July 2007 Final EIR

Final
Environmental Impact Report

Tri-Cities Recycling and
Disposal Facility (TCRDF)
Landfill Closure and
Land Use Plan

SCH# 2006112013

City of Fremont
July 2007



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1.0 OVERVIEW AND PURPOSE OF THE FINAL EIR

This document, together with the Draft Environmental Impact Report (Draft EIR) constitutes the Final Environmental Impact Report (Final EIR) for the proposed Tri-Cities Recycling and Disposal Facility (TCRDF) Landfill Closure and Land Use Plan in Fremont, California.

Under the California Environmental Quality Act (CEQA), the Lead Agency is required, after completion of a Draft EIR, to consult with and obtain comments from public agencies having jurisdiction by law with respect to the proposed project, and to provide the general public with an opportunity to comment on the Draft EIR. The City of Fremont, as the Lead Agency, is then required to respond to significant environmental issues raised in the review and consultation process, as described in CEQA Section 15132.

Comments on the Draft EIR were to be received in writing by no later than July 6, 2007.

1.1 FORMAT OF THE FINAL EIR

This document, which includes responses to comments and text revisions, has been prepared in accordance with Section 15088 of the CEQA Guidelines. In addition to Section 1.0 describing an overview of the purpose and format of the Final EIR, the Final EIR includes the following sections:

Section 2.0 List of Agencies and Individuals Receiving the Draft EIR

The agencies, organizations, and individuals who received copies of the Draft EIR or a notice of availability, are listed in this section. The locations where the Draft EIR could be reviewed during the 45-day circulation period are also included in this section.

Section 3.0 List of Agencies and Individuals Commenting on the Draft EIR

This section contains a list of all parties who submitted written comments on the Draft EIR.

Section 4.0 Written Comments on the Draft EIR and Responses

This section contains the written comments received on the Draft EIR and responses to those comments.

Section 5.0 Revisions to the Text of the Draft EIR

Section 5.0 contains text revisions to the Draft EIR. Text revisions can be made as a result of comments received during the Draft EIR public review process, corrections or clarifications to the text, or to reflect modifications that have been made to the project to reduce impacts.

1.2 PURPOSE OF THE FINAL EIR

In conformance with the CEQA Guidelines (Section 15151), EIRs should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision on a project that takes into account environmental consequences. The Final EIR also is required to examine mitigation measures and alternatives to the project intended to reduce or eliminate significant environmental impacts.

Prior to approving the proposed project, the Lead Agency is required to certify that the Final EIR has been completed in compliance with the CEQA Guidelines, the decision-making body (in this case the Fremont City Council) has reviewed and considered the information contained in the Final EIR prior to project approval, and the Final EIR reflects the Lead Agency's independent judgment and analysis.

The CEQA Guidelines (Section 15091) and the State Public Resources Code (Section 21081) also require that, while the information in the Final EIR does not control the agency's ultimate discretion on the approval of a project, the agency must respond to each significant effect identified in the Final EIR by making written findings for each of those significant effects. Possible findings are:

- (1) Changes or alterations have been required in, or incorporated into, the project which will mitigate or avoid the significant effects on the environment.
- (2) Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.
- (3) Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities of highly trained workers, make infeasible the mitigation measures or alternatives identified in the environmental impact report.

Findings made by the Lead Agency must be supported by substantial evidence in the environmental or administrative record for a proposed project.

2.0 AGENCIES AND INDIVIDUALS RECEIVING THE DRAFT EIR OR NOTICE OF AVAILABILITY OF THE DRAFT EIR

Federal

U.S. Fish and Wildlife Service

San Francisco Bay Conservation and
Development Commission
Native American Heritage Commission
State Clearinghouse

State of California

California Highway Patrol
Caltrans, District 4
Department of Conservation
Department of Fish and Game, Region 3
Department of Health Services
Department of Parks and Recreation
Department of Toxic Substances Control
Department of Water Resources
Development Commission
Integrated Waste Management Board
Public Utilities Commission
Resources Agency
Regional Water Quality Control Board,
Region 2

County of Alameda

Regional and Local Agencies

ABAG
Bay Area Air Quality Management District
City of Newark

School Districts

Organizations and Individuals

The complete list of individuals receiving notice is on file at City of Fremont Development Services Counter.

The Draft EIR was also on file and available for review at the Alameda County Main Library, Fremont Branch, located at 2400 Stevenson Boulevard and on the City of Fremont website.

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3.0 LIST OF AGENCIES AND INDIVIDUALS COMMENTING ON THE DRAFT EIR

3.1 FEDERAL AGENCIES

Comment Letter 1 United States Department of the Interior

3.2 LOCAL AND REGIONAL AGENCIES

Comment Letter 2 Alameda County Congestion Management Agency
Comment Letter 3 Alameda County Health Care Services Agency
Comment Letter 4 Alameda County Water District
Comment Letter 5 San Francisco Bay Conservation and Development Commission
Comment Letter 6 San Francisco Bay Trail Project

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4.0 WRITTEN COMMENTS ON THE DRAFT EIR AND RESPONSES

This section includes the comment letters and documents that were received on the Draft EIR during the public review period by the City of Fremont. It also includes responses to those comments. Each comment document (letter, e-mail, or transcript) is reproduced in its entirety and followed immediately by the responses to identified comments on the substance of the Draft EIR.

Comment documents are arranged in chronological order by the date received within each category (i.e., *Federal Agencies* and *Local and Regional Agencies*). Each comment document is identified by a number in the upper right corner of the letter. Individual comments are then labeled with a reference number in the margin. Responses use the same corresponding numbering system.

Where the same comment has been made in more than one comment document or is similar to another comment, the response may direct the reader to a previous numbered response. Where a response requires revisions to the text of the Draft EIR, those revisions are generally described in the response, and included in Chapter 5.0 of this Final EIR.

Some comments do not raise significant environmental issues. A substantive response to such comments or statements of opinion is neither appropriate nor required under the context of CEQA. Such comments are generally responded to with a “comment acknowledged” or “comment noted” reference, or a statement that no significant environmental issue has been raised. “Comment acknowledged” indicates that the comment will be forwarded (by its inclusion in this document) to the appropriate decision makers for their review and consideration.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
San Francisco Bay National Wildlife Refuge Complex
9500 Thornton Avenue
Newark, California 94560



Kelly Diekmann
Community Development Department
City of Fremont
39550 Liberty Street
Fremont, California 94537

JUN 26 2007

SUBJECT: Comments regarding the Notice of Availability of a draft Environmental Impact Report

Dear Ms. Diekmann:

The Don Edwards San Francisco Bay National Wildlife Refuge (NWR) appreciates the opportunity to comment on the notice of availability of a draft Environmental Impact Report (EIR) for the Tri-Cities Recycling and Disposal Facility (TCRDF) Landfill Closure and Land Use Plan. We support the closure of the landfill. We have been concerned about plastic waste blowing over to the Refuge from the landfill. We are also interested in the plans for operation and management of the existing wetlands and wildlife habitat within the project boundary. We hope that these areas continue to be managed for wetland habitat, especially since so much habitat has been lost in the San Francisco Bay area.

For your information, these lands are within the congressionally authorized expansion boundary of the NWR. If the TCRDF no longer needs ownership of the wetlands, the Refuge would be interested in obtaining them.

Thank you for including our comments. Please keep us informed of the EIR process. If you have questions regarding our comments, please contact me or Clyde Morris, Manager, Don Edwards San Francisco Bay NWR, at 510-792-0222, x25.

Sincerely,

for G. Mendel Stewart
Manager,
San Francisco Bay NWR Complex

1-1

4.1 RESPONSE TO COMMENT LETTER 1: UNITED STATES DEPARTMENT OF THE INTERIOR

RESPONSE TO COMMENT 1-1:

The commentor's support for closure of the landfill and concerns about plastic waste are noted. Under the proposed project, management of the existing wetland areas east and south of the landfill would not change.

The comment regarding interest in expanding the boundaries of the Don Edwards San Francisco Bay National Wildlife Refuge to include existing wetland areas has been provided to the project applicant, Waste Management.

These comments do not identify a new environmental impact not identified in the Draft EIR and no further response is required.



ALAMEDA COUNTY
CONGESTION MANAGEMENT AGENCY

1333 BROADWAY, SUITE 220 • OAKLAND, CA 94612 • PHONE: (510) 836-2560 • FAX: (510) 836-2185
E-MAIL: mail@accma.ca.gov • WEB SITE: accma.ca.gov

AC Transit
Director
Greg Harper

June 4, 2007

Alameda County
Supervisors
Nate Milley
Scott Haggerty
Chair

Ms. Kelly Diekmann
Senior Planner
39550 Liberty Street
Fremont, CA 94537

City of Alameda
Mayor
Beverly Johnson

City of Albany
Councilmember
Farid Javandel

SUBJECT: Comments on the Draft Environmental Impact Report for the Tri-Cities Recycling and Disposal Facility Landfill Closure and Land Use Plan

BART
Director
Thomas Blalock

Dear Ms. Diekmann:

City of Berkeley
Councilmember
Kris Worthington

Thank you for the opportunity to comment on the Draft Environmental Impact Report (DEIR) for the Tri-Cities Recycling and Disposal Facility Landfill Closure and Land Use Plan in the City of Fremont. The Tri-Cities Recycling and Disposal Facility (TCRDF) is located at 7010 Automall Parkway in the City of Fremont. The 378-acre TCRDF includes an active 115-acre landfill, resource recovery operations, an on-site storage area, corporation yard, and upland and wetland areas. The proposed project includes: 1. Installation of a final cover over the active landfill and associated environmental monitoring and maintenance of the landfill for 30 years; 2. excavation and conditioning of soil materials from an approximately 88-acre borrow area onsite; 3. alternative import of off-site borrow for landfill cover; and 4. planning permits related to the continued and ongoing use of the corporation yard and concrete recycling facility on up to 46 acres of the overall site. The planning permits include a General Plan Amendment from Solid Waste Facility to Light Industrial.

City of Dublin
Mayor
Janet Lockhart

City of Emeryville
Vice Mayor
Ruth Alkin

City of Fremont
Vice Mayor
Robert Wiekowski

City of Hayward
Mayor
Michael Sweeney

City of Livermore
Mayor
Marshall Kamena

City of Newark
Councilmember
Luis Freitas

City of Oakland
Councilmember
Larry Reid

As informed in our response to the Notice of Preparation of the DEIR dated February 2, 2007, based on our review of the DEIR, it appears that the project does not meet the Tier 1 requirements of generating 100 or more p.m. peak hour trips over existing or baseline conditions. Therefore, this project is exempt from the Land Use Analysis Program of the CMP.

2-1

City of Piedmont
Councilmember
John Chiang

Once again, thank you for the opportunity to comment. Should you have any questions or require any additional information, please do not hesitate to contact me at (510) 836-2560 ext.24.

City of Pleasanton
Mayor
Jennifer Hosterman

Sincerely,

City of San Leandro
Councilmember
Joyce R. Starosciak

City of Union City
Mayor
Mark Green
Vice Chair

Saravana Suthanthira
Senior Transportation Planner

Executive Director
Dennis R. Fay

Copy: Ed Chew, Database and Mapping Specialist, City of Fremont
file: CMP - Environmental Review Opinions - Responses - 2007

**4.2 RESPONSE TO COMMENT LETTER 2: ALAMEDA COUNTY CONGESTION
MANAGEMENT AGENCY**

RESPONSE TO COMMENT 2-1:

The commentor's concurrence that the project would not generate 100 or more PM peak hour trips is acknowledged and noted in the environmental record. No further response is required.

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director



DEPARTMENT of ENVIRONMENTAL HEALTH
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway
Alameda, CA 94502
(510) 567-6790
Fax (510) 337-9234

June 26, 2007

Kelly Diekmann
City of Fremont
Planning Division
39550 Liberty Street
Fremont, CA 94537

SUBJECT: Draft Environmental Impact Report (DEIR) for Project Titled "Tri-Cities Recycling and Disposal Landfill Closure and Land Use Plan". May 2007, SCH# 2006112013

Dear Ms. Diekmann:

The Alameda County Department of Environmental Health, the Local Enforcement Agency (LEA) thanks you for the opportunity to review and comment on the draft environmental impact report for the subject project noted above. As the agency responsible for the inspections and permitting of solid waste facilities, we provide the following comments;

- 1. In addition to what is described for the postclosure maintenance of the landfill in the Final Closure and Postclosure Plan (Appendix B), the LEA will monitor the closed landfill on a quarterly basis to assure compliance with state regulations. **3-1**
- 2. The LEA recommends that any potential expansion of the concrete recycling facility to process other recyclable materials such as construction and demolition inert debris be reviewed by the lead agency, and that the applicant be notified to contact the LEA prior to any proposed expansion. **3-2**
- 3. Solid waste vehicles used for the purposes of hauling municipal solid waste utilizing the corporation yard are required to file and be inspected by the LEA. **3-3**
- 4. The applicants Final Closure and Postclosure Plan dated December 2006 has been deemed complete pursuant to the California Code of Regulations, Title 27, Section 21860 and is consistent with State Minimum Standards pursuant to Title 27 Section 21685(b)(5) by the California Integrated Waste Management Board and the LEA. **3-4**

The LEA requests copies of any notices, public meetings subsequent information, or revisions of the project as proposed in the DEIR. If you have any questions regarding these comments, please contact Roel Meregillano at (510) 567-6752.

Yours truly,

Karen Moroz
Supervising E.H.S.

4.3 RESPONSE TO COMMENT LETTER 3: ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY

RESPONSE TO COMMENT 3-1:

This comment, regarding monitoring of the closed landfill by the LEA on a quarterly basis, is noted as a part of the environmental record.

RESPONSE TO COMMENT 3-2:

The Draft EIR evaluates continued operation of the existing concrete recycling facility at current levels of throughput during the busiest construction months. Additional uses (i.e., processing and recycling of additional types of construction demolition debris) would require subsequent environmental review and modification of the proposed [land use entitlement/PD zoning/Conditional Use Permit]. The City of Fremont would confirm that the LEA was contacted by the applicant prior to modifications of allowed uses at this solid waste facility.

RESPONSE TO COMMENT 3-3:

The commentor's statement regarding filing and inspection of vehicles used for hauling municipal solid waste by the LEA are noted and will be provided to the project applicant. As this comment does not identify a new environmental impact, no further response is required.

RESPONSE TO COMMENT 3-4:

The statement that the Final Closure and Postclosure Plan dated December 2006 has been deemed complete by the California Integrated Waste Management Board and the LEA is noted. No further response is required.



43885 SOUTH GRIMMER BOULEVARD • P.O. BOX 5110, FREMONT, CALIFORNIA 94537-5110
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Operations Manager

June 29, 2007

Kelly Diekmann
City of Fremont, Planning Division
39550 Liberty Street
Fremont, CA 94537

Dear Kelly Diekmann:

Subject: Draft Environmental Impact Report for the Tri-Cities Recycling and Disposal Facility
Landfill Closure and Land Use Plan

The Alameda County Water District (ACWD) wishes to thank you for the opportunity to comment on the "Draft Environmental Impact Report, Tri-Cities Recycling and Disposal Facility (TCRDF) Landfill Closure and Land Use Plan" for the TCRDF located at 7010 Automall Parkway, Fremont.

ACWD has reviewed the Draft Environmental Impact Report (DEIR) and would appreciate your consideration of the following comments:

1. Groundwater: Local and imported water is recharged into the Niles Cone Groundwater Basin through percolation both in Alameda Creek and the adjacent recharge ponds in the Quarry Lakes Regional Park. The water is subsequently recovered through ACWD's groundwater production wells and provided as a potable supply to a population of over 320,000 in the cities of Fremont, Newark and Union City. Therefore, protecting the groundwater basin is a high priority for ACWD.
 - a. Borrow Area: Historical groundwater elevations at the site ranged from artesian conditions to approximately 7 feet below mean sea level (msl). Excavation in the borrow area is proposed to be conducted during late spring through late summer (dry season), over a four year period with proposed excavation depths of approximately 3 to 4 feet. Even though the DEIR specifies that the proposed excavation would cease if groundwater is encountered, the EIR should address the potential impacts of the excavation to groundwater during winter or wet seasons, when groundwater levels tend to be higher and therefore may be exposed in the excavated areas.

b. Groundwater Removal: Since groundwater is an important component of ACWD's water resources, the EIR should address any temporary and permanent groundwater removal activities associated with the TCRDF, and the potential impact of these activities on the local drinking water supply. It is critical that the amount of water that may be extracted be estimated and documented in the EIR. Groundwater losses due to dewatering or extraction must be measured and are subject to a replenishment assessment fee.

4-2

c. Well Protection/Destruction: In order to protect the groundwater basin, each well located within the project area must be either protected or properly destroyed prior to or during proposed TCRDF closure activities. Wells associated with this site include groundwater detection wells, groundwater monitoring wells, leachate wells, gas monitoring wells, water well(s), and monitoring wells associated with the former Leaking Underground Fuel Tank cleanup site at the corporation yard. If the wells are to remain, a letter so indicating must be sent to ACWD along with survey data documenting the locations of each of the wells. If well(s) are: 1) no longer required by any regulatory agency; 2) no longer monitored on a regular basis; or 3) damaged, lost, or the surface seal is jeopardized in any way during construction and excavation activities, the wells must be destroyed in compliance with the City of Fremont Well Ordinance. Abandoned wells located within the project area must be properly destroyed prior to construction activities.

4-3

In addition, the EIR should specify that after the post closure monitoring period and after the existing wells are no longer required by any regulatory agencies, the wells will be destroyed in compliance with the City Well Ordinance.

d. Drilling Permit Requirement: As the enforcing agency for the City of Fremont's Well Ordinance, ACWD requests that the EIR include the requirement of obtaining a drilling permit from the Alameda County Water District prior to the start of any subsurface drilling activities. Application for a permit may be obtained from ACWD's Engineering Department, at 43885 South Grimmer Boulevard, Fremont or online at http://www.acwd.org/engineering/drilling_permit.php5. Before a permit is issued, the applicant is required to deposit with ACWD a check or cash in a sufficient sum to cover the fee for issuance of the permit or charges for field investigation and inspection. All permitted work requires scheduling for inspection; therefore, all drilling activities must be coordinated with ACWD prior to the start of any field work.

4-4

e. Groundwater Monitoring: The landfill was initially developed by the removal of the top soil down to the water table (approximately 1 to 3 feet). Refuse was then placed and compacted in this excavation which constitutes the base of the landfill. Even though a leachate collection and removal system is in operation, the refuse is just above or in direct contact with shallow groundwater. The EIR should address potential vertical migration of the leachate to the Newark Aquifer and the need to monitor groundwater quality in the Newark Aquifer during and after TCRDF closure activities.

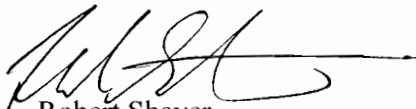
4-5

- f. Reporting: The EIR should specify that ACWD will continue to receive groundwater monitoring reports during the 30-year post closure monitoring and maintenance period. ACWD should also be notified in the event of a spill, leak or system breakdown that could adversely affect surface or groundwater quality. A contingency plan is also needed if groundwater contamination is still confirmed at the end of the 30-year period.
2. ACWD Contacts: The following ACWD contacts are provided so that the City can coordinate with ACWD as needed during the CEQA process:
- Eileen Chen, Groundwater Resources Scientist at (510) 668-4473, or by email at eileen.chen@acwd.com, for coordination regarding ACWD's groundwater resources.
 - Michelle Myers, Well Ordinance Program Coordinator, at (510) 668-4454, or by email at michelle.myers@acwd.com for coordination regarding groundwater wells and drilling permits.

4-6

Thank you for the opportunity to comment on the project at this time.

Sincerely,

for 
Robert Shaver
Engineering Manager

cc: Steven Inn
Michelle Myers
Eileen Chen
Ed Stevenson

4.4 RESPONSE TO COMMENT LETTER 4: ALAMEDA COUNTY WATER DISTRICT

RESPONSE TO COMMENT 4-1:

Once the borrow area is excavated, it is possible that groundwater levels from the surficial zone in Younger Bay Mud could reach the surface when groundwater levels fluctuate during the wetter parts of the year. Reported seasonal groundwater levels in the vicinity can be at four feet mean sea level (msl) or less. Ponding would be most likely to occur in the western portions of the borrow area, away from the UPRR tracks.

Two types of uses are proposed in the borrow area following removal of soil materials. Most of the site would be graded and seeded following excavation of soil materials. In the area shown on Figure 2-9 of the Draft EIR as Phase 5 and portions of Phases 3 and 4 (near the UPRR tracks), continued concrete recycling is proposed.

No dewatering is included in the project. In order to avoid contact of possible pollutants from concrete recycling operations with standing groundwater from the surficial aquifer above the Newark Aquifer, two additional measures have been included in the project. The first measure would require that drainage from the concrete facility and Corporation Yard be directed away from the borrow area during construction and post construction periods. The second measure requires an on-site inspection of finished grades and an assessment of seasonal groundwater levels within the borrow area. In the event groundwater would extend to the surface where the concrete recycling facility would be located, the area will be excluded from the concrete recycling facility and a boundary (fence or curb) established that would preclude vehicle movements and storage from occurring there. These measures are included in **Section 5.0 Revisions to the Text of the Draft EIR** on page ___ of this document.

The borrow area will continue to be surrounded by a levee and, as noted above, groundwater may pond in the event it reaches the surface. Since there is no place for the groundwater to run off and no pumping is proposed, the project would not result in impacts to groundwater levels in surficial aquifer or the underlying Newark Aquifer in the Niles Cone Groundwater Basin.

RESPONSE TO COMMENT 4-2:

As described on pages 93 and 95 of the Draft EIR, the City will require as a condition of project approval that dewatering of excavations within the 88-acre borrow area as part of landfill closure is prohibited. The project applicant has been notified that in the event dewatering is considered elsewhere on the site in the future, groundwater losses due to dewatering or extraction must be measured and are subject to a replenishment assessment fee under the Replenishment Assessment Act of the Alameda County Water District.

RESPONSE TO COMMENT 4-3:

These comments regarding the importance of proper well management and protection of the groundwater basin are acknowledged. Text has been added to the Draft EIR to reflect well protection and destruction requirements of the City of Fremont Municipal Code and the Alameda County Water District (see **Section 5.0 Revisions to the Text of the Draft EIR** on page ___ of this document).

RESPONSE TO COMMENT 4-4:

Text has been added to the Draft EIR to address standard requirements for obtaining a drilling permit within the City of Fremont (see **Section 5.0 Revisions to the Text of the Draft EIR** on page ___ of this document).

RESPONSE TO COMMENT 4-5:

The Draft EIR addresses the possible movement of leachate to groundwater in the Newark Aquifer in several sections. As described in *Sections 4.4.1.4 Water Quality (Existing Setting)* and *4.4.2.4 Groundwater Quality (Impacts)* of the Draft EIR, monitoring of leachate within the landfill and groundwater quality at the perimeter of the landfill is on-going under existing conditions and would continue during landfill closure and post-closure periods. These measures are regulatory requirements under the jurisdiction of the Regional Water Quality Control Board. As described on page 85 of the Draft EIR, the existing leachate collection and removal system at the landfill is designed to create an inward gradient around the landfill to prevent migration of leachate from the landfill to groundwater. Leachate is monitored and removed from the landfill to avoid “leachate breakout” to underlying groundwater (refer to page 86 of the Draft EIR).

The existing groundwater monitoring system on the site is located beyond the leachate collection and removal system and is designed to detect vertical and horizontal migration of leachate from the landfill. As noted on page 86 of the Draft EIR, groundwater monitoring systems are located along the eastern and western boundaries of the site. Vertical movement would be detected if chemical constituents of concern were found in the groundwater monitoring samples at these locations, which capture the regional and local groundwater movement directions (i.e., constituents in leachate that move vertically would also move horizontally with regional and local groundwater movements).

Because of the potential for leachate to move from landfill materials to groundwater, groundwater monitoring and leachate removal will continue through the closure and post-closure periods for at least 30 years following closure. Under Title 27 of the California Code of Regulations (Section 21900), the operator of a solid waste landfill may be released from postclosure, after a minimum period of thirty (30) years upon demonstration to and approval by the California Integrated Waste Management Board, the Local Enforcement Agency (LEA), and the Regional Water Quality Control Board that the solid waste landfill no longer poses a threat to the public health and safety and the environment. These agencies could extend monitoring and/or operation of the leachate removal system if groundwater quality could be adversely impacted following this period. As noted on page 86 of the Draft EIR, detection of constituents of concern in groundwater above regulatory limits requires immediate corrective action measures in accordance with Regional Water Quality Control Board requirements. Through these existing and proposed measures identified in the Draft EIR and the proposed Closure and Post Closure Monitoring Plan, impacts from leachate to groundwater quality in the Newark Aquifer would be reduced to a less than significant level.

RESPONSE TO COMMENT 4-6:

The project will be required, as a condition of approval, to continue sending groundwater monitoring reports during the 30-year post closure monitoring and maintenance period to the Alameda County Water District (refer to **Section 5.0 Revisions to the Text of the Draft EIR** on page ___ of this document) has been added to the Draft EIR . The Regional Board (as stated in Response 405) may extend the monitoring period and treatment beyond 30 years if necessary.



Making San Francisco Bay Better

June 7, 2007

Kelly Diekmann
City of Fremont
39550 Liberty Street
Fremont, CA 94537

SUBJECT: Notice of BCDC Jurisdiction

Dear Ms. Diekmann:

We have received notice that you are planning a construction project at the West terminus of Automall Parkway in the City of Fremont, Alameda County. We believe your project is located in the Commission's Bay and shoreline band jurisdiction along the Alameda County Flood Control Channel at the North end of the site. If work is being done within the Commission's jurisdiction, you will need the Commission's authorization before any work may begin at the site.

5-1

Please contact me or Karen Wolowicz at the Commission's office at (415) 352-3669 to discuss the matter and determine if a permit is necessary and the process for obtaining one.

Sincerely,

A handwritten signature in black ink, appearing to read "STEVEN A. McADAM", with a long horizontal flourish extending to the right.

STEVEN A. McADAM
Deputy Director

SAM/KW/MM

**4.5 RESPONSE TO COMMENT LETTER 5: SAN FRANCISCO BAY
CONSERVATION AND DEVELOPMENT COMMISSION**

RESPONSE TO COMMENT 5-1:

The text of the Draft EIR has been modified to list the San Francisco Bay Conservation and Development Commission (BCDC) as one of the agencies that may use the EIR as part of review for a discretionary permit (refer to **Section 5.0 Revisions to the Text of the Draft EIR** on page ____ of this document). This comment does not identify any environmental issues.

{*TO BE CONFIRMED ONCE I HEAR BACK FROM BCDC}**



June 28, 2007

Kelly Diekmann
 City of Fremont
 Planning Division
 39550 Liberty Street
 Fremont, CA 94538

Subject: Draft Environmental Impact Report for the Tri-Cities Recycling and Disposal Facility (TCRDF) Landfill Closure and Land Use Plan Project

Dear Mr. Diekmann:

On behalf of the San Francisco Bay Trail Project, I am writing to submit comments on the Draft Environmental Impact Report (DEIR) for the Tri-Cities Recycling and Disposal Facility Landfill Closure and Land Use Plan Project (TCRDF Project) located in the City of Fremont. The Bay Trail Project is a nonprofit organization administered by the Association of Bay Area Governments (ABAG) that plans, promotes, and advocates for the implementation of the Bay Trail. The Bay Trail is a planned 500-mile continuous network of multi-use bicycling and hiking paths that, when complete, will encircle San Francisco and San Pablo Bays in their entirety and cross seven toll bridges. It will link the shoreline of all nine Bay Area counties, as well as 47 cities. To date, 290 miles of the proposed Bay Trail system has been developed.

Within the vicinity of the TCRDF Project, there are two alignments of the Bay Trail. An existing commuter alignment of the Bay Trail runs along Boyce Road and Cushing Parkway as Class II bicycle lanes and sidewalks. There is also a planned recreation alignment that currently is indicated to run parallel to the Union Pacific Railroad (UPRR) right-of-way. However, the recreational alignment shown adjacent to the UPRR was developed simply as a place-holder, and it is the goal of the Bay Trail Project to move the recreational alignment of the Bay Trail to the Bay's edge. At the time that the original Bay Trail alignment was developed through Fremont, the existing uses along the shoreline such as the TCRDF prevented placing the proposed Bay Trail alignment along the Bay's edge, so the UPRR alignment was identified as a place-holder for the recreational alignment. This was done to preserve a recreational alignment option if the shoreline activities didn't change over time to allow the placement of the trail near the Bay's edge. With the proposed landfill closure and cessation of associated activities, this presents an immense opportunity to place the recreational alignment of the Bay Trail on the Bay's edge along the outer levee at the project site boundaries. This new recreational alignment would be consistent with the Bay Trail Plan policy of locating the Bay Trail as close to the Bay shoreline as feasible. We are also currently in discussions with the City of Newark on moving the recreational alignment of the Bay Trail to the Bay's edge of the proposed Newark Area 3 & 4 development.

Kelly Diekmann
June 28, 2007

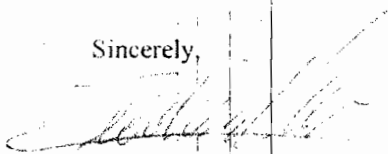
After reviewing the DEIR, we have the following comments to strengthen the DEIR's discussion and analysis of the TCRDF Project's impacts and mitigation related to the Bay Trail.

1. The DEIR should be revised to discuss and evaluate the potential impacts of the TCRDF Project on the possibility of relocating the recreational alignment of the Bay Trail on top of the outer levees along the project site boundaries. Any impacts that would prevent or impede the placement of the Bay Trail along the levees at the project boundaries should be mitigated to the point that the TCRDF Project impacts would not interfere with the possible development of the Bay Trail along the levees. The DEIR should be revised so that all project alternatives consider and evaluate the impacts to a possible Bay Trail alignment on top of the levees along the project site boundaries. During its evaluation of all project alternatives, the DEIR needs to analyze the consistency of each alternative with the adopted Bay Trail Plan policy of locating the recreational Bay Trail alignment as close to the shoreline as feasible. 6-1
2. The DEIR should be revised to include a cumulative impacts analysis on the Bay Trail as a result of this project, the proposed residential developments in the adjacent Newark Area 3 & 4 Specific Plan area, and the proposed A's baseball stadium. The impacts analysis should include, but not be limited to, increases in demand for Bay Trail use, safety of Bay Trail users, and the ability to connect to the proposed recreational Bay Trail alignment to the north and south of the project site. 6-2
3. Section 4.13 (*Recreation*) of the DEIR needs to be revised to identify the proposed Bay Trail as a regionally significant recreational facility and evaluate the project impacts on the Bay Trail as a regional recreational facility. 6-3
4. Throughout the DEIR and on Figure 4.1.2, the commuter alignment of the Bay Trail is identified as being partially located on Auto Mall Parkway and near Nobel Drive on the Pacific Commons property as a planned facility. The Bay Trail Project worked with the City of Fremont in 2006 to move the commuter alignment of the Bay Trail so that it's entirely located on Boyce Road and Clushing Parkway as Class II Bicycle Lanes and sidewalks. This realigned commuter route has already been developed and was adopted by the Bay Trail Board in 2006. As such, the DEIR needs to be revised to reflect this realigned commuter route of the Bay Trail. 6-4

Please add me to the mailing list for this project, and send a copy of the revised EIR and draft land use plan for our review when they become available.

The Bay Trail Project appreciates the opportunity to comment on the DEIR for the proposed TCRDF Project and looks forward to working with you on this project. Please do not hesitate to call me at (510) 464-7915 if you have any questions regarding the above comments or the Bay Trail.

Sincerely,



Lee Chien-luo
Bay Trail Planner

Cc: Jim Townsend, East Bay Regional Park District
Steve McAdam, San Francisco Bay Conservation and Development Commission

4.6 RESPONSE TO COMMENT LETTER 6: SAN FRANCISCO BAY TRAIL PROJECT

RESPONSE TO COMMENT 6-1: The Draft EIR described the planned locations of the Bay Trail shown on Bay Trail maps at the time the EIR Notice of Preparation was circulated November 2006. Subsequently, a revised map of the existing and planned Bay Trail was issued that showed revised routes and completed sections. Figure 4.1.2 in the Draft EIR has been revised to show changes in the project area (see **Section 5.0 Revisions to the Text of the Draft EIR** on page ___ of this document).

Closure of the landfill and adoption of a General Plan amendment that would allow operation of a Corporation Yard and continued operation of a concrete recycling facility would not modify existing access in the area, including vehicular access to the site over the UPRR tracks at the terminus of Auto Mall Parkway.

Possible future changes to planned Bay Trail alignments that have not been publicly reviewed or adopted by the Board of Directors of the San Francisco Bay Trail Project or the City of Fremont are speculative. Review of possible new alignments closer to the Bay, therefore, is beyond the scope of this EIR.

RESPONSE TO COMMENT 6-2:

As stated in the discussion of cumulative land use impacts on page 152 of the Draft EIR, the project does not include a substantial intensification of human activities on the site. The proposed project would not introduce new residents or a substantial number of new employees or users of the site to the area. The project would substantially reduce possible sources of conflict with existing, planned and future Bay Trail alignments by reducing activity on the site, ending the importation of garbage, and reducing noise and dust. Closure of the landfill may increase the attractiveness of the Bay Trail but cannot be accurately characterized as contributing to the demand for Bay Trail use. It also would not change or result in features that would block access to the planned Bay Trail alignment. The project, therefore, would not make a cumulatively considerable contribution to any future uses of the Bay Trail or result in a cumulatively significant adverse impact to existing or planned segments of the trail. Further discussion of cumulative demand, safety and connections to the proposed Bay Trail alignment is not required.

RESPONSE TO COMMENT 6-3:

References to the discussions of the future Bay Trail alignment west of the Union Pacific Railroad line in *Section 4.1.2 Land Use* and *Section 4.6.2 Transportation (Pedestrian and Bicycle Facilities)* of the Draft EIR have been added to *Section 4.13 Recreation* (see **Section 5.0 Revisions to the Text of the Draft EIR**). CEQA requires a discussion of project inconsistencies with regional and general plans; an EIR must also address impacts on physical conditions that exist at the time the Notice of Preparation is circulated. The planned recreational trail is not an existing recreational facility in the project vicinity and the project would not result in direct impacts to any existing segments of the trail.

RESPONSE TO COMMENT 6-4:

As noted in Response to Comment 6-1 above, Figure 4.2.1 has been revised to reflect the completed segment of Class II Bike Lanes and sidewalks along Boyce Road and Cushing Parkway, including the realigned segment.

5.0 REVISIONS TO THE TEXT OF THE DRAFT EIR

This section contains revisions to the text of the Draft EIR dated March 2007, as amended on April 20, 2007. Revised or new language is underlined. All deletions are shown ~~with a line through the text~~.

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- i-iii **Insert** Table of Contents as shown on the following pages.
- 2 Section 1.4 Uses of the EIR; **insert** the following text after the Regional Water Quality Control Board:
- San Francisco Bay Conservation and Development Commission San Francisco Bay Permit, if needed
- 38 Section 4.1.1.2 Surrounding Land Uses; **revise** Figure 4.1.2 Existing and Planned Sensitive Uses as shown on the following pages.
- 93 Section 4.4.2.4 Groundwater Quality; **insert** the following text after the end of the first paragraph on the page:
- On-Site Monitoring Wells
- Active wells on the site include leachate and groundwater monitoring wells and landfill gas sampling wells. Some wells on the landfill or adjacent Corporation Yard could be closed and relocated during the closure and post-closure periods. All active wells that would be removed by the project will be appropriately abandoned per the requirements of the Alameda County Water District.
- 93 Section 4.4.2.4 Groundwater Quality; **insert** the following text after the second complete paragraph under the subheading *Borrow Area*:
- During the wet season, groundwater from the surficial aquifer in Young Bay Mud could extent to the excavated soil surface in portions of the borrow area. In order to avoid possible impacts to groundwater quality in this aquifer, surface water runoff from the Corporation Yard and concrete recycling facility will be directed away from the borrow area. In addition, an inspection of on-site finished grades by a qualified hydrogeologist or hydrologist will be required, as a condition of approval, for any part of the borrow area proposed for concrete recycling or Corporation Yard uses. Fill materials or active industrial activities would be prohibited in areas where there was standing groundwater or areas with elevations where groundwater would seasonally extend to the final grade of the ground surface. In the event groundwater would extend to the surface where the concrete recycling facility would be located, the area will be excluded from the concrete recycling facility and a boundary (fence or curb) established that would preclude vehicle movements and storage from occurring there.
- 95 Section 4.4.3.1 Hydrology and Water Quality Program Level Mitigation Measures; **insert** the following text after the third paragraph on the page:
- PMM H/WQ 8.1:** Several state and local regulations are in place to prevent contamination of groundwater aquifers through wells. The State Water Code notes

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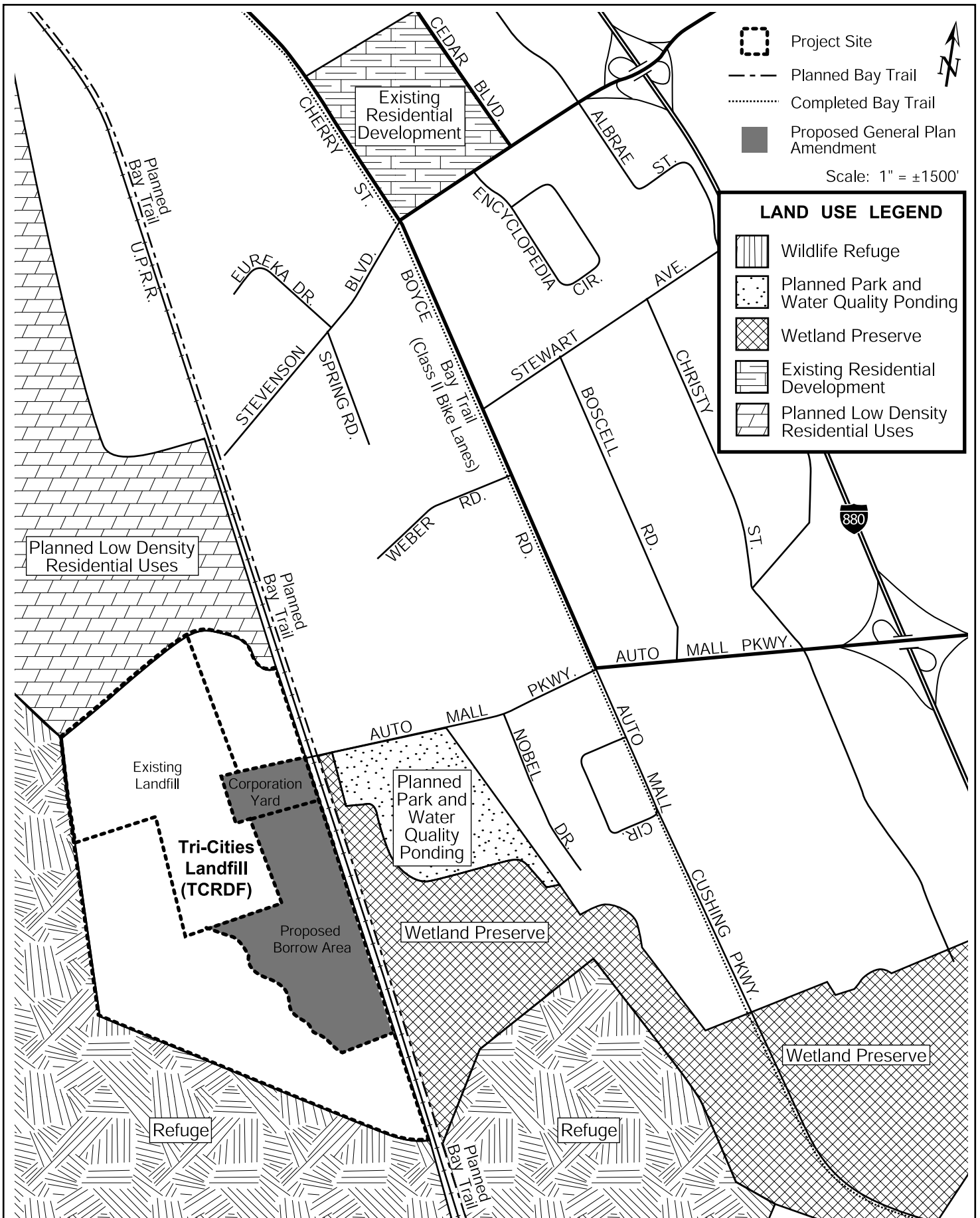
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EXISTING & PLANNED SENSITIVE LAND USES

FIGURE 4.1-2 (REVISED)

that the location, construction, maintenance, abandonment, and destruction of wells, including groundwater monitoring wells are activities that can directly affect the quality and purity of underground waters.

The Water Code directs counties and cities to adopt an ordinance establishing standards of water well, cathodic protection well, and monitoring well construction, maintenance, abandonment, and destruction.

The Alameda County Water District and the City of Fremont (under the City of Fremont Municipal Code (Section 3-10000 et.seq.)), have adopted standards, guidelines and permit processes that cover the drilling and abandonment of existing wells, including the various monitoring wells on the project site. Under these requirements, any abandoned wells on the project site must be properly destroyed prior to construction activities or once no longer required by regulatory agencies. A drilling permit also may be required for drilling on the site.

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Section 4.4.3.1 Hydrology and Water Quality Project Level Mitigation Measures; **insert** the following text above the heading **4.4.4 Conclusions Regarding Hydrology and Water Quality Impacts:**

MM H/WQ 8.1: Although not mitigation for a significant impact, the project includes the following measure to ensure that Alameda County Water District is notified of possible impacts to groundwater quality:

- The operator of the landfill shall send copies of groundwater monitoring reports to the Alameda County Water District in a timely manner during the post-closure monitoring and maintenance period.
- The Alameda County Water District shall be notified by the operator of the landfill in the event of a spill, leak or system breakdown that could adversely affect surface or groundwater quality.

MM H/WQ 9.1: The project includes the following measure to avoid possible impacts to groundwater quality in the borrow area:

- Surface water runoff from the Corporation Yard and concrete recycling facility will be directed away from the borrow area.
- An inspection of on-site finished grades and site conditions by a qualified hydrogeologist or hydrologist shall be completed for any part of the borrow area proposed for concrete recycling or Corporation

Yard uses. Based upon the inspection and review of site conditions and available information on hydrogeologic conditions in the area, the hydrogeologist or hydrologist shall determine what portions of the borrow area would be subject to groundwater ponding at the soil surface. Fill materials or active industrial activities shall be prohibited in areas where there was standing groundwater or areas with elevations where groundwater would seasonally extend to the final grade of the ground surface. Where groundwater would extend to the surface, the area will be excluded from the concrete recycling facility and a boundary (fence or curb) established that would preclude vehicle movements and storage from occurring there. Copies of the assessment of finished grades and groundwater conditions shall be submitted to the Planning Director and Alameda County Water District prior to use of graded borrow areas by the concrete recycling facility.

147 Section 4.13.1 Recreation Existing Setting; **insert** after the third paragraph on the page:

As described in Section 4.1, a future planned segment of the San Francisco Bay Trail is designated west of the Union Pacific Railroad tracks, near the terminus of Auto Mall Parkway. The San Francisco Bay Trail is a regional trail system that is planned to circle San Francisco Bay. As of early 2007, 288 miles of 500 planned miles of the trail system are complete (Source: San Francisco Bay Trail Spring 2007 Newsletter; <http://baytrail.abag.ca.gov/pdfs/BayTrailNewsltrSprng2007.pdf>).

147 Section 4.13.2 Recreation Impacts; **insert** after the sixth paragraph on the page:

The planned Bay Trail near the project site is not currently in place or in use. As discussed in Section 4.6.2.4 Impacts to Pedestrian and Bicycle Facilities, one concern would be possible conflicts between trucks and bicycles and pedestrians. At the time this segment of trail is designed, sight distance and the physical arrangement of the street crossing near the site entrance and UPRR crossing will need to be addressed. Any further discussion at this time would be speculative.

May 2007 Draft EIR

**Draft
Environmental Impact Report**

**Tri-Cities Recycling and
Disposal Facility (TCRDF)
Landfill Closure and
Land Use Plan**

SCH# 2006112013

**City of Fremont
May 2007**



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SUMMARY

The Tri-Cities Recycling and Disposal Facility (TCRDF) is located in western Fremont, California at the terminus of Auto Mall Parkway. The Tri-Cities Landfill Closure and Land Use Plan project includes:

- 1) Installation of a final cover over the active landfill and associated environmental monitoring and maintenance of the 115 acre landfill for 30 years;
- 2) Excavation and conditioning of soil materials from an 88-acre borrow area within the 378 acre TCRDF;
- 3) Alternative import of off-site borrow for landfill cover; and
- 4) Continued operation of the Corporation Yard and concrete recycling facility on up to 46 acres of the site.

The project proposes modification of the Conditional Use Permit and Solid Waste Facilities Permit for the TCRDF to address closure of the landfill in conformance with state and federal requirements and to allow for excavation of some of the soil materials for landfill closure from an on-site borrow area. A General Plan amendment is proposed on 46 acres of the TCRDF site from *Solid Waste Facility* to *Light Industrial*, as is rezoning to *L-I(F)* for Light Industrial uses to allow consideration of a Conditional Use Permit for continued operation of the on-site Corporation Yard and concrete recycling facility. The Corporation Yard would be used, in part, during the approximately 30-year postclosure period of the landfill by personnel responsible for monitoring and maintenance activities. Trucks used for residential and commercial waste collection in Fremont (up to 50 haul trucks) also could be parked and serviced in the Corporation Yard on a daily basis.

Permanent closure of a sanitary landfill is a process regulated by federal and state laws, and governed by the regulations of several agencies, including the California Integrated Waste Management Board (CIWMB), the San Francisco Bay Regional Water Quality Control Board (RWQCB), and the Alameda County Department of Environmental Health. These agencies will be responsible for assuring that the Final Closure and Postclosure Maintenance Plan for the TCRDF meets the specific technical requirements for landfill closure in Title 27 of the California Code of Regulations, especially in the areas of preventing ponding and erosion, final cover, financial assurance, and maintenance and monitoring.

The City of Fremont is responsible for enforcement of local land use regulations, including the City's General Plan and zoning. Under their municipal code, portions of the site are regulated under a Conditional Use Permit. The City of Fremont will need to modify the Conditional Use Permit for the landfill to reflect its permanent closed condition, and any uses that may be proposed on it.

Summary of Impacts and Mitigation Measures

The following table summarizes the significant environmental impacts identified and discussed within the text of the EIR, and identifies the mitigation measures proposed to avoid or reduce those impacts. Alternatives to the proposed project and known views of local groups and areas of controversy are also summarized at the end of the table. A complete description of the project and of its impacts and proposed mitigation measures can be found in the text of the EIR which follows this summary. Standard conditions that apply to the project and would avoid significant adverse environmental impacts are also identified in the text of the EIR.

SIGNIFICANT IMPACT	STANDARD CONDITIONS AND MITIGATION MEASURES	Significance After Mitigation
Biological Resources		
<p>Impact BIO-5: Grading and excavation activities in the borrow area during landfill closure could impact individual tiger salamanders if they move onto the site from breeding ponds to the east. (Significant Impact)</p>	<p>MM BIO-5.1: <u>Exclusion of California Tiger Salamanders from Project Site.</u> To minimize possible impacts to individual tiger salamanders from borrow activities, a barrier to tiger salamander dispersal shall be placed along the eastern boundary of the site, from the existing entrance road southeast to the southeastern limit of the borrow area. This barrier should be designed to prevent salamanders dispersing from breeding sites east of the railroad tracks from entering the project area. This barrier shall be designed by a qualified herpetologist, and checked and maintained regularly to ensure that gaps that could allow salamanders to enter the project site do not occur. Because the borrow activities are proposed to be phased, such a barrier shall also be placed between borrow areas and portions of the Resource Recovery Area not being used for borrow activities, to prevent any salamanders from entering the active borrow area.</p> <p>MM BIO-5.2: <u>Salvage of Individual Tiger Salamanders During Project Activities.</u> While Mitigation Measure BIO-5.2 would minimize the probability of salamanders entering the site, any salamanders already present in the borrow area shall be salvaged and translocated off site to the extent practicable. Although detecting every tiger salamander on a site is not feasible due to this species' secretive, subterranean habits, a qualified herpetologist shall be present during removal of debris and initial clearing and grubbing on the Resource Recovery Area prior to excavation at a particular borrow area. The herpetologist would look for individual tiger salamanders that may be taking refuge under debris or in the few mammal burrows present on the site. Any individuals detected would be captured and translocated to a safe location outside the project area; this relocation site shall be approved by the USFWS prior to translocation.</p> <p>MM BIO-5.3: <u>On-site Construction Crew Education Program for Tiger Salamander.</u> A worker education program shall take place before the commencement of borrow excavation activities. A USFWS-approved biologist shall explain to construction workers how best to avoid impacts to California</p>	LTS

SIGNIFICANT IMPACT	STANDARD CONDITIONS AND MITIGATION MEASURES	Significance After Mitigation
	<p>tiger salamanders. The approved biologist will conduct a training session that would be scheduled as a mandatory informational field meeting for contractors and all construction personnel. The field meeting will include topics on species identification, life history, descriptions, and habitat requirements during various life stages. Handouts, illustrations, photographs, and project mapping showing areas where minimization and avoidance measures are being implemented will be included as part of this education program. The program will increase the awareness of the contractors and construction workers about existing federal and state laws regarding endangered species as well as increase their compliance with conditions and requirements of resource agencies.</p> <p>Prior to the start of work each day, dedicated construction personnel will inspect pits that were left open overnight for tiger salamanders. If a tiger salamander is encountered during project construction, the following protocol will be implemented:</p> <ul style="list-style-type: none"> • All work that could result in direct injury, disturbance, or harassment of the individual animal must immediately cease; • The foreman will be immediately notified; • The foreman will immediately notify a qualified biologist, who in turn will immediately notify USFWS and CDFG; and • If approved by the USFWS and CDFG, the qualified biologist will remove the individual to a safe location nearby. 	
<p>Impact BIO-7: Although not currently on the site, landfill closure activities could impact individual Burrowing Owls in the event Burrowing Owls move onto the landfill or borrow area in the future. (Significant Impact)</p>	<p>MM BIO 7.1: <u>Pre-construction Surveys for Burrowing Owl.</u> Pre-construction surveys for Burrowing Owls shall be conducted in potential habitat (inactive slopes of the landfill and the borrow area) in conformance with CDFG protocols, no more than 30 days prior to the start of any ground-disturbing activity such as clearing and grubbing, excavation, or grading. If no Burrowing Owls are located during these surveys, no additional action would be warranted. However, if Burrowing Owls are located on or immediately adjacent to the site the following mitigation measures will be implemented.</p>	<p>LTS</p>

LTS=Less Than Significant

S=Significant

SIGNIFICANT IMPACT	STANDARD CONDITIONS AND MITIGATION MEASURES	Significance After Mitigation
	<ul style="list-style-type: none"> • Buffer Zones. If Burrowing Owls are present during the nonbreeding season (generally September 1 to January 31), a 150-foot buffer zone, within which no new project-related activity will be permissible, shall be maintained around the occupied burrow(s). During the breeding season (generally February 1 to August 31), a 250-foot buffer, within which no new project-related activity will be permissible, will be maintained between project activities and occupied burrows. Owls present at burrows on the site after February 1 will be assumed to be nesting on or adjacent to the site unless evidence indicates otherwise. This protected area will remain in effect until August 31, or at the discretion of the CDFG and based upon monitoring evidence, until the young owls are foraging independently. • If ground-disturbing activities will directly impact occupied burrows, eviction outside the nesting season may be permitted pending evaluation of eviction plans by, and receipt of formal written approval of the relocation from the CDFG. No Burrowing Owls shall be evicted from burrows during the nesting season (February 1 through August 31) unless evidence indicates that nesting is not actively occurring (e.g., because the owls have not yet begun nesting early in the season, or because young have already fledged late in the season). <p>A report on the results of the pre-construction survey(s) for Burrowing Owls, including any required buffer zones or protection measures, shall be submitted to the Planning Director prior to the start of grading each year and/or at the start of a new phase of grading or landfill closure.</p>	
<p>Impact BIO-8: Removal of dense vegetation during the nesting season could result in impacts to nesting Alameda Song Sparrow and Saltmarsh Common Yellowthroats. (Significant Impact)</p>	<p>MM BIO-8.1: Prior to ground disturbing activities in the borrow area, suitable habitat for breeding by Alameda Song Sparrow or Saltmarsh Common Yellowthroats (e.g., dense wetland and ruderal vegetation) will be identified and mapped by a qualified biologist. To the extent feasible, vegetation that could be used for breeding by these species within the area to be graded during the next</p>	<p>LTS</p>

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	<p>year will be removed during the non-breeding season (mid-August to late February). In addition, all vegetation that could serve as suitable nesting habitat for these species, and that is located within 50 feet of areas of disturbance, shall be removed to prevent the project from disturbing active nests. During the construction period, the project site and adjacent areas shall be maintained so that no vegetation suitable for nesting by Song Sparrows and Common Yellowthroats is allowed to develop. If vegetation is removed during the non-breeding season prior to construction, no impacts to nesting would occur.</p> <p>A report documenting the removal of vegetation within the active borrow area shall be submitted to the Planning Director prior to the start of grading each year.</p> <p>MM BIO 8.2 In the event suitable vegetation has not been removed and project activities are to occur during the breeding season in or near potential nesting habitat for Alameda Song Sparrow or Saltmarsh Common Yellowthroats, a qualified ornithologist shall conduct pre-disturbance surveys no more than 15 days prior to the initiation of disturbance in any given area. If Song Sparrow or Common Yellowthroat nests are found to be present within or near (i.e., within 50 feet of) the impact areas during the breeding season, a buffer free from any new project-related disturbance shall be established around any active nest, the width of this buffer being determined by an experienced ornithologist in consultation with CDFG. This buffer shall be maintained until nesting has been completed.</p> <p>A report on the results of any pre-construction surveys for Alameda Song Sparrow and Saltmarsh Common Yellowthroats, including any required buffer zones or protection measures, shall be submitted to the Planning Director prior to the start of grading each year.</p>	

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<p>Impact BIO-10: Grading and excavation activities in dense vegetation in the borrow area near pickleweed areas during landfill closure could result in impacts to individual salt marsh harvest mice and salt marsh wandering shrews. (Significant Impact)</p>	<p>MM BIO 10.1: <u>Exclusion of Individual Salt Marsh Harvest Mice and Salt Marsh Wandering Shrews from Project Site.</u> A barrier to exclude salt marsh harvest mice and salt marsh wandering shrews from the project’s impact areas shall be constructed under the guidance of a qualified biologist. The fence shall consist of a three-foot tall, tight cloth silt fence toed into the soil at least three inches deep and supported with stakes. Additionally, vegetation within the impact area and within ten feet of the barrier shall be removed by hand; such bare areas are unlikely to be crossed by salt marsh harvest mice and salt marsh wandering shrews and provide additional insurance against the dispersal of individuals into the project site. Alternatively (if the barrier of bare ground is not practicable), a three-foot-high smooth metal fence toed into the soil at least three inches shall be constructed instead. All fence construction and vegetation removal shall be conducted under the supervision of a qualified biological monitor who is permitted by the USFWS to move salt marsh harvest mice out of the construction area.</p> <p>MM BIO-10.2: <u>Salvage of Individual Salt Marsh Harvest Mice and Salt Marsh Wandering Shrews During Project Activities.</u> While Mitigation Measure BIO-10.1 would minimize the probability of salt marsh harvest mice and salt marsh wandering shrews entering the site, any individuals already present in the impact areas should be salvaged and translocated off site to the extent practicable. Although detecting every individual on a site is not feasible due to these species’ secretive habits, a qualified mammalogist shall be present during construction of the barrier fence, removal of vegetation, and initial clearing and grubbing within ten feet of the barrier fence. The mammalogist would look for individual salt marsh harvest mice and salt marsh wandering shrews that may be present within the project area. Any individuals detected would be captured and translocated to a safe location within the closest suitable, pickleweed-dominated habitat.</p> <p>A report documenting the construction of the exclusionary fencing and translocation of any salt marsh harvest mice or salt marsh wandering shrews shall</p>	<p>LTS</p>

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	<p>be submitted to the Planning Director prior to the start of grading of the borrow area each year.</p> <p>MM BIO-10.3: <u>On-site Construction Crew Education Program for Salt Marsh Harvest Mice or Salt Marsh Wandering Shrews.</u> A worker education program will take place before the start of borrow excavation each year. A USFWS-approved biologist will explain to construction workers how best to avoid impacts to salt marsh harvest mice and salt marsh wandering shrews. The approved biologist will conduct a training session that would be scheduled as a mandatory informational field meeting for contractors and all construction personnel. The field meeting will include topics on species identification, life history, descriptions, and habitat requirements. Handouts, illustrations, photographs, and project mapping showing areas where minimization and avoidance measures are being implemented will be included as part of this education program. The program will increase the awareness of the contractors and construction workers about existing federal and state laws regarding special-status species as well as increase their compliance with conditions and requirements of resource agencies.</p>	
Hydrology and Water Quality		
<p>Impact H/WQ-5: Substantial impacts to water quality associated with installation of the final cover on the landfill would be avoided by implementation of measures included in the NPDES Industrial Permit for the TCRDF. Grading and excavation in the proposed borrow area and soil conditioning and handling could result in substantial short-term impacts to surface waters quality during construction. (Significant Impact)</p>	<p>MM H/WQ 5.1: The project will be required to conform with the requirements and guidelines of the Alameda Countywide Clean Water Program and the City of Fremont to reduce nonpoint pollution in storm water runoff. The project also proposes to comply with nonpoint pollution control measures during construction as required under the NPDES General Construction Permit for activities in the borrow area.</p> <p><u>Erosion and Sedimentation Control.</u> Contractors shall implement erosion control measures on site to retain all debris, dirt and pollutants, and prevent said pollutants from flowing into the on-site storm water collection system. Erosion control plans and/or SWPPPs shall be submitted for review and approval by the Community Development Department prior to issuance of any grading permits.</p>	LTS

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Air Quality		
<p>Impact AIR-1: Landfill closure activities would intermittently generate fugitive dust and exhaust emissions from construction equipment. This could result in short-term air quality impacts. (Significant Impact)</p>	<p>MM AIR 1-1: Implementation of the measures recommended by the BAAQMD would reduce the air quality impacts associated with grading and other landfill cover construction activities. Contractors shall implement the following measures during excavation of the borrow area and placement of the final cover over the landfill:</p> <ul style="list-style-type: none"> • Water all active construction areas twice daily and more often during windy periods. • Cover all trucks hauling soil, sand, and other loose materials or maintain at least two feet of freeboard. • Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas. • Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas and sweep streets daily (with water sweepers) if visible soil material is deposited onto the adjacent roads. • Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas. • Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles. • Limit traffic speeds on unpaved roads to 15 mph. • Install sandbags or other erosion control measures to prevent silt runoff to public roadways. • Replant vegetation in disturbed areas as quickly as possible. • Suspend excavation and grading activity when high winds cause visible dust clouds to extend beyond the construction site. • Limit the area subject to excavation, grading, and other construction activity at any one time. 	LTS

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	<p>MM AIR-3.1: Although not a significant impact, the following measures are included in the project (or will be required as conditions of approval) to reduce emissions of diesel particulates during construction of the final cover of the landfill:</p> <ul style="list-style-type: none"> • Opacity is an indicator of exhaust particulate emissions from off-road diesel powered equipment. The project shall ensure that emissions from all construction diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. • The contractor shall install temporary electrical service whenever possible to avoid the need for independently powered equipment (e.g., compressors). • The proposed project shall limit idling of construction equipment to five minutes and properly tune and maintain equipment for low emissions. 	<p>LTS</p>
CULTURAL RESOURCES		
<p>Impact CUL-1: The proposed project includes excavation of native soil materials in an on-site borrow area. Although unlikely, buried archaeological resources could be encountered during soil excavation for landfill cover material. (Significant Impact)</p>	<p>MM CUL 1.1: In the event cultural materials are found during site grading or excavation in the borrow area, the following measures will be implemented: All construction within 50-feet of the find would be halted, the Director of Community Development would be notified, and a qualified archaeologist would examine the find and make recommendations regarding the significance of the find and the appropriate mitigation. Recommendations could include collection, recordation, and analysis of any significant cultural materials.</p> <ul style="list-style-type: none"> • If human remains are discovered, the Alameda County Coroner shall be notified. If the remains are determined to be Native American, the coroner shall notify the Native American Heritage Commission, who shall identify the Most Likely Descendant (MLD) of the deceased Native American. • If the Planning Director finds that the cultural resource find is not a significant resource, work shall resume only after the submittal of a preliminary report and after provisions for reburial and ongoing monitoring 	<p>LTS</p>

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	<p>are accepted. Provisions for identifying descendants of a deceased Native American and for reburial shall follow the protocol set forth in the CEQA Guidelines. If the site is found to be a significant archaeological site, a mitigation program shall be prepared and submitted to the Director of the Community Development Department for consideration and approval, in conformance with the protocol set forth in Section 15064.5 of the CEQA Guidelines.</p>	
<p>Impact CUL-2: Future modifications to the Corporation Yard to facilitate the parking and maintenance of haul trucks could disturb native soils. Although unlikely, buried archaeological resources could be encountered during site grading. (Significant Impact)</p>	<p>Measures that would avoid or reduce possible future cultural resources impacts associated with the General Plan amendment are identified below, in the form of Plan policies or programs and local, regional, state or federal regulations. Program level mitigation measures would be applicable to future modifications to the Corporation Yard or concrete recycling facility.</p> <p>PMM CUL-2.1: The California Health and Safety Code Section 7050.5 outlines the requirements for handling human remains if found outside of a dedicated cemetery. The county coroner is required to contact the Native Heritage Commission within 24 hours if the coroner recognizes the remains to be those of a Native American. The Native American Heritage Commission then identifies the Most Likely Descendant (MLD) of the deceased Native American. Provisions for reburial will be made with the MLD.</p> <p>PMM CUL-2.2: Section 15064.5 of the CEQA Guidelines identifies steps that should be taken in the event Native American remains, historical resources or unique archaeological resources are accidentally discovered during construction. These steps include immediate evaluation of the find by a qualified archaeologist and implementation of avoidance measures or appropriate mitigation. For future projects that involve ground disturbance, the City of Fremont will include standard conditions that incorporate these measures outlined in the CEQA Guidelines.</p>	<p>LTS</p>

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SUMMARY OF ALTERNATIVES

CEQA requires that an EIR identify alternatives to a project as it is proposed. The CEQA Guidelines specify that the EIR should identify alternatives that “will feasibly attain most of the basic objectives of the project but will avoid or substantially lessen any of the significant effects of the project.” The purpose of this section is to determine whether there are alternatives of design, scope or location that will substantially lessen the significant impacts, even if those alternatives “impede to some degree the attainment of the project objectives,” or are more expensive. [Section 15126.6]

In order to comply with the purposes of CEQA, it is important to identify alternatives that reduce the significant impacts that are anticipated to occur if the project is implemented and to try to meet as many of the project’s objectives as possible. The Guidelines emphasize a common sense approach -- the alternatives should be reasonable, should “foster informed decision making and public participation,” and should focus on alternatives that avoid or substantially lessen the significant impacts.

All impacts that might have been significant will be reduced to a less than significant level by mitigation or avoidance measures included in the proposed project. The significant impacts for which mitigation or avoidance is proposed include: biological resources during construction (Borrow Area); air quality impacts during construction (Borrow Area and Landfill), hydrology and water quality impacts (Borrow Area to Landfill), and cultural resources (Excavation in Native Soils). All of the significant impacts of the project would be reduced or avoided by implementation of program (standard) mitigation measures and mitigation measures included in the project. Alternatives required by CEQA to be considered should be capable of avoiding or reducing some or all of the significant impacts listed above.

Consideration of a “No Project” alternative is mandatory. In addition, a logical alternative which might reduce the significant impacts identified for the proposed project includes a different location for landfill borrow or the Corporation Yard and concrete recycling facility. A different location should be considered only if it is capable of avoiding or reducing some or all of the significant impacts identified.

NO PROJECT ALTERNATIVES

The CEQA Guidelines stipulate that an EIR specifically include a “No Project” Alternative, which should discuss both “the existing conditions, as well as what will be reasonably expected to occur in the foreseeable future if the project is not approved, based on current plans and consistent with available infrastructure and community services.”

The proposed project includes two components; closure of the active landfill and a General Plan amendment and rezoning to allow on-going industrial uses. The discussion below addresses both a no landfill closure scenario and a no project scenario upon the current land use designation for the site.

No Project/No Landfill Closure Scenario

Under this scenario, the landfill would continue receiving waste, which would be covered with daily and intermediate cover. The final cover and extension of the landfill gas and leachate collection systems would not be installed. Existing improvements (maintenance buildings) and the concrete recycling facility could remain.

This No Project alternative scenario would not conform to regulatory requirements, including the Solid Waste Facility Permit for the TCRDF. It would avoid construction impacts (air quality and biological resources) associated with removal of borrow materials, but would increase impacts to underlying groundwater and could result in accelerated erosion. The No Project/No Landfill Closure is not a feasible alternative from a regulatory standpoint and will not be discussed further in this EIR.

No General Plan Amendment or Rezoning Scenario

Under this alternative, the existing General Plan designation and zoning would remain in place. The final cover would be placed over the active landfill, in conformance with regulatory requirements. Limited facilities for maintenance activities at the landfill would be allowed to remain for the 30-year postclosure maintenance period. The existing Corporation Yard would be limited to uses related to landfill maintenance and would not include operation of fleet services. The concrete recycling facility would not continue to operate on the site.

The No General Plan Amendment or Rezoning Alternative is feasible from a land use and planning standpoint. The final cover would be installed under this alternative and construction impacts (biological resources, air quality, water quality, and cultural resources) during from site grading in the borrow area would be the same as the proposed project.

Under this alternative scenario, industrial uses (i.e., operation of the Corporation Yard and concrete recycling facility) would be limited to maintenance activities for the landfill. The drainage patterns at the Corporation Yard would not substantially change. Possible impacts to buried cultural resources would be avoided. This alternative would avoid increased activity (such as vehicle maintenance and repair) that could have water quality impacts if hazardous materials are improperly handled or there are accidental spills. Implementation of regulatory requirements for industrial facilities could substantially reduce impacts from allowed on-site uses, however.

The No General Plan Amendment or Rezoning Alternative would be consistent with the basic objectives of the project that pertain to construction of the Final Closure Cover Liner at the landfill in compliance with state and federal regulations to protect public health, safety, and the environment.

The City of Fremont's objectives for the proposed General Plan and zoning changes include allowing for the continuation of existing uses on the site to the extent they are deemed compatible with future adjacent uses while encouraging resource recovery and diversion activities, ongoing maintenance and supervision of the landfill closure, maintaining the integrity of the site for future appropriate industrial uses within known access, utility, and natural environment constraints. This alternative would allow for ongoing maintenance and supervision of the landfill closure but would not wholly meet the objective of allowing continuation of existing uses that encourage resource recovery (i.e., concrete recycling).

NO ON-SITE BORROW ALTERNATIVE

Under this alternative, all of the materials would come from off-site and no excavation would not be undertaken in the proposed borrow area. The final cover would be placed over the active landfill, in conformance with regulatory requirements. Like the proposed project, this alternative would include operation of the existing Corporation Yard and the Raisch Corporation concrete recycling facility. The focus of this alternative would be the reduction of possible biological resources impacts within the proposed borrow area.

Like the proposed project, the No On-Site Borrow Alternative would require a modification of the General Plan land use designation and zoning to *Light Industrial* on 46 acres of the TCRDF (and consideration of a conditional use permit for the proposed post-closure facility usage. Use of soil materials from off-site locations is feasible from a land use and planning standpoint.

There would be no on-site excavation for soil borrow. This would avoid the possible impacts to nesting birds and individual California tiger salamanders and salt marsh harvest mice during construction. On-site generation of dust from the borrow area would be avoided. On a regional basis, dust and particulate matter could be generated at other sites where soil materials for the final cover are obtained. Air quality impacts during installation of the final cover would be the same as the proposed project. Emissions of pollutants from mobile sources (i.e., haul trucks) would increase if all soil needed for the final cover was transported to the site from off-site sources. This alternative could result in a new, short-term significant impact to regional air quality. The total emissions would not exceed 15 tons per year during the construction phase, however.

This alternative would avoid short-term water quality impacts associated with excavation in the on-site borrow area during construction of the final cover. Possible impacts to buried cultural resources would also be avoided. This alternative would result in increased truck trips to and from the site over a four year period compared to the proposed project. This would incrementally increase air emissions and energy use.

The No On-Site Borrow Alternative would be consistent with the basic objectives of the project that pertain to construction of the Final Closure Cover Liner at the landfill in compliance with state and federal regulations to protect public health, safety, and the environment. This alternative would not meet the applicant's goal of reducing the amount of earthen lining from off-site hauling.

The City of Fremont's objectives for the proposed General Plan and zoning changes include allowing for the continuation of existing uses on the site to the extent they are deemed compatible with future adjacent uses while encouraging resource recovery and diversion activities, ongoing maintenance and supervision of the landfill closure, maintaining the integrity of the site for future appropriate industrial uses within known access, utility, and natural environment constraints. This alternative, like the proposed project, is consistent with the City of Fremont's objectives for the proposed General Plan and zoning changes.

CORPORATION YARD/CONCRETE RECYCLING LOCATION ALTERNATIVE

Under this alternative, the existing General Plan designation and zoning would remain in place. The project applicant would locate a Corporation Yard in an industrial area within the East Bay and the concrete recycling uses would be moved to another facility or considered on a case by case basis for on-site operations at individual construction sites. Possible locations for a Corporation Yard for waste hauling trucks may be available in the industrially zoned area in the vicinity of Boyce Road and Christy Street, approximately one-half to one mile from the TCRDF facility.

The final cover would be placed over the active landfill, in conformance with regulatory requirements. Limited facilities for maintenance activities at the landfill would be allowed to remain for the 30-year postclosure maintenance period. The existing Corporation Yard would be limited to uses related to landfill maintenance. The concrete recycling facility would not continue to operate on the site.

This alternative would reduce activity within the Corporation Yard and concrete facility, but would not avoid or lessen one of the identified significant environmental effects of the project. It is

presented to provide additional information to the decision-makers, responsible agencies, and the public.

Within areas designated for General Industrial uses, the Corporation Yard/Concrete Recycling Location Alternative is feasible from a land use and planning standpoint. The feasibility of individual sites for use as a Corporation Yard in nearby industrial areas of Fremont would depend on site size, existing buildings and other improvements, and surrounding land uses. Possible truck routes to and from the site and the proximity of sensitive receptors to those routes and the facility itself would affect the feasibility of a Corporation Yard for an approximately 50-truck fleet. On-site concrete recycling at construction sites in Central Fremont, especially near residential and commercial areas, may not be considered feasible due to possible noise and dust impacts. The final cover would be installed under this alternative and construction impacts (biological resources, air quality and hydrology) from site grading in the borrow area would be the same as the proposed project. Under this alternative scenario, industrial uses would be limited to maintenance activities for the landfill. This alternative would avoid increased activity (such as vehicle maintenance and repair) that could have water quality impacts if hazardous materials are improperly handled or there are accidental spills. Implementation of regulatory requirements for industrial facilities could substantially reduce impacts from allowed on-site uses, however. If located near residential uses on Stevenson Boulevard, there could be noise and land use compatibility impacts along truck routes. Impacts to sensitive uses would generally be limited if a Corporation Yard was located within an existing industrial area.

The Corporation Yard/Concrete Recycling Location Alternative would be consistent with the basic objectives of the project that pertain to construction of the Final Closure Cover Liner at the landfill in compliance with state and federal regulations to protect public health, safety, and the environment.

Parking and maintenance of waste haul trucks that serve Fremont residences and businesses would be at another location within the City. This alternative would allow for ongoing maintenance and supervision of the landfill closure but would not wholly meet the City's objective of allowing continuation of existing uses that encourage resource recovery (i.e., concrete recycling).

FINAL COVER DESIGN ALTERNATIVE

The alternative described in the following section is a modification of the final cover design on the top deck of the landfill. Unlike the other alternatives, it would not avoid or lessen one of the identified significant environmental effects of the project. It is presented to provide information to the decision-makers, responsible agencies, and the public on a modified design that could improve performance of the final cover.

A review of the proposed GCL alternative cover on the top of the landfill found that the proposed final cover would meet or exceed the performance of the prescriptive cover design (one foot of low permeability material) in state regulations for landfill closure. There are several measures, however, that could improve the performance of the final cover and avoid desiccation and drying of the GCL alternative cover.

The project proposes one foot of soil over the GCL. A thicker layer of soil above the geosynthetic clay liner may be advisable in semi-arid areas, such as Central California, to prevent moisture reaching the underlying waste materials through cracks in the overlying vegetative soil layer or the geosynthetic clay liner if they dry and crack and to protect the GCL from damage by construction equipment operating on the top of the landfill. Without a thicker vegetative layer above the

geosynthetic layer, more maintenance could be required over time or there could be an increase in leachate.

Under the Final Cover Design Alternative, the thickness of the vegetative soil cover would be increased from 12-inches to 18- to 24-inches. This would require an additional 45,000-90,000 cubic yards of soil materials. A conservative overlap of GCL panels, as much as 12-inches, would also be used to avoid separation of the GCL panels due to differential settlement of the top deck. Like the proposed project, this alternative would include operation of the existing Corporation Yard and the Raisch Corporation concrete recycling facility.

Like the proposed project, this alternative would require a modification of the General Plan land use designation and zoning to *Light Industrial* on 46 acres of the TCRDF (and consideration of a conditional use permit for the proposed post-closure facility usage. Modifications to the final cover design would not require modification of the General Plan or zoning. The modifications would be feasible from a land use and planning standpoint.

Additional soil material (45,000-90,000 cubic feet) would be required for the vegetative layer, which would incrementally increase the area within the borrow area that is disturbed. Borrow would occur in previously disturbed areas. Construction impacts to biological resources from site grading in the borrow area, therefore, would be similar to the proposed project.

Daily construction emissions and identified air quality impacts during excavation of the borrow area and installation of the final cover would be the similar to the proposed project. Grading and construction activities could occur on more days in the borrow area and on top of the landfill during the final year of cover construction, however. Like the proposed project, the significant construction impacts of the project can be reduced by the mitigation measures included in the project.

Short-term water quality impacts and possible impacts to buried cultural resources associated with excavation in the proposed borrow area would be similar to the proposed project. Like the project, the significant construction impacts of the project can be reduced by the mitigation measures included in the project.

The Final Cover Design Alternative would be consistent with the basic objectives of the project that pertain to construction of the Final Closure Cover Liner at the landfill in compliance with state and federal regulations to protect public health, safety, and the environment. The City of Fremont's objectives for the proposed General Plan and zoning changes include allowing for the continuation of existing uses on the site to the extent they are deemed compatible with future adjacent uses while encouraging resource recovery and diversion activities, ongoing maintenance and supervision of the landfill closure, maintaining the integrity of the site for future appropriate industrial uses within known access, utility, and natural environment constraints. Like the proposed project, this alternative meet the objective of allowing continuation of existing uses that encourage resource recovery (i.e., concrete recycling).

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The CEQA Guidelines specify that an EIR must identify the environmentally superior alternative among those alternatives discussed.

The No On-Site Borrow Alternative is environmentally superior to the proposed project during the four seasons of construction of the final cover in terms of possible impacts to individual animals that are listed as special status species. This alternative, however, could result in a new, short-term

impact to regional air quality due to increased truck trips. Overall, this alternative is not clearly superior to the proposed project.

The Final Cover Design Alternative could reduce the possibility of the final cover being compromised by desiccation cracks (that do not heal when rewetted) or punctures or tears in the GCL. It is presented to provide information to the decision-makers, responsible agencies, and the public on a modified design that could improve performance of the final cover. It would require more excavation and grading during construction of the final cover on the top deck of the landfill. This alternative would not reduce any of the identified significant impacts of the project.

1.0 INTRODUCTION AND PROJECT OBJECTIVES

1.1 INTRODUCTION

This document has been prepared by the City of Fremont as the Lead Agency in conformance with the California Environmental Quality Act (CEQA) and the CEQA Guidelines. The purpose of this Environmental Impact Report (EIR) is to inform decision makers and the general public of the environmental effects of the proposed project, to identify ways in which the significant effects might be minimized, and to identify alternatives to the project that could avoid or reduce those significant impacts.

This document includes descriptions of the physical environmental conditions in the vicinity of the project, as those conditions existed at the time the Notice of Preparation of the Draft EIR was circulated for a 30-day period starting on November 2, 2006. The consideration and discussion of environmental impacts that follow evaluate whether the environmental effects are significant; that is: do those effects exceed stated levels, or “thresholds” of significance. Mitigation measures, proposed to minimize the identified significant environmental effects, are also described in the discussion of environmental impacts and mitigation measures, per CEQA Guidelines Section 15126.

1.2 BACKGROUND AND OVERVIEW

The Tri-Cities Recycling and Disposal Facility (TCRDF) in Fremont, California began accepting municipal solid waste in 1967 and was formerly known as the Durham Road Landfill. Recycling activities were added on the site in 1991.

The project proposes closure of the 115-acre active landfill and continued operation of the on-site Corporation Yard and a concrete recycling facility. The project proposes modification of its Conditional Use Permit and Solid Waste Facilities Permit to address closure of the landfill in conformance with state and federal requirements and allow for excavation of some of the soil materials for landfill closure from an on-site borrow area. A General Plan amendment is proposed on 46 acres of the TCRDF site from *Solid Waste Facility* to *Light Industrial*, as is rezoning to *L-I(F)* for Light Industrial uses to allow consideration of a Conditional Use Permit for continued operation of the on-site Corporation Yard and concrete recycling facility.

1.3 PROJECT OBJECTIVES

The stated purpose of the project applicant, Waste Management, Inc., is provided below.

The purpose of the Fill Area 1 Final Closure Cover Liner (FCCL) construction is to isolate the wastes contained in the landfill from the environment and to minimize precipitation infiltration into the landfill by constructing a cover liner system over the surface of the landfill. State and Federal regulations require FCCL construction as part of landfill closure so as to protect public health, safety, and the environment. Therefore, the objective of the Fill Area 1 FCCL construction project is to comply with applicable federal and state regulations for closure of solid waste landfills and to comply with applicable local agency permit conditions so as to protect public health, safety, and the environment. Specifically, applicable provisions of Code of Federal Regulations Part 258 (Subtitle D) and California Code of Regulations Title 27 establish requirements for design and construction of FCCL systems. To this end, the FCCL goal is to meet these obligations and reduce the amount of earthen lining required to meet this requirement from off-site hauling.

The City of Fremont’s objectives for the proposed General Plan and zoning changes are as follows:

The General Plan amendment, rezoning and Conditional Use Permit project components are intended to allow for the continuation of existing uses on the site to the extent they are deemed compatible with future adjacent uses while encouraging resource recovery and diversion activities, ongoing maintenance and supervision of the landfill closure, maintaining the integrity of the site for future appropriate industrial uses within known access, utility, and natural environment constraints.

1.4 USES OF THE EIR

It is proposed that this EIR be relied upon in issuing appropriate program-level and project-specific discretionary and non-discretionary approvals necessary to implement this project as proposed. These actions include the following approvals by the agencies indicated:

City of Fremont	General Plan Amendment (for Corporation Yard and Concrete Recycling Facility) Zoning (for Corporation Yard and Concrete Recycling Facility) Conditional Use Permits (for Landfill Closure, Corporation Yard, and Concrete Recycling Facility) or other Development Permits for improvements and use (e.g. Zoning Administrator) Grading Permit(s) (For Borrow Area)
California Integrated Waste Management Board	Solid Waste Facilities Permit
Regional Water Quality Control Board	National Pollution Discharge Elimination System (NPDES) Permits (Industrial, Construction, and Municipal)
County of Alameda -Stopwaste.org (Local Enforcement Agency)	Solid Waste Facilities Permit

1.5 PUBLIC PARTICIPATION IN ENVIRONMENTAL REVIEW

The City of Fremont, as required under CEQA, encourages public participation in the environmental review process. Opportunities for comments by public agencies and the public include responding to the Notice of Preparation of the Draft EIR, written comments on this Draft EIR, and presentation of written or verbal comments at future public hearings.

A Notice of Preparation for this Draft EIR was circulated to public agencies in November 2006. Responses to the Notice of Preparation are included in Appendix A of this document.

Under the California Environmental Quality Act (CEQA), the Lead Agency is required, after completion of a Draft EIR, to consult with and obtain comments from public agencies having jurisdiction by law with respect to the proposed project, and to provide the general public with an opportunity to comment on the Draft EIR. Written comments concerning the environmental review contained in this Draft EIR must be submitted to the Lead Agency, the City of Fremont, to the attention of Kelly Diekmann, Senior Planner, City of Fremont, 39550 Liberty Street, Fremont, CA 94538 during the 45-day public review and comment period. Written and verbal comments may also

be presented at scheduled public hearings on certification of the Final EIR, but may not be included in the response to comments and Final EIR.

1.6 ORGANIZATION OF THE DRAFT EIR

The Draft EIR includes the following sections:

Summary

The Summary of the Draft EIR, which precedes this introduction, includes a brief description of the proposed project and summarizes the project's impacts, mitigation measures, and alternatives to the project. The summary also briefly describes any known areas of public controversy and the views of local groups.

Section 1. Introduction and Project Objectives

This section provides a general overview of the CEQA process, describes the public participation process and opportunities for input, describes the intended uses of the EIR, lists the applicant and City objectives for the project, and outlines the contents of the Draft EIR.

Section 2. Description of the Proposed Project

This section describes the physical and operational characteristics of the proposed project (at both a program level and project level). Information on the location of the project and assumptions about implementation of the proposed General Plan change are addressed in this section.

Section 3. Consistency with Adopted Plans

The project's conformance with objectives, goals, and policies in applicable General Plans and regional plans is described in this section.

Section 4. Environmental Setting, Impacts, and Mitigation

The Environmental Setting, Impacts, and Mitigation section includes descriptions of the physical setting of the project area, identifies environmental impacts resulting from the project, and identifies mitigation measures for the environmental impacts examined in the EIR. The primary environmental issue areas addressed in this Draft EIR are land use (including land use compatibility), geology and soils, biological resources, hydrology and water quality, hazards and hazardous materials, transportation, noise, air quality, and visual resources and aesthetics. The Draft EIR identifies proposed mitigation measures for significant impacts in this section and briefly evaluates the expected effectiveness/feasibility of these measures.

Each impact is numbered using an alpha-numerical system that identifies the environmental issue. For example, **Impact BIO – 1**, denotes the first impact in the biological resources section. Mitigation measures and conclusions are also numbered to correspond to the impacts they address. For example, **MM NOI – 2.3** refers to the third mitigation measure for the second impact in the noise section. The letter codes used to identify environmental issues are listed on the following page.

Letter Codes for Environmental Issues	
Letter Code	Environmental Issue
AES	Aesthetics
AIR	Air Quality
BIO	Biological Resources
CUL	Cultural Resources
GEO	Geology and Soils
HAZ	Hazards and Hazardous Materials
H/WQ	Hydrology and Water Quality
LU	Land Use
NOI	Noise
P&H	Population and Housing
PS	Public Service
REC	Recreation
TRAN	Transportation
UTIL	Utilities and Service Systems

Section 5. Cumulative Impacts

This section includes a discussion of cumulative environmental impacts of the project along with other pending and future development in the area.

Section 6. Growth Inducing Impacts

The discussion of growth inducing impacts addresses the ways in which a proposed project could foster economic or population growth or the construction of additional housing in the surrounding area.

Section 7. Significant Unavoidable Impacts

This section lists any significant unavoidable impacts that could result if the proposed project is implemented.

Section 8. Alternatives to the Proposed Project

This section identifies a reasonable range of alternatives to the proposed project which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen the significant effects of the project. The environmental impacts associated with each alternative are discussed and a comparison of the impacts to those of the project is presented. How well each of the alternatives meets the objectives of the applicant and City of Fremont is also assessed.

Section 9. Significant Irreversible Environmental Changes

This section discusses the irreversible commitment of natural resources that could occur as a result of implementation of the proposed General Plan amendment.

Section 10. References

This section lists the references, persons, and organizations consulted during preparation of the Draft EIR.

Section 11. Authors and Consultants

This section lists the lead agency staff and consultants who participated in preparation of the Draft EIR.

Section 12. List of Symbols and Abbreviations

This section consists of a list of symbols, acronyms, and abbreviations used in the text of the Draft EIR.

1.7 REFERENCE AVAILABILITY

Copies of all documents referred to in this EIR are available for review at the Department of Community Development, Planning Division, City of Fremont, 39550 Liberty Street, Fremont, CA 94537, during normal business hours.

2.0 PROJECT DESCRIPTION

2.1 HISTORIC OVERVIEW AND BACKGROUND

The 378 acre Tri-Cities Recycling and Disposal Facility (TCRDF) in Fremont, California includes a 115-acre Class III Landfill,¹ resource recovery operations and storage on approximately 61 acres, and an approximately 14-acre Corporation Yard (refer to Figures 2.1-2.3). Approximately 32 acres of upland and four acres of wetlands are located immediately south of the resource recovery operations. The remainder of the site (approximately 148 acres) consists of two diked areas and levees in the northeast and western areas of the property. The northeastern diked area is used for surface water control and is intermittently wet and dry depending on seasonal climatic conditions. High voltage electrical transmission towers are located in the northeastern diked area and there is an easement for the electrical transmission lines that crosses this area. The western diked area is a jurisdictional wetland area.

The TCRDF began accepting municipal solid waste in 1967 and was formerly known as the Durham Road Landfill. In 1991, the name was changed to Tri-Cities Recycling and Disposal Facility to reflect the addition of recycling activities on the site.

Waste received at the TCRDF includes residential, commercial, industrial, and demolition waste. Roughly 80 percent is residential and commercial waste, one percent is industrial waste, and 19 percent is demolition waste.² The TCRDF does not accept hazardous wastes. Designated wastes, such as asbestos, infectious bio-medical wastes, and liquid wastes (i.e., grease trap pumped wastes and on-site truck wash wastewater) were disposed in the landfill in relatively small quantities prior to 1990.

2.2 DESCRIPTION OF CURRENT OPERATIONS

The landfill and recycling facilities on the site are open to the general public every day from 8 a.m. to 5 p.m., excluding New Year's Day, Easter Sunday, Labor Day, Thanksgiving Day, and Christmas Day. Collection trucks can deliver waste to the landfill from 2 a.m. to 5 p.m.

2.2.1 Active Landfill Area

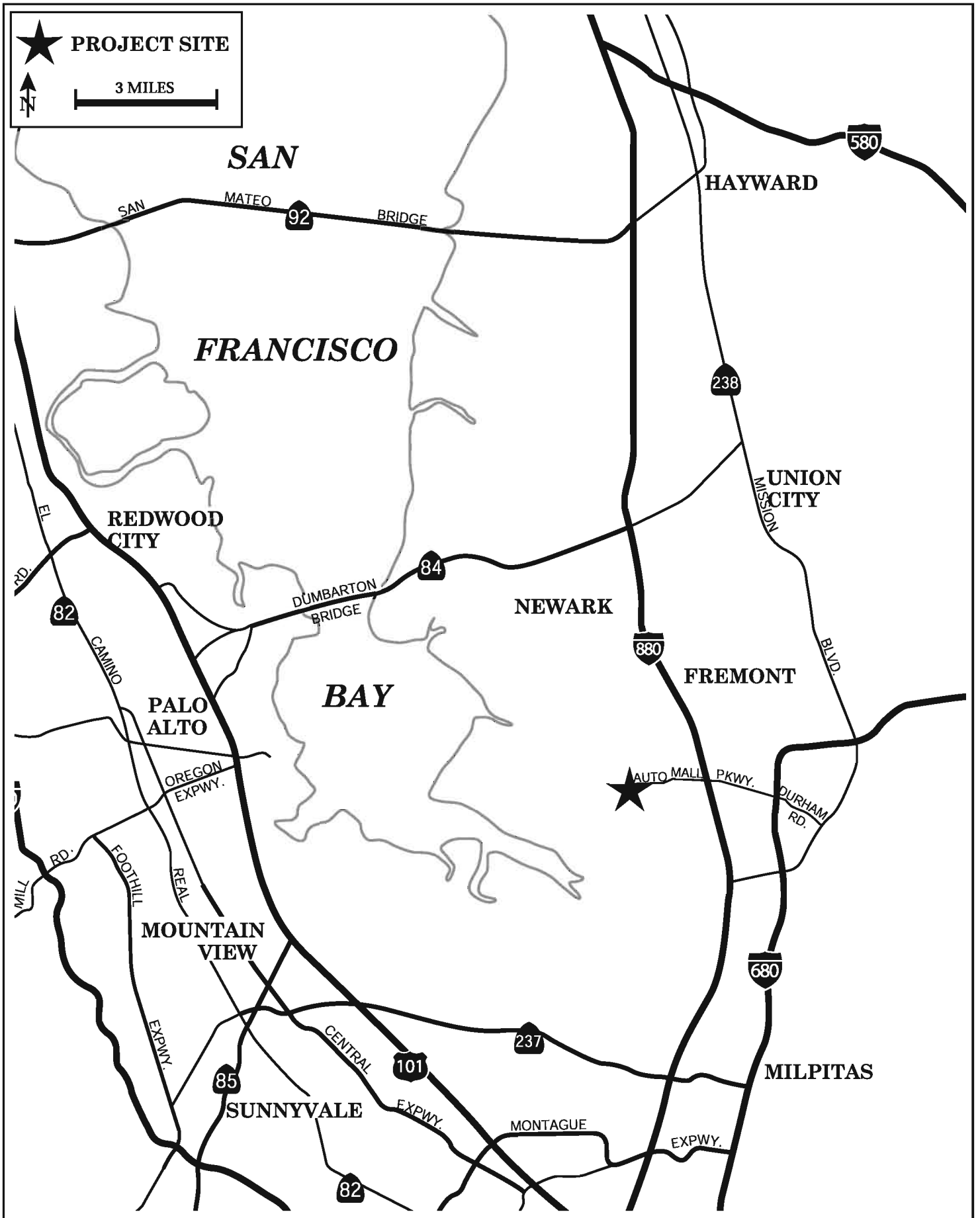
The 115-acre Class III Solid Waste Landfill is designated as Fill Area 1 and was formerly known as the Durham Road Landfill.³ Solid waste disposal operations began in Fill Area 1 Landfill in 1967. The maximum daily waste disposal allowed at the landfill is 2,628 tons per day. TCRDF receives residential, commercial, and industrial wastes collected in the Cities of Fremont, Newark, and Union City.

Collection trucks and private vehicles deposit the permitted solid waste at specified locations on the top and sides of the landfill. These materials are covered on a daily basis with soil or similar materials (i.e., Alternative Daily Cover, such as shredded green waste or tarps). In general, refuse is

¹ The levee at the perimeter of the landfill occupies an additional approximately four acres of the 378-acre Tri-Cities site (Guy Petraborg, Waste Management, written communications, August 28, 2006).

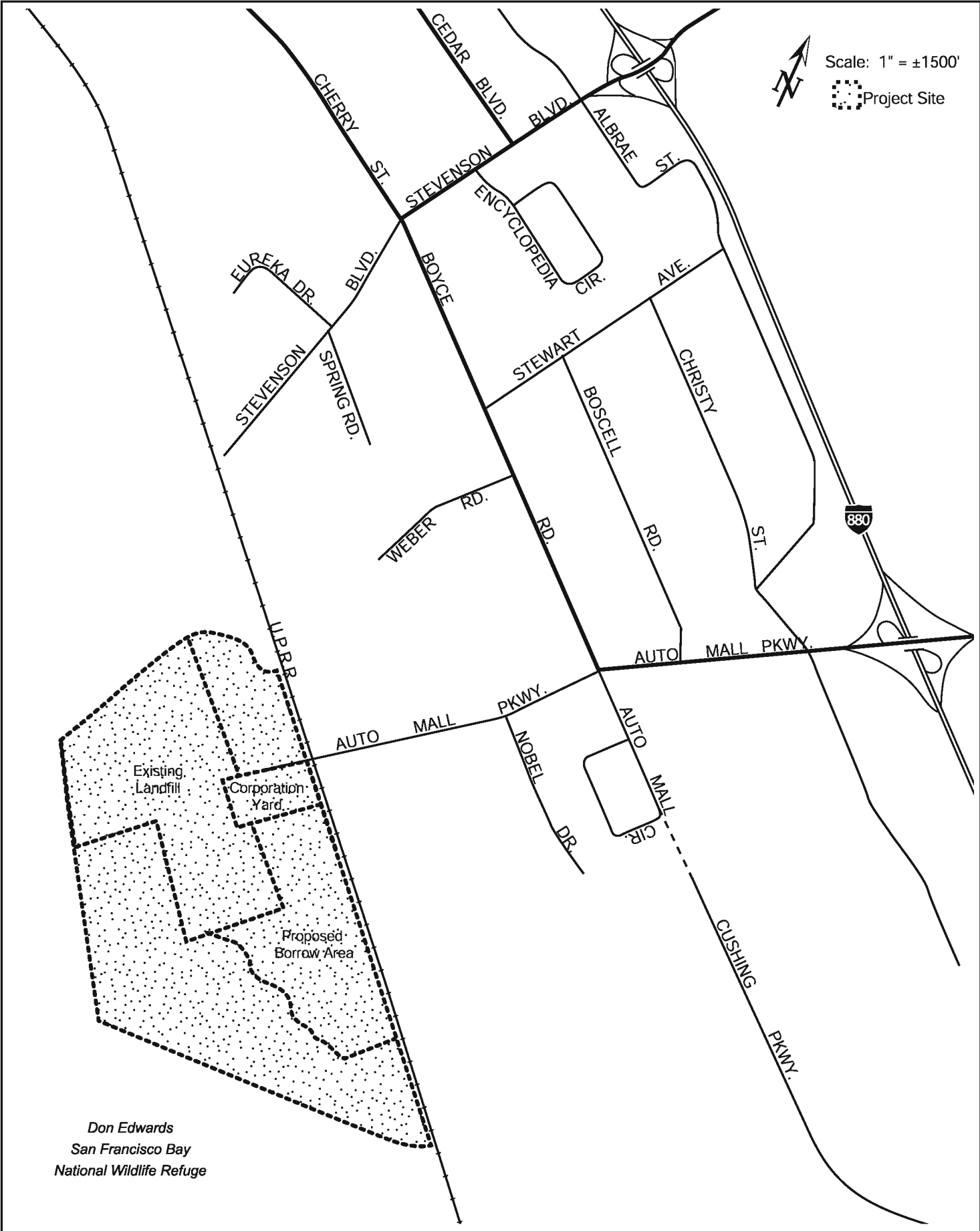
² *Joint Technical Document Tri-Cities Recycling and Disposal Facility, Alameda County, California*, July 2003, Volume I (Prepared for Waste Management of Alameda County, Inc. by Shaw EMCON/OWT, Inc.).

³ A Class III disposal site, as defined in Title 27 of the California Code of Regulations, can receive municipal solid waste (such as putrescible garbage and refuse). Hazardous materials, including hazardous liquids, are prohibited.



REGIONAL MAP

FIGURE 2-1



VICINITY MAP

FIGURE 2-2



AERIAL PHOTOGRAPH AND SURROUNDING LAND USES

FIGURE 2-3

placed in two foot thick layers and compacted. Multiple layers of refuse make up what is called a “lift”. Daily lift thicknesses vary but are typically on the order of 15 to 25 feet thick.

A leachate collection and removal system (LCRS) is located around the perimeter of the landfill. The LCRS consists of a collection trench that contains a perforated collection pipe surrounded by permeable gravel material. The collection pipes are connected to sumps at several intermediate locations. As water levels rise in the collection trench, pumps located in the sumps are activated and the water levels are pumped down. The water is conveyed in solid transmission pipes to the on-site sanitary sewer lift station. The water is then pumped by the lift station pumps to the off-site sanitary sewer lines via a force main. The leachate is conveyed in the force main to and treated by the Union Sanitary District.

2.2.2 Landfill Flare and Landfill Gas Collection System

A landfill gas collection system and landfill flare are also in place at the landfill (Figure 2.4). Landfill gas is a decomposition product of putrescible waste, such as kitchen waste, and consists primarily of methane (approximately 50 percent) and carbon dioxide with smaller amounts of other constituents. The gas collection system is a system of extraction wells which are operated under a slight vacuum. The gas is collected and burned at a landfill flare located north of the Corporation Yard. The flare is operated under a permit issued by the Bay Area Air Quality Management District.

2.2.3 Remaining Landfill Capacity

As of July 2006, there was approximately 1.1 million cubic yards of remaining landfill space available for refuse disposal at the Tri-Cities Recycling and Disposal Facility.⁴ The average daily landfilling rate between 1999 and 2003 was 1,337 cubic yards (based upon an average of 488,130 cubic yards per year). The operator of TCRDF proposes to stop accepting direct haul waste for landfilling at the site on June 30, 2007. After June 30, 2007, waste from the Fremont Transfer Station will be delivered to the landfill until TCRDF reaches the permitted capacity and maximum height of the top-deck of the landfill (an elevation of 150 feet above mean sea level including placement of the final cover).

2.2.4 Landfill Closure

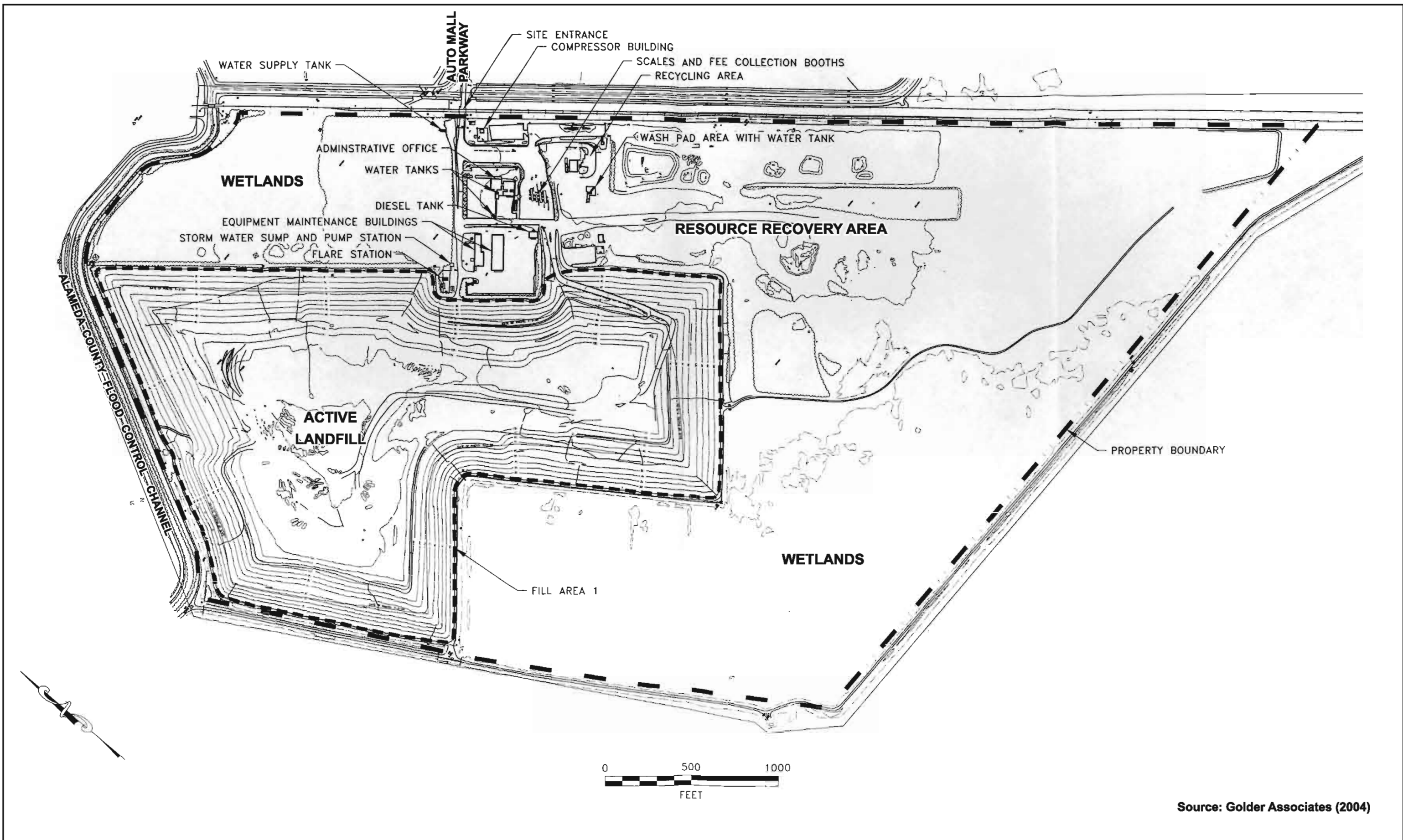
At the completion of waste disposal activities, the entire landfill area will be capped with a multiple layer final cover system designed to minimize moisture infiltration into the landfill. The proposed landfill final cover is described below under *Project Description*.

2.2.5 Resource Recovery Operations

Construction and demolition debris, wood waste, yard waste, soil, and large appliances are currently processed as part of resource recovery operations in an area south of the existing Corporation Yard and east of the landfill (refer to Figure 2.3). Material is accepted from contractors, landscapers and private individuals. Co-mingled recyclable materials are also unloaded and consolidated into larger loads at the TCRDF and hauled to a materials recovery facility (MRF) on Davis Street in the City of San Leandro for processing.⁵ Once the TCRDF stops accepting direct haul waste on June 30, 2007,

⁴ Source: Guy Petraborg, Waste Management, written communications, August 28, 2006.

⁵ Source: Joint Technical Document Tri-Cities Recycling and Disposal Facility, Volume I, Alameda County, California, July 2003 (Revised December 2004).



Source: Golder Associates (2004)

FACILITY PLAN

FIGURE 2-4

resource recovery operations (with the exception of concrete recycling) from would be undertaken at the Fremont Transfer Station.

2.2.5.1 Concrete and Asphalt Processing

Concrete and asphalt recycling is carried out on-site by a lessee, Raisch Corporation. The concrete recycling facility is open Monday through Saturday from 7:30 a.m. to 4:00 p.m. Customers haul material to the site and Raisch hauls crushed products from the site, with the busiest period of the year being May through August.

A portable processing plant is brought to the site approximately once per month and concrete rubble is crushed and sized using a crusher and a variety of screens. Crushed concrete is stored in piles prior to trucking off-site. The management and regular removal of stockpiled material within the Resource Recovery Area is a function of market conditions and hauler availability. Approximately 8,800 trucks bring loads to the concrete recycling facility per year. Approximately 6,000 outbound trucks transport crushed concrete and asphalt products from the site, in trucks with larger average capacities than inbound loads. In the most active month, the Raisch recycling facility processed 1,400 inbound truck loads of concrete and asphalt, or a maximum of 64 trucks per day.⁶

2.2.5.2 Yard, Landscaping, and Wood Waste

For the yard and wood waste type, larger woody material is separated and ground in a barrel grinder to create wood chips. Wood waste consists of brush, tree trimmings, and wood. Ground wood waste is hauled off site for use as fuel or used at the landfill as Alternative Daily Cover (ADC) in the active landfill areas.

2.2.5.3 Drop-off Center for Recycled Materials

An on-site drop-off center for recycled materials, such as cardboard, newspaper, metal cans and bottle glass is operated on the site, south of the truck scales.

2.2.5.4 Appliance Recycling

Large appliances, such as stoves, washing machines, refrigerators, and clothes dryers, are recycled on-site. Recyclable materials (such as metals) are manually removed from non-recyclable materials. Hazardous materials, such as oil in motors and refrigerants (i.e., Freon), are removed and disposed of off-site by contractors licensed to handle the specific materials.

2.2.5.5 Tires

The TCRDF accepts whole tires for recycling. An outside recycler removes tires from the site for off-site recycling.⁷

⁶ Source: Rick Navarro, Raisch Products, personal communications, November 17, 2006.

⁷ *Joint Technical Document Tri-Cities Recycling and Disposal Facility, Alameda County, California*, July 2003, Volume I (Prepared for Waste Management of Alameda County, Inc. by Shaw EMCON/OWT, Inc.)

2.2.5.6 E-Waste

E-waste, such as televisions and computer monitors, is collected and shipped off-site for processing by specialized, third-party recycling firms.

2.2.6 Corporation Yard

On-site facilities within the Corporation Yard include administrative offices and parking, a maintenance office and shop facility, a waste oil recycling area, a truck and container washing facility, a water supply station, and waste water pump station. Also included along the access haul road in this area are truck scales and collection booths. Currently there are approximately 35-38 employees at the TCRDF.

2.2.7 On-Site Wetlands

The western diked area within the TCRDF property, separated from landfilling and resource recovery operations, supports tidal wetlands (refer to Figure 2.3).

2.3 PROJECT DESCRIPTION

The Tri-Cities Landfill Closure and Land Use Plan project includes several components. The components include:

- 1) Installation of a final cover over the active landfill and associated environmental monitoring and maintenance of the 115 acre landfill for 30 years;
- 2) Excavation and conditioning of soil materials from an 88-acre borrow area within the 378 acre TCRDF;
- 3) Alternative import of off-site borrow for landfill cover; and
- 4) Continued operation of the Corporation Yard and concrete recycling facility on up to 46 acres of the site.

The closure of the landfill will require modifications to the Conditional Use Permit for the landfill. The continued and ongoing operation of the Corporation Yard and concrete recycling facility without an active landfill as the primary land use will require a General Plan Amendment and Rezoning to *Light Industrial* and a Conditional Use Permit.

These activities are described below.

2.3.1 Description of Installation of Landfill Final Cover

Installation of final cover on the side slopes and top deck of the landfill will start after completion of landfilling operations in Fill Area 1. The maximum height of the top-deck of the landfill will be at an elevation of 150 feet above mean sea level (msl), which is consistent with the existing Closure and Postclosure Plan for the landfill.

2.3.1.1 Grading Plan/Final Slopes

The landfill will continue to settle due to the compression and decomposition of refuse and consolidation of underlying Bay Mud. The final grading plan for the landfill calls for slopes that meet the criteria below at the time of placement of final cover.

- **West Side-Slope.** The existing lower slope will be maintained. The lower bench will be maintained at the existing width of 15 to 25 feet. Subsequent slopes above the existing 2H:1V (horizontal:vertical) will be limited to a maximum grade of 2.5H:1V.
- **South Side-Slope.** The existing 2.5H:1V slope will be maintained. The slopes above the existing 2.5 H:1V will be limited to a maximum grade of 2.5H:1V.
- **Other Side-Slopes.** The remaining side-slopes will be filled to 2.75H:1V along the lower intermediate slope and 2.5:1V above.
- **Top-Deck.** The top deck slope grades at closure will be five percent to insure that the three percent slope gradient of the closure plan is achieved.

The grading plan is shown on Figure 2.5.

2.3.1.2 Final Closure Cover

The proposed Final Closure Cover Liner (final cover or FCCL) consists of a prescriptive [standardized] cover liner system for the side-slope areas of the landfill and an alternative cover liner system for the top deck portion of the landfill that meets the hydraulic conductivity and durability requirements in Title 27 of the California Code of Regulations.

The side slopes are proposed to be covered first, in three separate phases. The top-deck of the landfill, which is the most susceptible to adverse settlement impacts, will be covered last. This will allow for filling to maintain proper drainage on the top-deck prior to placement of the final cover.

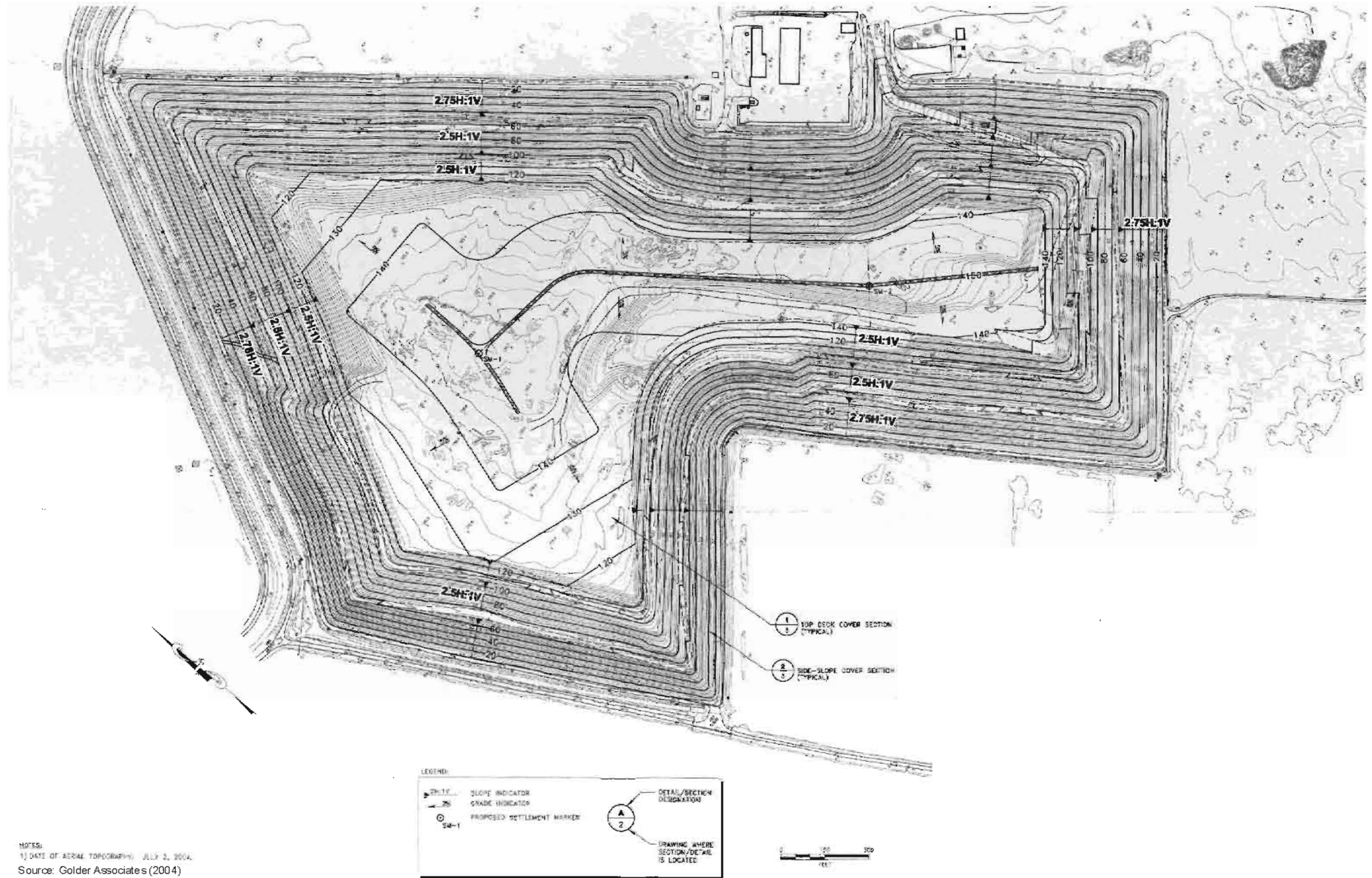
Side-slope Cover

The cover for the side-slopes is proposed to conform to the prescriptive cover liner system in Title 27 of the California Code of Regulations. The final cover of side-slopes will consist of the following layers from bottom to top:

- **Foundation Layer.** A minimum two (2) foot thick foundation layer of soil will cover waste materials and will be compacted to support overlying layers. The Foundation Layer soil may include gravel or crushed-concrete where the location was used by landfill operations as a stabilized pad area necessary for wet-weather disposal operations.
- **Low-Hydraulic Conductivity Layer.** A minimum one (1) foot thick low-hydraulic conductivity layer, having a hydraulic conductivity of 1×10^{-6} cm/sec or less to minimize the infiltration of water into the underlying foundation layer and waste materials.⁸
- **Erosion-Resistant (Vegetative) Layer.** A minimum one (1) foot thick soil layer to support vegetation and provide erosion resistance during wet weather.

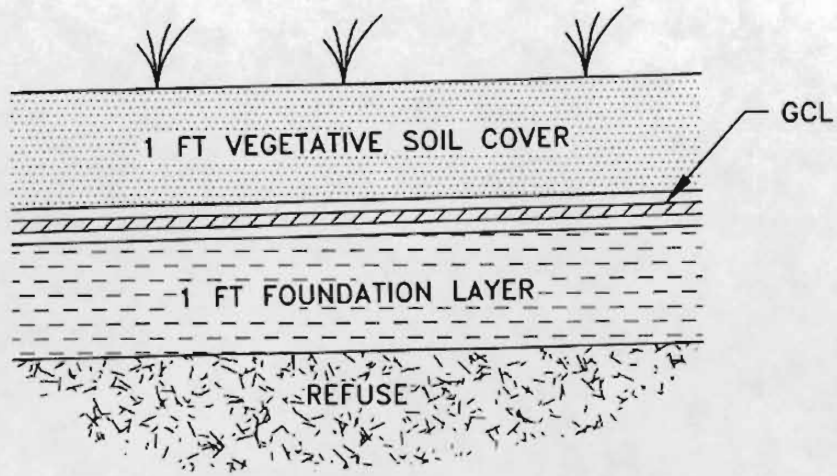
The proposed cover of the side-slopes is shown graphically on Figure 2.6.

⁸ Hydraulic conductivity measures how fast water can move through a specific thickness of material. A hydraulic conductivity of 1×10^{-6} cm/sec is very low. It is equivalent to approximately one foot of infiltration over a one year period, under specific testing conditions.



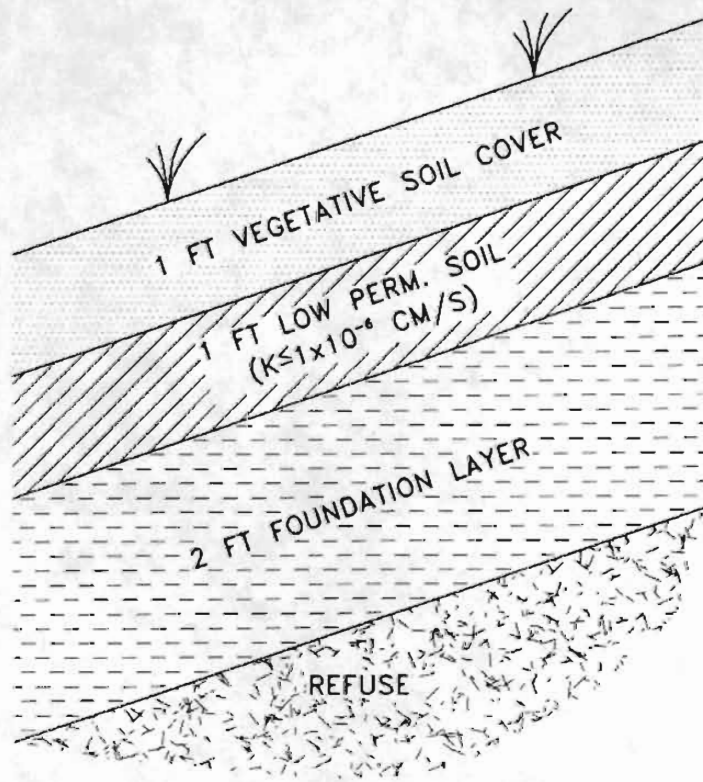
GRADING PLAN

FIGURE 2-5



TOP DECK

NTS



SIDE SLOPE

NTS

PROPOSED LANDFILL COVER SYSTEM

FIGURE 2-6

Top of Landfill Cover

Similar to the side-slope cover, the cover liner system for the top deck of the landfill is proposed to consist of three layers. In this case, the middle, low-hydraulic conductivity layer would consist of a geosynthetic clay liner.⁹ The geosynthetic clay liner will have a maximum hydraulic conductivity of approximately 5×10^{-9} cm/sec or less, which is lower than the hydraulic conductivity of the middle layer on the side-slopes.

The applicant's purposes in proposing this alternative cover are:

- To provide greater infiltration resistance over the gently sloping top deck; and
- To provide greater postclosure integrity as a barrier in light of the magnitude of the total and differential settlements predicted to occur in the landfill, as well as seasonal soil moisture fluctuations.

The final cover of the top deck will consist of the following layers from bottom to top:

- Foundation Layer. A minimum one (1) foot thick soil layer will cover waste materials and will be compacted to support the overlying geosynthetic clay liner.
- Low-Hydraulic Conductivity Layer. An internally reinforced geosynthetic clay liner with a maximum hydraulic conductivity of 5×10^{-9} cm/sec or less to minimize infiltration into the underlying foundation layer and waste materials.
- Erosion-Resistant (Vegetative) Layer. A minimum one (1) foot thick soil layer to support vegetation and provide erosion resistance during wet weather.

The proposed cover of the top deck of the landfill is shown graphically on Figure 2.6.

2.3.2 Soil Quantities

Table 2-1 outlines the estimated quantities of soil materials required for construction of the foundation layer, low-hydraulic conductivity layer and erosion-resistant (vegetative) layer as part of the final cover of the landfill.

A total of about 320,000 cubic yards of soil will be required to construct the foundation layer on the side-slopes and top deck of the landfill. From 0.5-1.5 feet of this layer (or approximately 96,000 to 219,000 cubic yards) could be in-place as intermediate soil cover placed over wastes upon completion of waste disposal operations. The upper range listed in Table 2-1 assumes that 0.5 feet of soil will be in place and could be utilized as a part of the final foundation layer. The lower range of soil required assumes up to 1.5 feet of intermediate soil cover could meet requirements for the foundation layer.

Approximately 110,000-127,000 cubic yards of soil will be required to construct the low-hydraulic conductivity soil layer on the side-slopes, and approximately 190,000 cubic yards of soil is proposed

⁹ A geosynthetic clay liner is a manufactured material composed of sodium bentonite clay bonded between two layers of geotextile or bonded to a geomembrane.

to be installed for the erosion resistant (vegetative) layer.¹⁰ These estimates assume one foot of compacted soil on side slopes and a geosynthetic clay layer on the top deck of the landfill.

Table 2-1 Estimated Quantity of Soil Materials (in cubic yards)	
Final Cover Layers	Cubic Yards
Foundation Layer	100,000-222,000*
Low Hydraulic Conductivity Layer	110,000-127,000
Erosion Resistant (Vegetative) Layer	190,000-193,000
Total Volume Required for Final Cover	400,000-542,000
Sources of Soil Material	
On-Site Borrow	542,000▽**
Off-Site Import	25,000-185,000
Total Volume from On-Site and Off-Site Sources	400,000-542,000
<p>* The total volume of soil in the foundation layer would be about 320,000 cubic yards. The upper value listed in this table (222,000 cubic yards) assumes 0.5 feet of soil (approximately 96,000 cubic feet) will be in place and could be utilized as a part of the final foundation layer. The lower value (100,000 cubic yards) assumes approximately 1.5 feet of acceptable soil will be in place as intermediate cover.</p> <p>** Golder Associates (2006) estimated the following quantities available from the proposed on-site borrow area: 200,000-260,000 cubic yards of silt available for the vegetative layer; 200,000-260,000 cubic yards of alluvium available for the foundation and/or vegetative layers; and 160,000-220,000 cubic yards of clay available for all three layers. This estimate exceeds the estimated 542,000 cubic yards needed for the final cover. Some off-site import may be used instead of the on-site borrow, as available.</p>	
Sources: Waste Management, Inc., March 27, 2006, Golder Associates, December 28, 2006, and City of Fremont.	

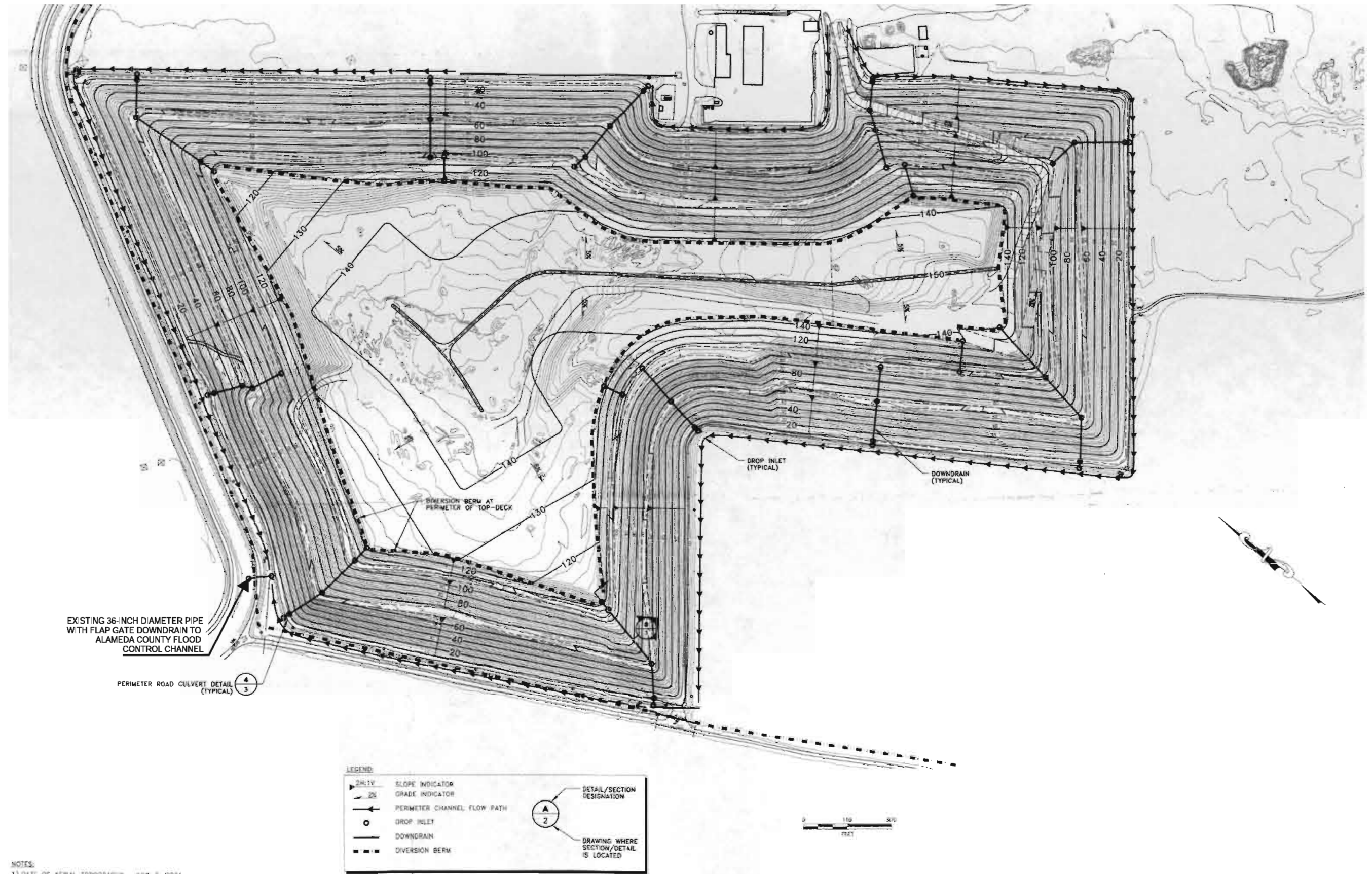
The project proposes to obtain soil for the construction of the final cover from an 88-acre on-site borrow area and/or to import it from off-site locations. The location of the borrow area and proposed excavation is described under *On-Site Borrow Area*.

2.3.3 Relocation of Gas Collection and Drainage Systems

Currently, the landfill gas system is extended as the landfill area is filled. As a part of the landfill closure the gas control system would be temporarily disconnected and extended through the final cover. Elements of the gas collection and control system will be extended above the surface of the final cover, as needed for maintenance and monitoring.

Drainage channels will be constructed on the top deck, side slopes and around the perimeter of the landfill, as shown on Figure 2.7. The drainage system is designed to accommodate a 24-hour, 100-year storm event. Drainage from the top of the landfill will be conveyed to the Alameda County Flood Control Channel to the northwest of the landfill through an existing 36-inch pipe and flapgate. The flood control channel discharges to Mowry Slough, which in turn discharges to San Francisco Bay.

¹⁰ Source: Guy Petrabor, Waste Management, written communications, February 10, 2006 and Table 2 in *Final Closure and Postclosure Maintenance Plan* for Fill Area 1 (Golder Associates, December 2004). Quantities from the Final Closure and Postclosure Maintenance Plan are rounded.



DRAINAGE PLAN

FIGURE 2-7

Leachate collected in the existing leachate collection system will continue to be conveyed to the Union Sanitary District for treatment.

2.3.4 Revegetation of Landfill Cover

Following placement of the vegetative layer, grasses and wildflowers will be planted on the top deck and side-slopes of the landfill. Woody shrubs and perennial plants are proposed for northern and eastern side slopes that are more protected from sun, salt and wind exposure. Proposed plant species are listed in Table 2-2. The proposed plant plantings on the landfill would not be irrigated.

Plant Community	Scientific Name	Common Name
A- Grasses and Wildflowers	<i>Avena fatua</i>	Wild oat
	<i>Briza major</i>	Quaking grass
	<i>Bromus rubens</i>	Red brome
	<i>Holcus lanatus</i>	Velvet grass
	<i>Lolium</i> spp.	Rye grasses
	<i>Eschscholtzia californica</i>	California poppy
	<i>Nemophila menziesii</i>	Baby blue eyes
	<i>Layia platyglossa</i>	Tidy tips
	<i>Lupinus</i> spp.	Lupine species
B-Woody and Perennial Shrubs	<i>Atriplex</i> spp.	Saltbush
	<i>Baccharis pilularis</i>	Coyote brush
	<i>Heteromeles arbutifolia</i>	Toyon
	<i>Rhamnus californica</i>	Coffeeberry
	<i>Symphoricarpos</i> sp.	Snowberry
<i>Source:</i> Guy Petraborg, Waste Management, Inc. from <i>Joint Technical Document, TriCities Waste Management Facility</i> (1999).		

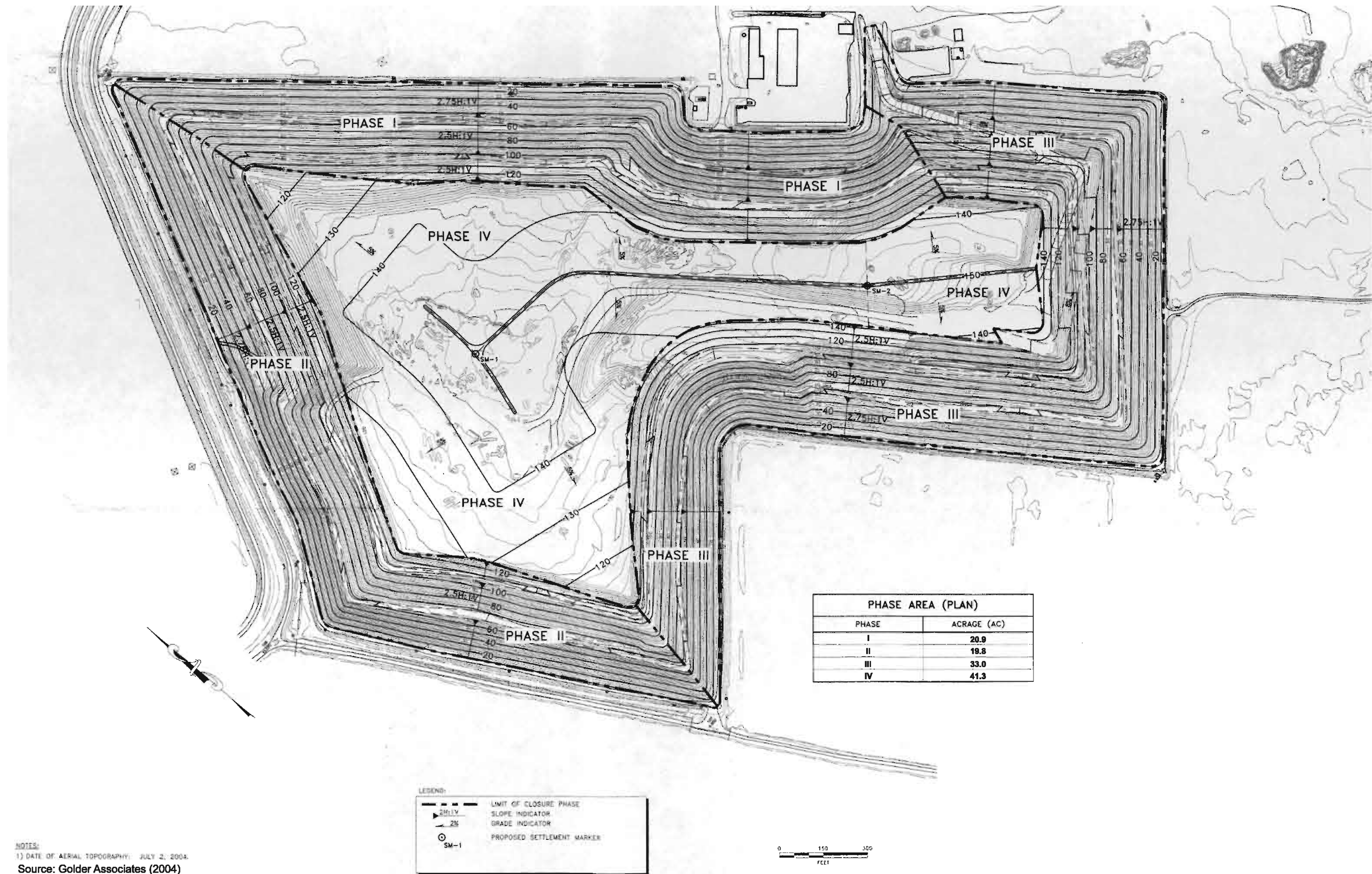
2.3.5 Phasing of Landfill Cover Installation

The final landfill cover over the 115-acre Fill Area 1 portion of the site is proposed to be installed over a period of four years. Construction of the final cover would occur during the dry season (May to September). The final cover would be placed over the side-slopes of the landfill during the first three dry seasons following the completion of landfilling operations. The final closure cover liner would be placed on the top deck of the landfill during the fourth and final dry season. Each year, the closure area would range from more than 20 acres to about 40 acres (see Figure 2.8).

The construction schedule would allow total and differential settlements to occur in the top deck area prior to installation of the liner in this area, allow for revegetation of disturbed areas and limit the area of disturbance at any one time, and allow for the completion of drainage features (or systems) prior to the start of the wet season.

2.3.6 Maintenance and Monitoring of Final Cover

As described in the *Final Closure and Postclosure Maintenance Plan for Fill Area 1* (Golder Associates, December 2004), the final cover will be inspected semi-annually for the first five years and annually thereafter for an additional 25 years, or until such time as the post-closure period is



NOTES:
 1) DATE OF AERIAL TOPOGRAPHY: JULY 2, 2004.
 Source: Golder Associates (2004)

PHASING PLAN FOR LANDFILL CLOSURE

FIGURE 2-8

certified as completed, to ensure that the final cover continues to function as an infiltration barrier. Visual inspections by qualified personnel will be performed on the integrity of the final cover and vegetative cover. Items requiring corrective action, such as settlement and subsidence, erosion, or cracking will be repaired. Where there is insufficient vegetative growth, additional seed and mulch will be applied.

The surface drainage system will be inspected semi-annually for evidence of damage, excessive erosion, settlement, and obstruction by debris. Regrading will be performed as necessary to maintain positive drainage.

Existing groundwater monitoring, landfill gas, and leachate monitoring systems will be maintained and monitored during the postclosure period. Postclosure monitoring and maintenance at the landfill will occur for a period of at least 30 years, unless a reduced monitoring frequency is approved by all applicable regulatory agencies (in this case, Alameda County (Local Enforcement Agency), San Francisco Regional Water Quality Control Board (RWQCB) and California Integrated Waste Management Board (CIWMB)). Groundwater wells, leachate riser pipes, and landfill gas probes will also be inspected as part of a periodic sampling program, as described in the *Final Closure and Postclosure Maintenance Plan* (refer to Appendix B).

Reports of the inspections and any repairs will be submitted to the RWQCB, the CIWMB, and the LEA (Alameda County Department of Environmental Health).

2.3.7 Future Land Use of 115-acre Landfill

The postclosure land use of the 115-acre landfill area is private, non-irrigated open space with no public access. The current land use designation and zoning is Agricultural with Flood District Overlay. No change to the land use designation is proposed for this area of the project site.

2.3.8 Description of On-Site Borrow Area

An 88-acre area south of the Corporation Yard would be used as a source of soil materials for the final cover, for construction staging, and for testing and conditioning of soil materials. The northern portion of this area is currently used for resource recovery operations and plastic cart storage.

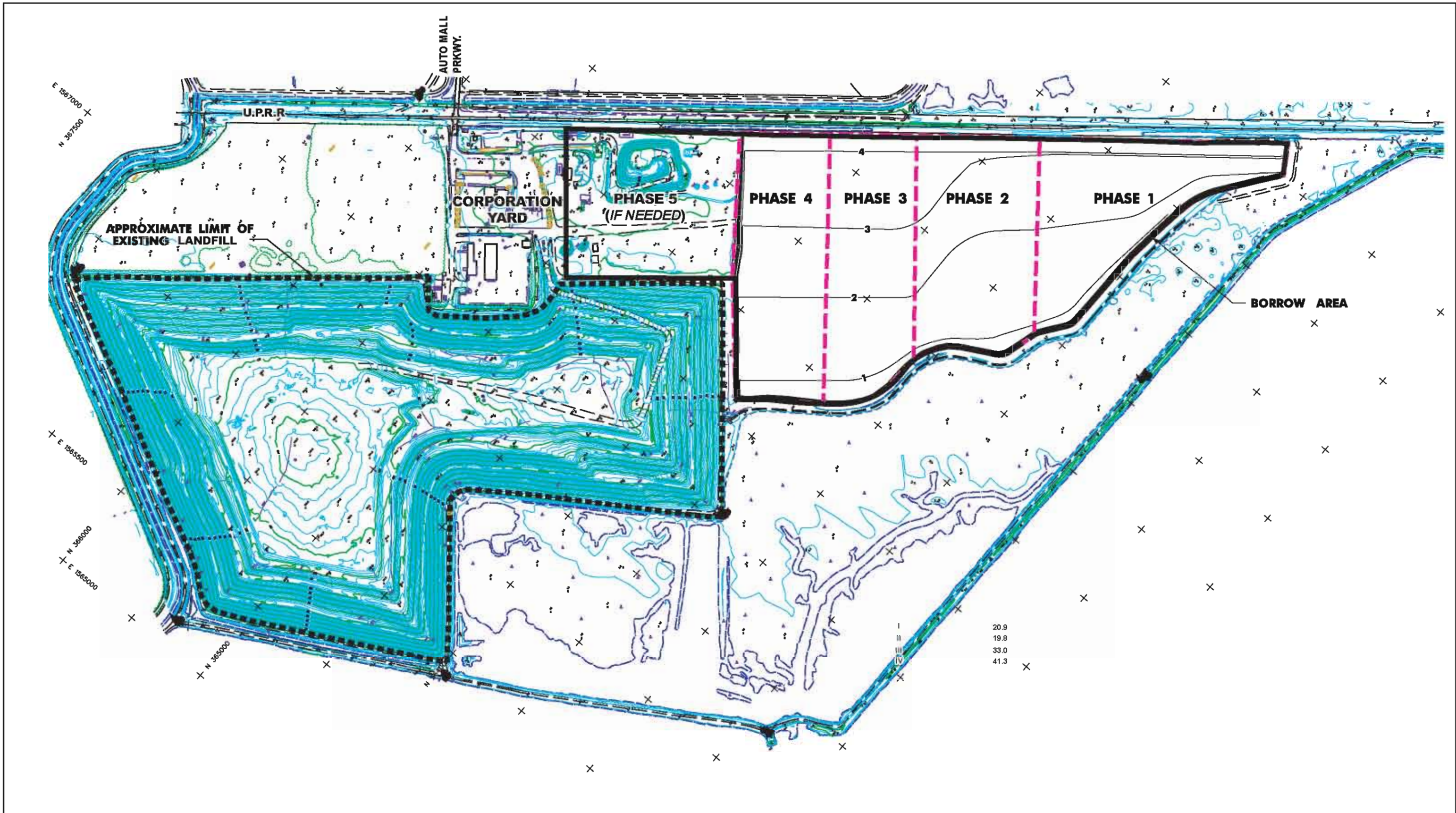
Soil would be excavated from four or five areas within the proposed 88-acre borrow area as shown on Figure 2.9. If enough suitable material is available, only the four southern-most areas will be excavated. The estimated minimum and maximum amount of soil material available from the on-site borrow area is summarized in Table 2-1.

The elevation of the borrow area will be lowered by approximately three to four feet. Final elevations in the borrow area would range from approximately one to four feet msl from west to east, as shown on Figure 2.9. These values are maximum depths; if less soil is used, finish elevations in the borrow area could be higher.

Once excavation in the borrow area is complete each construction season, the disturbed area would be smoothly graded and seeded for erosion control.

2.3.8.1 *On-Site Staging and Soil Conditioning*

A construction staging area, including a temporary construction office, equipment and supply storage area, and fueling and maintenance area would be located within the on-site borrow area.



ON-SITE BORROW AREA CONCEPTUAL EXCAVATION PLAN

FIGURE 2-9

A portion of the borrow area would also be used as a test pad area for controlled construction and testing of the low-hydraulic conductivity soil layer to confirm construction quality and compliance with the minimum criteria for hydraulic conductivity.

Soils excavated from the borrow area may be wet and/or contain a mixture of materials. Soil materials excavated from the borrow area may be spread out for moisture conditioning prior to hauling and placement and compaction on the landfill. Soil not suitable for use as final cover will remain or be placed back in the borrow area.

2.3.9 Future Land Use of On-Site Borrow Area

The northeastern portion of the borrow area is included in the area proposed to be changed from an *Agricultural* land use designation to a *Light Industrial* land use designation. This area is part of the existing concrete recycling facility and would continue to be used for this purpose.

Waste Management is considering several possible future land uses for the remainder of the on-site borrow area. These uses include commercial or industrial development and/or use of some or all of the area as a wetland mitigation bank. None of these land uses is proposed as a part of the Landfill Closure project and all would require subsequent environmental review by the City of Fremont at the time a specific proposal is submitted for review.

2.3.10 Off-Site Sources of Soil for Landfill Cover

Some soil materials for the final cover could come from off-site sources. Off-site materials would be used if market conditions permit or in the event there was not an adequate supply of on-site soil suitable for the various layers of the final cover. For example, soils from the borrow area are clayey and may not be suitable for the upper vegetative layer or may require the addition of soil amendments. As shown in Table 2-1, an estimated 25,000 to 327,000 cubic yards of material could come from off-site sources. Assuming an average of 12 cubic yards per truck, off-site truck trips to the site could range from approximately 2,080 truck loads to 27,250 truck loads over four dry seasons. The location of possible off-site soil sources are not known at this time. Anticipated sources would be sites in east and south Fremont, Milpitas, and Sunol.

2.3.11 Corporation Yard and Concrete Recycling Facility

The project proposes continued operation of the existing Corporation Yard and the Raisch Corporation concrete recycling facility. The Corporation Yard would be used, in part, during the approximately 30-year postclosure period of the landfill by personnel responsible for monitoring and maintenance activities. Trucks used for residential and commercial waste collection in Fremont (up to 50 haul trucks) also could be parked and serviced in the Corporation Yard on a daily basis. Some of the structures on the site used for truck maintenance and repair would be reconstructed as enclosed structures and the area around repair facilities would be paved.

The concrete recycling facility was originally approved to operate until the landfill closes. A request with this application asks for an extension of the existing concrete recycling facility into the future in the same general configuration and scope of activities as currently exists at the site.

Concrete recycling operations by the Raisch Corporation are projected to continue during landfill closure operations. Some of the area used for recycling activities is within the proposed soil borrow area (Phase 5 on Figure 2-9). It is anticipated that stockpiles would be relocated within the processing

area to accommodate the remove of one to three feet of soil materials, if needed. After removal of the borrow material, concrete processing could resume in the borrow area.

2.3.11.1 General Plan Amendment and Rezoning

Continued operation of a corporation yard and concrete recycling facility on the site for activities not directly connected with the operation of an active landfill will require a modification of the General Plan land use designation and zoning on 46 acres of the TCRDF (Figure 2-10). The proposed land use designation is *Light Industrial*. The *Light Industrial* designation is intended for a wide variety of industrial uses which are generally oriented toward serving local businesses and residents. The proposed zoning would be L-I(F) for Light Industrial uses within a flood hazard zone.¹¹ A conditional use permit will be considered for the proposed post-closure facility usage. All future improvements within the L-I District would be subject to Site Plan and Architectural Review by the City's Development Organization.

The full potential of development allowed under the proposed *Light Industrial* General Plan designation and zoning is not analyzed in this EIR. The analysis in this EIR assumes that uses within the 46 acre area covered by the General Plan amendment and rezoning would continue to be used as a Corporation Yard and concrete recycling facility. Other uses are not currently proposed.

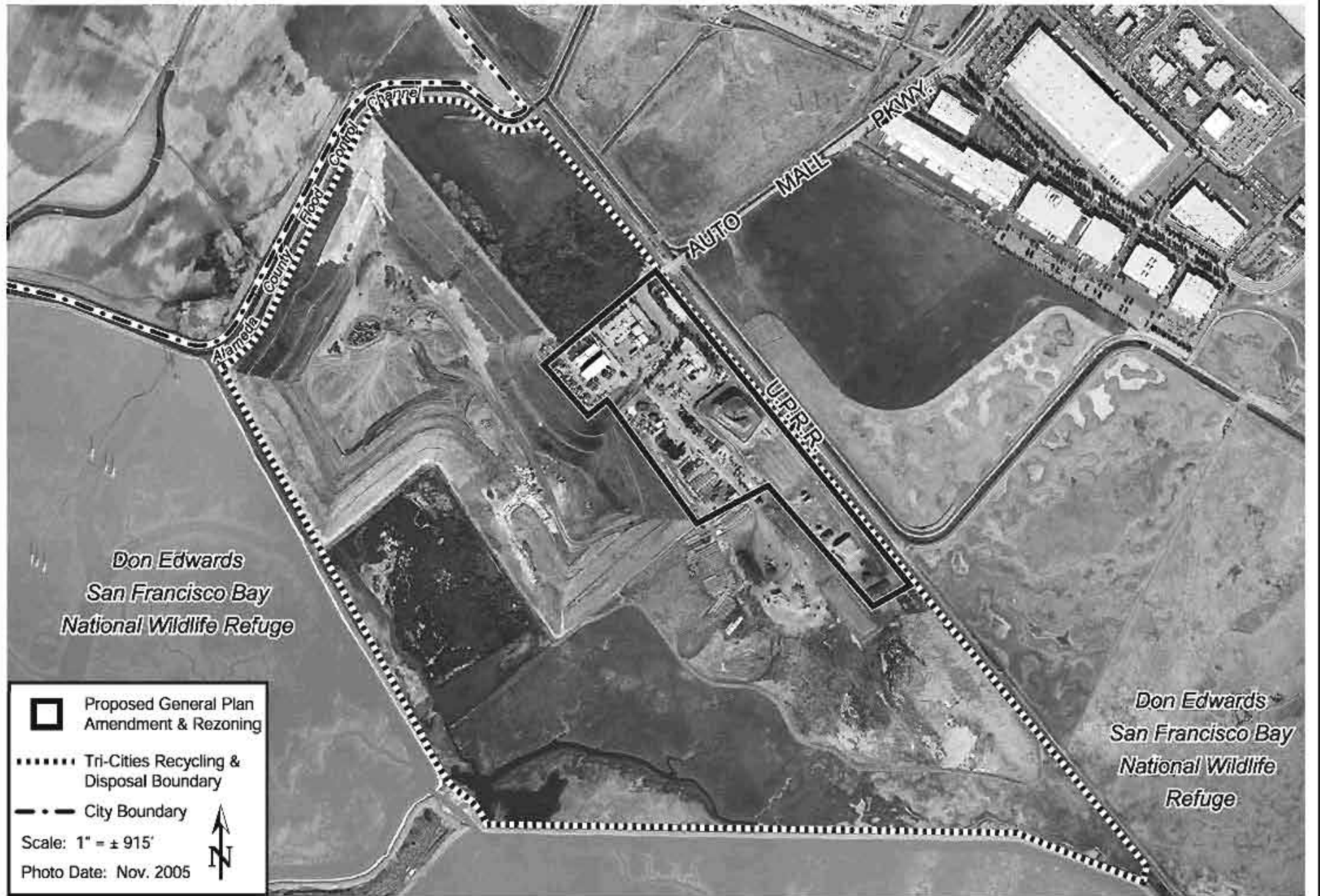
There are no potable water lines that serve the site that could be used to support industrial uses such as manufacturing or office/research and development. Should new industrial development or land uses with greater employment or traffic generating uses be proposed in the future, additional environmental review that includes an analysis of resulting traffic, site access and safety, and utility capacity issues, would be required under CEQA.

2.4 REGULATORY OVERVIEW OF LANDFILL CLOSURE

Permanent closure of a sanitary landfill is a process regulated by federal and state laws, and governed by the regulations of several agencies, including the California Integrated Waste Management Board (CIWMB), the San Francisco Bay Regional Water Quality Control Board (RWQCB), and the Alameda County Department of Environmental Health. Under Title 27 of the California Code of Regulations, the Final Closure and Postclosure Maintenance Plan for Fill Area 1 of the TCRDF is subject to review and approval by the CIWMB and the State Water Resources Control Board. The County of Alameda, as a Local Enforcement Agency (LEA) for the landfill and the RWQCB also review and approve the Plan. These agencies will be responsible for assuring that the Plan meets the specific technical requirements for landfill closure in Title 27, especially in the areas of preventing ponding and erosion, final cover, financial assurance, and maintenance and monitoring.

The City of Fremont is responsible for enforcement of local land use regulations, including the City's General Plan and zoning. Under their municipal code, portions of the site are regulated under a Conditional Use Permit. The City of Fremont will need to modify the Conditional Use Permit for the landfill to reflect its permanent closed condition, and any uses that may be proposed on it.

¹¹ According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps, the project site is located within the 100-Year tidal floodplain (Panel 0650280045D, 2/9/2000). The site is shown within Zone A1 (elevation 8 feet). Most of the landfill is well above this elevation and would not be subject to tidal flooding in the event of overtopping or failure of bayfront levees.



PROPOSED GENERAL PLAN AMENDMENT & REZONING

FIGURE 2-10

3.0 CONSISTENCY WITH ADOPTED PLANS

The CEQA Guidelines state that an EIR should discuss “any inconsistencies between the proposed project and applicable general plans and regional plans” [Section 15125(d)].

The TCRDF is located within the City of Fremont and the applicable General Plan is the City of Fremont General Plan adopted in 1991 (as amended). Applicable regional plans include the Alameda County Integrated Waste Management Plan (CoIWMP), the Bay Area 2005 Ozone Plan, and the San Francisco Bay Region Water Quality Control Plan (Basin Plan). The following sections discuss the consistency of the proposed project with these plans.

3.1 FREMONT GENERAL PLAN

3.1.1 Land Use

The project site is located in the City’s Baylands Planning Area and is designated *Solid Waste Landfill* in Fremont’s General Plan.

Closure of the landfill is a foreseeable use within the Solid Waste Landfill designation. Projections for solid waste facilities include the assumption that ultimately a landfill site will be closed in accordance with relevant health and safety requirements. Continued operation of a Corporation Yard on the site for activities not directly connected with the TCRDF will require a modification of the General Plan land use designation and zoning on 46 acres of the TCRDF, however. The proposed land use designation for this area is *Light Industrial*. The *Light Industrial* designation is intended for a wide variety of industrial uses which are generally oriented toward serving local businesses and residents. These include auto repair and servicing, machine shops, cabinet shops, small warehouse and delivery operations, small wholesale businesses, printing and other smaller industrial operations. Light industrial areas are generally in the vicinity of residential or commercial areas and allowed uses are limited in the City’s General Plan.

Consistency: The proposed landfill closure activities would be consistent with the General Plan land use designation of *Solid Waste Landfill*. The project proposes to change the General Plan designation on 46-acres to *Light Industrial* to allow for continued operation of a Corporation Yard and concrete recycling operation. A Conditional Use Permit will be required for the proposed uses. With this change to the General Plan and issuance of a Conditional Use Permit, the proposed project would be consistent with the industrial uses allowed under the *Light Industrial* designation.

3.1.2 Transportation

The Transportation chapter of the City’s General Plan addresses the transportation network and the City’s fundamental goals for the character of the City.

Policy T1.3.2 Encourage through truck traffic to use interstate highways rather than local truck routes in Fremont.

Policy T1.3.3: Protect neighborhoods from intrusion by truck traffic.

Haul trucks will continue to use the existing roadway system, including Auto Mall Parkway, to reach the landfill (during landfill closure activities), the Corporation Yard, and concrete recycling facility. Garbage collection trucks and private haul vehicles will not haul waste to the TCRDF site once gate

closure occurs in June 2007. The amount of truck traffic will decrease once placement of the final cover over the landfill is complete.

Consistency: The proposed project is not inconsistent with Transportation policies of the General Plan.

3.1.3 Natural Resources

The Natural Resources chapter of the City’s General Plan addresses a range of natural resources in the City, including biological, water, air and visual resources. Policies applicable to the proposed project are discussed below.

3.1.3.1 *Biological Resources*

Policy NR 1.1.1: Whenever feasible, natural and semi-natural wetland areas, including riparian corridors, vernal pools and their wildlife habitat shall be preserved or impacts minimized.

Implementation 1: Development encroaching on wetland areas, including lakes, ponds, marshes, and vernal pools shall be discouraged.

The proposed project includes excavation and removal of borrow materials for placement on the landfill as final cover and continued operation of a Corporation Yard and concrete recycling facility. As discussed in *Section 4.3 Biological Resources*, the project would avoid direct and indirect impacts to salt marsh habitat, pickleweed/cattail, and aquatic habitats. Disturbed seasonal depressions in the existing Resource Recovery Area (refer to Figure 4.3-1) that provide some of the functions of wetlands or aquatic habitats by providing foraging habitat for waterbirds would be disturbed in the borrow area. The borrow area, however, represents a very small fraction of disturbed seasonal depression habitat available regionally, and the loss of such habitat will not result in significant impacts to biological resources.

Consistency: The proposed project is not inconsistent with policies on the preservation of wetlands.

Policy NR 2.2.2: Minimize impacts of development in uplands adjacent to or associated with seasonal and other wetlands (see Figure 9-2 in the General Plan for approximate location).

Implementation 1: As part of the environmental assessment process, identify uplands areas adjacent to wetlands species habitat and propose mitigations for potential significant environmental impacts on the wetlands from development.

Implementation 2: Projects proposed in uplands areas should minimize runoff of excess nutrients, sediments and pesticides into seasonal and other wetlands. To the degree feasible, require conservation or revegetation of uplands vegetation for nesting, foraging and retreat.

Placement of the landfill cover and continued operation of the Corporation Yard and concrete recycling facility will be in previously disturbed areas and runoff from these areas will continue to be directed to the adjacent Alameda County Flood Control District channel. Construction of the final cover of the landfill will be required to conform to construction and post-construction measures to

prevent erosion and sedimentation called for in a Storm Water Pollution Prevention Plan (SWPPP) for the landfill.

Consistency: Overall, the project would not result in substantial impacts to uplands immediately adjacent to wetlands or runoff with elevated levels of sediments into wetlands.

Policy NR 2.2.4 Avoid disruption of grassed and natural areas known to provide groundnesting for endangered threatened or candidate animals.

Consistency: The project includes removal of vegetation outside the nesting season, preconstruction surveys and other measures to avoid possible impacts to individual nesting birds within the borrow and landfill areas (see *Section 4.3.3 Biological Resources Mitigation and Avoidance Measures*).

3.1.3.2 Air Quality

Policy NR 12.17: Reduce particulate emissions.

Implementation 1: Reduce emissions from construction of roads and buildings through enforcement of construction practices that reduce dust and other particulate emissions.

Consistency: As discussed in *Section 4.7 Air Quality*, the project includes measures to reduce dust during construction of the landfill final cover and grading of the borrow area.

3.1.4 Health and Safety

The Health and Safety chapter of the City's General Plan addresses issues related to geologic, seismic, flood and fire hazards, hazardous materials, emergency preparedness, and noise. The following specific policies are relevant to the proposed landfill closure and continued operation of the Corporation Yard and concrete recycling facility.

3.1.4.1 Geologic Hazards

Policy HS 2.1.1: Locate development to minimize potential damage resulting from seismic activity.

Implementation 2: Require site specific soils, geologic and/or geotechnical engineering studies prior to development approval of sites in areas identified with moderate to high (S4) or Severe Shaking Potential (S5) shown on Figure 10-3 of the General Plan, Groundshaking and Liquefaction Potential Map.

Implementation 3: Require site specific soils, geologic and/or geotechnical engineering studies prior to development approving development on sites in areas identified as L3(w), L4 or L5 as shown on Figure 10-3 of the General Plan, Groundshaking and Liquefaction Potential Map.

Consistency: The design of the final cover for the landfill is based upon site specific studies of the underlying geologic conditions and settlement rates at the landfill.

3.1.4.2 *Flooding*

Policy HS 3.1.1: Continue to prohibit development of habitable (as defined by the Federal Emergency Management Agency) structures within the 100 year flood zone shown on Figure 10-6 of the General Plan, Inundation Hazards Map, unless the structures are designed to comply with existing National Flood Insurance Program Criteria for construction.

Implementation 1: Enforce the City’s existing flood control ordinances and regulations, amending them as necessary to conform with National Flood Insurance Program Criteria.

Consistency: The project will comply with the City’s existing flood control ordinances and regulations. Elevations in the Corporation Yard range from approximately six to 12 feet above mean sea level. This could require raising site elevations in portions of the Corporation Yard that are below the flood elevation of eight (8) feet msl.

3.1.4.3 *Fire Hazards*

Policy HS 4.1.2: Require adequate access and clearance for fire equipment, fire suppression personnel, and evacuation.

Implementation 1: Continue to review projects for necessary fire access and clearances.

Consistency: Fire Department personnel will review site plan designs to ensure adequate access prior to approval of the Conditional Use Permits for the Corporation Yard and concrete recycling facility. Access to the site is limited and other normally allowed uses under the *Light Industrial* land use designation (for example a use with greater employment densities) may not meet fire access requirements.

3.1.4.4 *Noise*

Policy HS 8.1.3: Noise created by commercial or industrial sources associated with new projects or developments shall be controlled so as not to exceed the noise level standards set fourth in Table 10-2 as measured at any affected residential land use.

Consistency: As discussed in *Section 4.8 Noise* of this EIR, the proposed project will not cause an exceedance of the City’s noise level standards.

3.1.5 Overall General Plan Consistency

The proposed closure of the Tri-Cities landfill and General Plan Amendment to allow continued operation of a Corporation Yard and concrete recycling facility is not inconsistent with relevant General Plan policies.

3.2 ALAMEDA COUNTY INTEGRATED WASTE MANAGEMENT PLAN

The Alameda County Integrated Waste Management Plan is a state-mandated plan prepared by the Alameda County Waste Management Authority. The Plan identifies solid waste facilities, waste sources, and areas of waste collection within Alameda County. It describes the countywide plan for reaching the state-mandated 50% recycling goal and the county-mandated 75% recycling goal. Waste

reduction and disposal facilities in the county that require Solid Waste Facility Permits must conform with policies and siting criteria contained in the CoIWMP.

The CoIWMP includes, by reference, source reduction and recycling elements, household hazardous waste elements and non-disposal facility elements for each city and the unincorporated county area, as well as a plan that describes countywide diversion programs and landfill disposal needs.

The COIWMP also includes the Countywide Siting Element. The TCRDF is identified as a fully permitted landfill in the Plan and is part of the needed landfill capacity to serve the County. The Plan also identifies the anticipated closure date as being around 2004.

Goals, objectives and policies in the CoIWMP focus on promoting environmental quality, achieving feasible waste reduction, information and education, meeting disposal needs, cost-effective services and financing, and promotion of interjurisdictional cooperation. The goals and policies that directly relate to the proposed project are related to minimization of environmental impacts in all aspects of solid waste management and waste reduction. These objectives and policies are discussed below.

3.2.1 Goal 1: Promote Environmental Quality

This goal calls for ensuring protection of public health and safety and minimizing environmental impacts. Identified areas of concern range include, but are not limited to, public health, hydrology, biotic, traffic and roadways, noise, air quality, energy use, land use compatibility, and visual impacts. The implementing objective and policies under this goal are:

Objective 1.1: that existing solid waste facilities cause no new public health, safety or environmental impacts, that are not evaluated and permitted by the agencies of jurisdiction.

Policy 1.1.1: facilities must comply with all applicable permit conditions and standards and shall be monitored regularly for compliance.

Policy 1.1.2: environmental impacts should be re-evaluated each time permits are reviewed or revised.

The proposed project is revision of the existing Solid Waste Facilities Permit and City of Fremont Use Permit to provide for final closure of the Tri-Cities Landfill. The project includes design features and monitoring plans to comply with state and federal regulations regarding environmental protection, including modifications to the landfill gas collection, leachate, and storm water drainage systems. The final cover has also been designed to account for differential settlement, stability of side slopes, and use of an appropriate alternative cover design on the top of the landfill. The project's environmental impacts and compliance with standards are specifically discussed in *Sections 4.2 Geology and Soils, 4.3 Biological Resources, 4.4. Hydrology and Water Quality, 4.5 Hazards and Hazardous Materials, 4.7 Air Quality, 4.8 Noise, 4.9 Visual Resources and Aesthetics, and 4.11 Public Facilities and Services* of this EIR.

Consistency: The proposed landfill closure is consistent with the environmental protection goal, objective and policies in the CoIWMP.

3.2.2 Goal 2: Achieve Maximum Feasible Waste Reduction

One of the primary goals of the CoIWMP is to reduce waste and disposal of material in landfills. Applicable objectives and policies to the project under this goal include:

Objective 2.1: achieve countywide waste reduction of 75 percent by 2010. In calculating waste reduction, give credit for:

- Existing waste reduction in the 1990 base year.
- Changes in population or in the number or size of industrial, commercial and governmental operations after 1990.
- Special factors such as cleanup of debris from natural disasters.

Objective 2.3: To achieve by recycling, countywide waste reduction of 75 percent by 2010.

Policy 2.31: The Authority shall support recycling programs as a form of resource conservation and economic development.

The proposed project includes a General Plan Amendment and Use Permit that would allow continued concrete recycling on the site. This activity would assist the cities of Fremont, Newark, and Union City with waste reduction from construction demolition materials.

Consistency: The proposed continued operation of concrete recycling on a portion of the TCRDF is consistent with the waste reduction goals and policies in the CoIWMP. The landfill closure is also consistent with the assumptions in the Countywide Siting Element of the CoIWMP.

3.3 BAY AREA 2005 OZONE PLAN

The Bay Area Air Quality Management District (BAAQMD), in cooperation with the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG), prepared the Bay Area 2005 Ozone Strategy which serves as a roadmap showing how the San Francisco Bay Area will achieve compliance with the state one-hour air quality standard for ozone as expeditiously as practicable, and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. The Bay Area 2005 Ozone Strategy updates Vehicle Miles Traveled (VMT) and other assumptions in the 2000 Clean Air Plan (CAP) related to the reduction of ozone in the atmosphere and serves as the current CAP for the Bay Area. The consistency of the proposed project with this regional plan is primarily a question of the consistency with the population/employment assumptions utilized in developing the Ozone Strategy, which were based on ABAG Projections 2002.

Consistency: The project proposes to change the land use designation on a portion of the project site from *Solid Waste Landfill* to *Light Industrial* and implement a Closure Plan at the active landfill. Compared to the existing conditions, the project would not increase the number of vehicle trips or vehicle miles traveled (VMT) in the long term or increase population (refer to *Section 4.7, Air Quality*). For these reasons, the proposed project is consistent with the Bay Area 2005 Ozone Strategy.

3.4 BASIN PLAN

The Regional Water Quality Control Board (RWQCB) has developed and adopted a Water Quality Control Plan (Basin Plan) for the San Francisco Bay Region. The Plan is a master policy document that contains descriptions of the legal, technical, and programmatic bases of water quality regulation in the San Francisco Bay Region. The Regional Board first adopted a water quality control plan in 1975 and the last major revision was adopted in 1995.

The Plan provides a program of actions designed to preserve and enhance water quality and to protect beneficial uses. It meets the requirements of the U.S. Environmental Protection Agency and establishes conditions related to discharges that must be met at all times.

The implementation portion of the Basin Plan includes descriptions of specific actions to be taken by local public entities and industries to comply with the policies and objectives of the Plan. These include measures for urban runoff management and wetland protection.

Consistency: The proposed landfill closure activities would conform to the requirements of the Regional Water Quality Control Board for landfill closure and waste discharge requirements for leachate. Activities within the borrow area, Corporation Yard, and concrete recycling facility will be required to conform with the requirements and guidelines of the Alameda Countywide Clean Water Program and the City of Fremont to reduce nonpoint pollution in storm water runoff. The project also proposes to comply with nonpoint pollution control measures during construction as required under the NPDES General Construction Permit for activities in the borrow area, including preparation of a Stormwater Pollution Prevention Plan (SWPPP). Through these measures, the project will comply with the intent of the Basin Plan.

4.0 ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION

In accordance with Section 15143 of the CEQA Guidelines, the discussion in this EIR is focused on the significant effects on the environment resulting from the proposed landfill closure, General Plan amendment on 46 acres of the site, and continued operation of a Corporation Yard for garbage haul trucks and a concrete recycling facility.

This EIR is both a “program level” document, and a “project specific” EIR. The proposed project includes various levels of entitlement that will occur over a period of time, and addresses impacts in varying degrees of specificity.

The mitigation measures that are appropriate to the types of approvals being considered also differ in terms of their specificity and degree of entitlement and enforceability. While CEQA requires that mitigation measures should be “fully enforceable,” it also acknowledges that impacts from adoption of a plan or policy can best be mitigated by measures incorporated into the plan or policy [CEQA Guidelines Section 15126.4(a)(2)].

Program Level Review (for General Plan Amendment and Regulatory Requirements for Landfill Closure)

The proposed General Plan and zoning changes that are a part of the project considered in this EIR would apply to the site in the future. General Plan policies are therefore the most relevant statement of how and to what degree impacts likely to result from those approvals can be avoided or reduced, even though they are not very detailed or specific. General Plan policies are subsequently implemented through the City’s standards and/or through discretionary review processes.

Where it is possible or appropriate, some mitigation can be accomplished by implementation policies, ordinances, or laws that are already in place. These regulations may occur at the City, regional, state or federal levels. Like General Plan policies, this “program level” mitigation is identified where it exists.

For each topic, measures that would avoid or reduce possible future impacts associated with the General Plan amendment are identified in the form of Plan policies or programs and local, regional, state or federal regulations. Program level mitigation measures would be applicable to future projects, such as construction of a new repair facility and paving on the 46 acre area of the Corporation Yard and concrete recycling facility. Project-specific mitigation measures that are proposed by this project to implement these policies and regulations for Landfill Closure follow the program level discussion in each section of this EIR.

Project Level Review

Project level mitigation and avoidance measures fall into one of two categories: 1) specific measures that are included in the project as proposed; or 2) specific measures that could reasonably be expected to reduce adverse impacts, but are not included in the project as proposed. The latter category is important because it provides information to decision makers regarding potential mitigation measures, which could be required as conditions of project approval, as described in CEQA Guidelines Section 15126.4(a)(1)(A).

4.1 LAND USE

4.1.1 Existing Setting

4.1.1.1 *On-Site Land Uses*

Land uses on the project site include an active landfill used to dispose of municipal solid waste, sorting and processing areas for recyclable materials (including concrete, asphalt, metal, cardboard, glass, appliances, tires, wood, yard waste, televisions, and computer equipment), and vacant areas. Vacant areas include diked wetlands and areas supporting a mosaic of upland and seasonally ponded depressions (Figure 2-3). Some of what appears to be vacant land has been filled over time with soil and compost.

Auto Mall Parkway, which extends westerly from Interstate 880, terminates at the TCRDF site.

4.1.1.2 *Surrounding Land Uses*

The project site is bordered by the Don Edwards San Francisco Bay National Wildlife Refuge (Salt Evaporation Ponds M5 and M6), an Alameda County Flood Control District channel (Line N), and the Union Pacific Railroad (UPRR) line. The UPRR line is an active line used by passenger and freight trains, including approximately 26 passbys of the Capitol Corridor, Altamont Corridor Express (ACE), and Coast Starlight trains per weekday. Land on the other side of the flood control channel and the Union Pacific Railroad line in the immediate project vicinity is vacant. Some of the vacant land east of the railroad line is a wetlands preserve. Industrial and commercial uses are present along Auto Mall Parkway and Boyce Road, north and east of the vacant land (refer to Figures 4.1-1 and 4.1-2).

The Don Edwards San Francisco Bay National Wildlife Refuge consists of over 30,000 acres of open bay waters, salt evaporation ponds, salt marshes, mudflats, uplands and vernal pool habitats located in the South San Francisco Bay area. The Don Edwards San Francisco Bay National Wildlife Refuge is part of a complex made up of six other wildlife refuges in the San Francisco Bay Area administered by the U.S. Fish and Wildlife Service. The refuge provides critical habitat for endangered species, habitat for shorebirds and waterfowl along the Pacific Flyway, and opportunities for public use of the baylands. In the vicinity of the project, public access is limited to hunting and non-motorized boating in adjoining salt evaporation ponds (M5 and M6). Hunting is prohibited within 300 feet of the Union Pacific Railroad line.

4.1.1.3 *General Plan and Zoning*

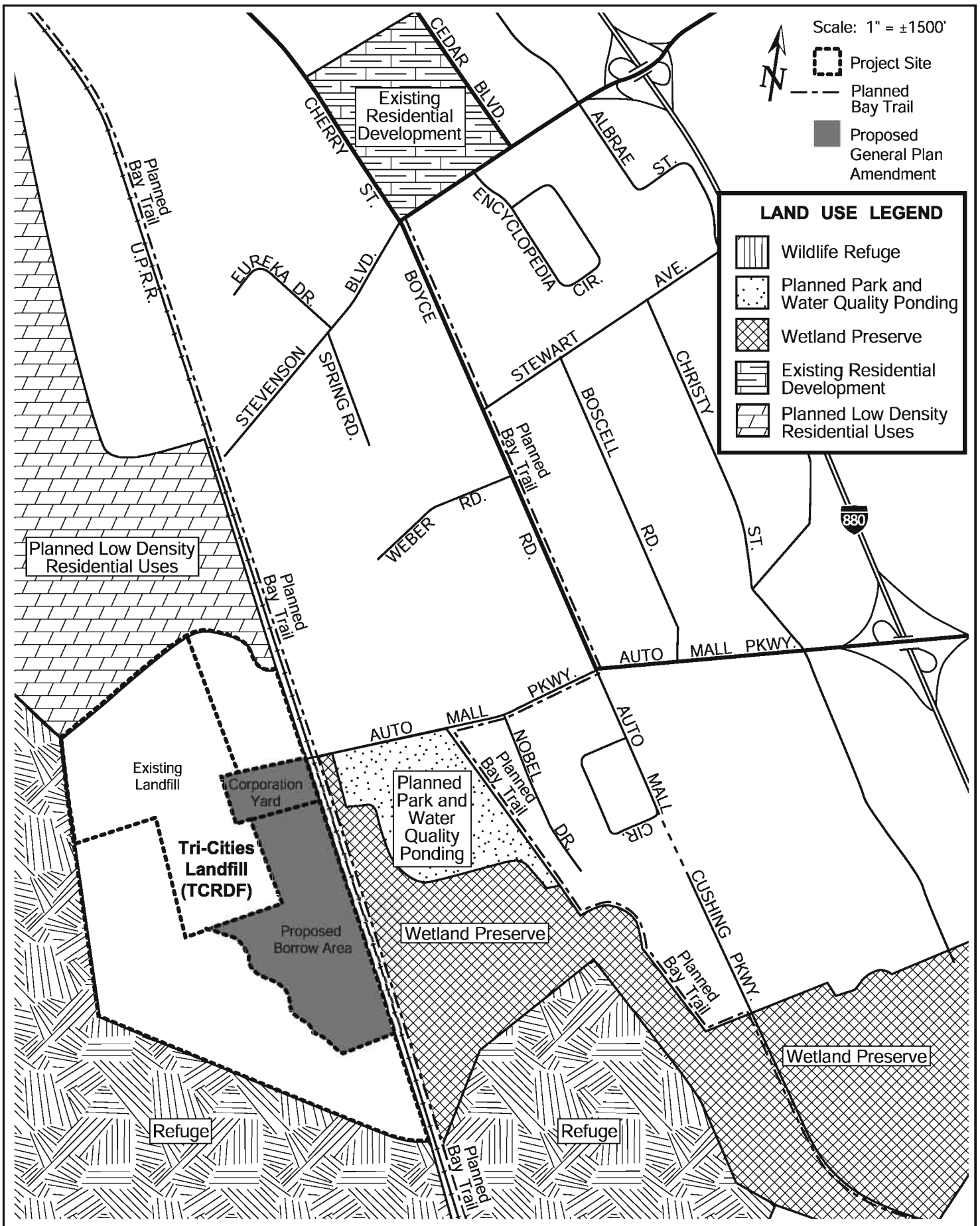
The City's General Plan land use designation for the site is *Solid Waste Facility* and the underlying zoning is *Agricultural*. Figure 4.1-3 shows the surrounding area. Land to the northeast is designated for *Institutional Open Space* and *General Industrial with a Commercial-Industrial Overlay G(C-I)* in the City of Fremont General Plan. Land north of the Alameda County Flood Control District channel and south of the UPRR line is designated for *Low Density Residential*, a golf course, and open space uses in the Newark General Plan.

Under the *General Industrial with a Commercial-Industrial Overlay* designation, retail and amusement uses may be allowed where the Fremont City Planning Commission finds the use occupies at least 50,000 square feet or is located in a shopping center with a total leasable area of at least 150,000 square feet; the use is oriented to the regional market; convenient access to the freeway is available; and the proposed use would be compatible with existing industrial uses and would not



SURROUNDING LAND USES

FIGURE 4.1-1



EXISTING & PLANNED SENSITIVE LAND USES

FIGURE 4.1-2

impede future industrial development. Near the project site, these uses are designated north of Auto Mall Parkway. The underlying zoning designations are G-I and G-I (F) for General Industrial uses and General Industrial uses in a flood zone. *Institutional Open Space* in the vicinity of Auto Mall Parkway and the Union Pacific Railroad line are designated for a park, transit center or water quality pond. Under the Pacific Commons Planned District zoning this area is intended to be used for park, recreation, and/or wildlife habitat uses. To the south, this designation includes a wetlands preserve adjacent to the Don Edwards San Francisco Bay National Wildlife Refuge. These areas are part of a larger Planned Development zoning (P-2000-214) for the Pacific Commons project.

Lands north of the Alameda County Flood Control District channel are within “Area 4” in the City of Newark General Plan. The area is planned for low density residential use (4.2-8.5 units per acre), a golf course (if feasible), and open space. Residential uses should be of high quality and a mix of executive housing types. Development in this area requires adoption of a Specific Plan including recreational amenities and transportation, sewage, water, drainage and other infrastructure improvements. This area is currently zoned *Agricultural*.

The Bay Trail

The Bay Trail is a planned regional hiking and bicycling trail around the perimeter of San Francisco and San Pablo Bays.¹² A planned, but not developed, segment of The Bay Trail is shown along the northeast side of the UPRR line in the vicinity of the project.¹³ This planned segment extends from Thornton Avenue in the City of Newark. Another planned segment of the trail would extend along Boyce Road and a segment of Auto Mall Parkway near Nobel Drive and cross the Pacific Commons property. The segment along Boyce Road is mapped as an on-street “Unimproved Bay Trail”, with no bike lanes and/or no sidewalk. Planned Bay Trail routes are shown in Figure 4.1-2.

4.1.1.4 Constraints to Development

The project site is currently partially developed and within the city limits of the City of Fremont. The site is bordered by the Don Edwards San Francisco Bay National Wildlife Refuge and wetland areas. Physical conditions on or adjacent to the site that could cause potential constraints to future development include:

- The water table can be two to five feet below the ground surface;
- The proximity to wetlands and other sensitive habitats;
- Electrical transmission towers cross the eastern portion of the site;
- The site is served by sanitary sewer service, but potable water infrastructure has not been extended to the site.
- Emergency access limited to one improved access point.

These issues are discussed in *Section 4.2-Geology and Soils*, *Section 4.3.Biological Resources*, *4.6 Transportation*, and *Section 4.10 Utilities and Services*.

¹² ABAG. 1989. *The Bay Trail Planning for a Recreational Ring Around San Francisco Bay*. San Francisco Bay Trail Project. Reprinted March 2001.

¹³ Sources: City of Fremont General Plan maps and *San Francisco Bay Trail, South Bay-Redwood Shores to Newark* map with recommended routes for walking and bicycling.

4.1.2 **Land Use Impacts**

Thresholds of Significance

For the purposes of this EIR, a land use impact is considered significant if the project will:

- physically divide an established community; or
- conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or
- conflict with any applicable habitat conservation plan or natural community conservation plan.

The proposed project, closure of an existing landfill and a General Plan amendment to allow continued use of a Corporation Yard and concrete recycling facility at the TCRDF, would not physically divide an established community. The City of Fremont does not currently have a habitat conservation plan or natural community conservation plan in place; therefore, the project site is not included in a habitat conservation plan or natural community conservation plan. The following discussion addresses potential land use conflicts.

4.1.2.1 Land Use Conflicts

Land use conflicts can arise from two basic causes: 1) a new development or land use may cause impacts to persons or the physical environment in the vicinity of the project site or elsewhere; or 2) conditions on or near the project site may have impacts on the persons or development introduced onto the site by the new project. Both of these circumstances are aspects of land use compatibility. Potential incompatibility may arise from placing a particular development or land use at an inappropriate location, or from some aspect of the project's design or scope. Depending on the nature of the impact and its severity, land use compatibility conflict can range from minor irritation and nuisance to potentially significant effects on human health and safety. The discussion below distinguishes between potential impacts from the proposed project upon people and the physical environment, and potential impacts from the project's surroundings upon the project itself.

Impacts From the Proposed Project

The TCRDF is located at a distance from sensitive receptors, such as residential uses, and other businesses. The closest residences are located approximately one mile northeast of the site and the closest industrial use is located on Auto Mall Parkway, approximately 0.3 mile from the entrance to the TCRDF. Sensitive wildlife habitats, such as salt marsh, are present on and adjacent to the project site. Possible impacts to sensitive wildlife habitats are discussed in *Section 4.3 Biological Resources*. Adjacent areas of the Don Edwards San Francisco National Wildlife Refuge are also seasonally open for hunting. *Section 4.13 Recreation* discusses recreational uses in adjacent areas of the Don Edwards San Francisco Bay National Wildlife Refuge, including hunting.

The proposed project will not substantially change the character of the project site. Overall, the intensity of activities on the landfill portion of the site will decrease once waste hauling for disposal ceases. The use of heavy equipment, such as front end loaders and large trucks, to install the landfill cover will continue for approximately four years, during the months of May through September. These activities would generate dust and noise; however, given the separation distance between the landfill and sensitive receptors and existing businesses, this would not result in a land use compatibility impact. After placement of the landfill cover, activities will be limited to maintenance

and monitoring activities, such as filling settlement areas, collecting landfill gas and leachate samples, and maintaining the landfill gas flare. Concrete and asphalt recycling activities would continue and trucks and other equipment would continue to access the Corporation Yard for parking and equipment maintenance. Currently, concrete crushing at the concrete recycling facility is done with a portable crusher several times per month.

As discussed in *Section 4.9 Visual Resources and Aesthetics*, the project would not construct any new buildings that would be a source of daytime glare. No changes to hours of operation or lighting are proposed on the site and the site would not be a source of new nighttime light. Compared to existing conditions, the proposed project would not increase the number of large trucks on Auto Mall Parkway or otherwise result in possible sources of conflict with existing businesses.

Impact LU-1: The proposed project will not result in significant adverse land use impacts as a result of substantial increases in dust or noise levels. **(Less Than Significant Impact)**

Future Bay Trail

The project site is located at the terminus of Auto Mall Parkway, west of the Union Pacific Railroad line. A proposed alignment of the Bay Trail would cross Auto Mall Parkway near the entrance to the TCRDF. One concern would be possible conflicts between trucks and bicycles and pedestrians. At the time this segment of trail is designed, sight distance and the physical arrangement of any street crossings will need to be addressed.

As discussed above, trucks accessing the site will eventually decrease compared to existing conditions and the proposed project would not substantially change the character of the TCRDF site. In addition, the concrete recycling facility and Corporation Yard would continue to operate primarily on weekdays, when use of the trail may be less. The proposed project, therefore, would not result in a new land use compatibility impact to the planned Bay Trail.

Impact LU-2: The proposed landfill closure and continued use of the site as a Corporation Yard and concrete recycling facility will not conflict with the planned Bay Trail shown in the City of Fremont's General Plan. **(Less Than Significant Impact)**

Future Residential Development in the City of Newark

Vacant land north of the Alameda County Flood Control District channel within the City of Newark is designated in the Newark General Plan for low density residential use (4.2-8.5 units per acre), a possible golf course, and open space. Development in this area requires adoption of a Specific Plan.

Under the proposed project, a final cover would be installed over the entire landfill. Work on the side slopes of the landfill closest to the City of Newark would be completed as part of the second phase of the landfill closure, during the second season. Since a Specific Plan has not currently been approved for the land north of the flood control channel, it is unlikely that landfill closure activities would impact any future residences in the City of Newark.

The Corporation Yard and concrete recycling operations that would be allowed to continue under the proposed General Plan amendment are located over 2,000 feet from the boundary with the City of Newark. With this separation distance, there would be no land use compatibility impacts associated with operation of the Corporation Yard and concrete recycling and possible future residences.

Impact LU-3: The proposed landfill closure and continued use of the site as a Corporation Yard and concrete recycling facility will not conflict with possible future low density residential uses north of the site in the City of Newark. **(Less Than Significant Impact)**

Impacts to the Project

The closest developments to the TCRDF are industrial, which are uses compatible with the industrial uses proposed, and allowed by the proposed General Plan designation and zoning. None of these uses will result in adverse impacts to the proposed project.

Impact LU-3: Existing industrial land uses in the vicinity of the TCRDF would not adversely impact the proposed uses. **(Less Than Significant Impact)**

4.1.2.2 Other Impacts of the General Plan Amendment and Zoning

Future development or redevelopment under the proposed General Plan designation and zoning could occur. While the *Light Industrial* designation allows a floor area ratio of 35 percent¹⁴ for industrial buildings, the unusual nature of the site makes it difficult to predict either the amount or type of such development at some time in the future. Since no specific proposal for development at a greater intensity is currently available, further evaluation of possible land use impacts at this time would be speculative. Any additional development will require a project specific CEQA review.

4.1.3 Mitigation and Avoidance Measures

No mitigation or avoidance measures are required.

4.1.4 Conclusions Regarding Land Use Impacts

The proposed closure of the landfill and a General Plan amendment to allow continued use of the Corporation Yard and concrete recycling facilities on a portion of the TCRDF site would not result in substantial land use impacts. **(Less Than Significant Impact)**

¹⁴ The floor-area ratio, or FAR, is the total floor area of all buildings or structures on a property divided by the total area of the lot. For example, a 46-acre property is approximately two million square feet in size. A property of this size with a FAR of 35 could be developed with approximately 700,000 square feet of buildings.

4.2 GEOLOGY AND SOILS

The following discussion is based upon the Final Closure and Postclosure Maintenance Plan (December 2004) and the Joint Technical Document for the Tri-Cities Recycling and Disposal Facility and an evaluation of the proposed alternative cover by CDM. A copy of the text of the Final Closure and Postclosure Maintenance Plan is included in Appendix B and the evaluation of the proposed alternative cover is provided in Appendix C of this EIR.

4.2.1 Existing Setting

4.2.1.1 *Regulatory Framework*

The geotechnical and seismic safety of landfills in California is governed by Title 27 of the California Code of Regulations. Those regulations build upon federal requirements for landfills in the Code of Federal Regulations (CFR). The California Integrated Waste Management Board, Regional Water Quality Control Board, and the Local Enforcement Agency (County of Alameda) are responsible for enforcing these requirements during the active operation and postclosure periods for landfills. For example, the slope of the final site face of a landfill must be no greater than 30 degrees and must be engineered to withstand the maximum probable earthquake for the area. The mechanisms for enforcing state and federal regulations include review and implementation of Solid Waste Facilities Permits and Landfill Closure Plans.

In addition, regulations in the Uniform Building Code (1997 Edition) and implementation measures in the City's General Plan, as adopted by the City of Fremont, have been developed to protect lives and property from building failure due to geologic conditions and earthquakes. The Uniform Building Code includes design standards for buildings in Seismic Zone 4 and for construction on expansive soils. The requirements in the building code are implemented as a part of the City's review of building permit applications. Building permit requirements apply to existing and any future new structures in the Corporation Yard. The General Plan calls for site specific soils, geologic and/or geotechnical engineering studies in identified areas of the City prior to development.

Erosion and sedimentation are processes that can be accelerated when a construction site is disturbed. Regulations set forth by the U.S. Environmental Protection Agency (EPA) and the State Water Resources Control Board to fulfill the requirements of the federal Clean Water Act and California's Porter-Cologne Water Quality Control Act include provisions to reduce the amount of pollutants, such as sediment, in stormwater runoff. These provisions are implemented through National Pollutant Discharge Elimination System (NPDES) permits. Landfills fall under the industrial NPDES permit category. Locally, development projects over one acre in size must also comply with the statewide General Construction permit and the NPDES permit issued to the TCRDF by the San Francisco Regional Water Quality Control Board. The methods used to achieve permit requirements vary from site to site, but generally include measures to reduce or avoid erosion and sedimentation during construction and grading and post-construction periods.

4.2.1.2 *Geology and Soils*

The project site is mapped in the Soil Survey of Alameda County (1975) as consisting primarily of Willows clay. The parent material is alluvium, derived mainly from sedimentary rock. This soil is very deep, poorly drained, and located on basin rims. Willows clay has gray and brown mottles from poor drainage. Due to the high clay content of the soil, native soils on the site have a high shrink/swell potential.

Approximately 115-120 acres of the site are covered with landfilled materials (waste and daily cover) and levee roads. Unengineered fill materials are also present in the Resource Recovery Area (refer to Figures 2-3 and 2-4).

The subsurface profile down to approximately 50 feet below sea level is composed of three geologic units: Younger Bay Mud at the surface; Older Bay Mud in the middle; and the alluvial materials in the Newark Aquifer.¹⁵ The Centerville Aquifer underlies the Newark Aquifer at a depth of approximately 180 feet and is separated from the water bearing Newark Aquifer by a thick aqualude¹⁶ of clayey materials. A description of the Younger Bay Mud, Older Bay Mud and the Newark Aquifer follows.

Younger Bay Mud (YBM)

The Younger Bay Mud unit, although complex, is characterized as firm, darkly-colored clays with lenses and interbeds of fine grained soils. The organic content is high, textures range from sandy to silt clay, and the consistency ranges from soft to stiff. The Younger Bay Mud extends to depths of seven to 25 feet below the ground surface, at or near sea level. This unit is interlayered with lenses of clayey silt, sandy silt, clayey sand, and silty fine sand from one to six feet in thickness.

Older Bay Mud (OBM)

Older Bay Mud underlies the Younger Bay Mud unit. It is stiff, blue-gray to blue-green, silty clay to clayey silt. This unit generally extends to elevations of -13 to -70 feet msl (below sea level) and is ten feet or more thick. In the northeasterly part of the site, however, the thickness of Older Bay Mud tapers to about four feet.

Newark Aquifer

The Newark Aquifer is generally overlain by ten feet or more of Bay Mud. It varies in both composition and thickness. Beneath the landfill, the upper layer of the Newark Aquifer consists of alternating layers of clean, fine to coarse-grained sands, with sandy to clayey gravel lenses. The thickness of this upper layer ranges from approximately three to 28 feet, with the top-of-formation occurring at elevations ranging from -11 feet msl to -35 feet msl.

4.2.1.3 Landfill Settlement

The landfilled materials on the site settle and compress as waste decomposes and under the weight of landfill materials placed above. Settlement can occur over broad areas or in smaller areas as differential settlement. Primary settlement of landfill materials generally occurs quickly (within six months). Secondary settlements, due to ongoing compression and decomposition of wastes occur over a longer period.

Based upon modeling by Golder Associates described in the 2004 Final Closure and Postclosure Maintenance Plan, settlement of the landfill due to the underlying Bay Mud is expected to be less than one to two feet in the future.

¹⁵ Source: *Joint Technical Document Tri-Cities Recycling and Disposal Facility, Volume I, Alameda County, California*, July 2003 (revised December 2004).

¹⁶ An aquifer is an underground bed or layer of earth, gravel, or porous stone that yields water. An aqualude, or aquitard, is a bed of low permeability adjacent to an aquifer.

Settlement and elevation of the landfill are measured on a routine basis. Side-slopes of the landfill had settled to an inclination as flat at 4:1 (horizontal:vertical) by 2002. Prior to closure of the landfill, side slopes will be refilled to maintain prescribed slopes as described in *Section 2.3.1 Description of Installation of Landfill Final Cover*.

4.2.1.4 Seismicity

The San Francisco Bay Area is one of the most seismically active regions in the United States. Alameda County is classified as Zone 4, the most seismically active zone. An earthquake of moderate to high magnitude generated within the San Francisco Bay region could cause considerable ground shaking at the project site. According to the U.S. Geological Survey, there is a 67 percent probability that the San Francisco Bay area will be subjected to strong ground shaking resulting from a magnitude 7 seismic event on the San Andreas, Hayward, or Healdsburg-Rogers Creek faults during the next 30 years.¹⁷ The degree of shaking at a site is dependent on the magnitude of the event, the distance to its zone of rupture and local geologic conditions.

The three major fault lines in the region are the San Andreas Fault, the Calaveras Fault, and the Hayward Fault. The San Andreas Fault runs north/south and parallel to the Hayward Fault and the Calaveras Fault line. The northern San Andreas Fault is approximately 14.9 miles (24 km) west of the site, the Calaveras Fault is approximately 8.7 miles (14 km) east of the site, and the Hayward Fault is approximately 3.1 miles (5 km) east of the site.

Seismic Slope Stability

The landfill on the site is an elevated mound. The slope stability of the side slopes of the landfill were evaluated by Harding Lawson Associates in 1993.¹⁸ A peak bedrock acceleration (PBA) of 0.46g from a 7.0 Moment Magnitude (Mw) seismic event on the Hayward Fault was used in the slope stability evaluation. The evaluation found that the static factor of safety is 1.5 and that displacements of from two to three feet could result from the maximum probable earthquake for the site.

Other than the landfill, the site is relatively flat, with the exception of slopes on levee roads.

Liquefaction

Liquefaction is a phenomenon in which a soil located below the groundwater surface loses a substantial amount of strength due to strong earthquake ground shaking. Recently deposited (geologically young) and relatively loose natural soils, and uncompacted or poorly compacted fills, are potentially susceptible to liquefaction. Dense natural soils and well-compacted fills have low susceptibility to liquefaction while clayey soils and bedrock generally are not subject to liquefaction.

Consequences of liquefaction include vertical settlement, lateral displacement, loss of load bearing capacity for foundations, increased lateral loading on structures, and floatation of lightweight structures embedded in soil that liquefies.

¹⁷ Source: Joint Technical Document Tri-Cities Recycling and Disposal Facility, Volume I, Alameda County, California, July 2003 (revised December 2004).

¹⁸ Harding Lawson Associates. 1993. *Seismic Stability Evaluation Tri-Cities Landfill Vertical Expansion Fremont, California* (March 20, 2003) in Appendix D of the Joint Technical Document for the landfill.

As previously described, the site is underlain by Bay Mud, although at some locations the Bay Mud contains lenses of sandy material with varying amounts of silt and clay. In the southern and northwestern areas of the landfill, the Bay Mud is underlain by a two to 14-foot thick layer of medium dense, silty sand/sandy silt transitioning to dense sands with varying silt content in the Newark Aquifer unit. Elsewhere on the site, Bay Mud is directly underlain by the Newark Aquifer. Since sandy lenses in the Bay Mud on the site were found to be discontinuous, Harding Lawson (1993) concluded that liquefaction in this layer would be limited to a few inches. There could be some deformation in the transitional material underlying the Bay Mud in the southern and northwestern areas of the landfill. Harding Lawson also found that the dense sands in the Newark Aquifer are not subject to liquefaction.

4.2.2 Geology, Soils and Seismicity Impacts

4.2.2.1 *Thresholds of Significance*

For the purposes of this EIR, a geologic or seismic impact is considered significant if the project will:

- expose people or structures to substantial adverse effects including the risk of loss, injury or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic related ground failure (including liquefaction), landslides, or expansive soil; or
- be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse; or
- cause substantial erosion or siltation.

4.2.2.2 *Overview of Final Cover Placement and Design*

At the completion of landfilling activities, a final cover will be installed over the waste materials landfilled on the site. The final cover is designed, per regulatory standards in Title 27 of the California Code of Regulations, to minimize water infiltration into landfill materials and to provide a stable surface on the top deck and side slopes of the landfill. The three components of the final cover, the foundation layer, low-hydraulic conductivity layer, and erosion-resistant vegetative layer are described in *Section 2.3.1 Description of Installation of Final Cover*. The low-hydraulic conductivity layer on the top deck of the landfill would consist of a geosynthetic clay layer, bentonite clay sandwiched between layers of geotextile (a specialized woven fabric) backing. This is considered an “Alternative Cover Design” under state regulations for final cover of solid waste facilities. Refer to *Section 4.4.2.4 Groundwater Quality* for a discussion of the performance of the Alternative Final Cover limiting water movement through the final cover.

The overall final grading configuration of the landfill will result in an elevated knoll with top surface grades at a minimum of three percent (for drainage) and side slopes of 3:1 (horizontal:vertical). The initial placement of the final cover will accommodate expected settlement of eight to 12 feet at the top of the fill slopes. On the side slopes, 15 foot wide benches would be installed at 50 foot intervals.

The final top deck grade of three percent is designed to prevent ponding in the event of localized and differential settlements. The slopes and benching of the side slopes are designed to limit soil movement due to slope instability and to reduce the potential for erosion and sedimentation. A drainage system would convey water collected in down drain inlets through 18 inch down drains down the side slopes. Benches would have ditches to direct runoff to the down drain inlets, sized to accommodate a 100-year, 24-hour storm event. Surface runoff would be conveyed to the base of the

landfill and subsequently directed to the northwest corner of the site. Water would flow offsite through a 36 inch flap gate into the Alameda County Flood Control District channel.

A permanent access road with a maximum grade of eight percent will provide access to the top of the completed land fill. This will provide access for maintenance activities, such as filling localized settlements, and monitoring of the final cover and landfill gas collection and drainage systems.

4.2.2.3 *Overview of Corporation Yard and Concrete Recycling Facility (General Plan Amendment Area)*

For the purposes of this EIR analysis, the General Plan amendment and Conditional Use Permits are assumed to allow continued operation of the existing Corporation Yard and concrete recycling facility on 46-acres of the TCRDF. No specific modifications to the Corporation Yard, such as construction of new maintenance buildings or parking area paving, are currently proposed.

In the event specific improvements to these facilities are proposed, additional environmental review would be required.

4.2.2.4 *Expansive Surface Soils*

Native surface soils are highly expansive, which can impact the integrity of pavements and foundations when the soils are subject to cycles of wetting and drying. This phenomenon is only a factor when the expansive soils are at or near the soil surface.

Landfill closure activities do not include building construction or paving and would not occur directly on native expansive soils. In the event portions of the Corporation Yard or concrete recycling facility were paved in the future, the presence of expansive soils would need to be considered. Standard engineering and design measures, such as over excavation and replacement of soil materials and provision of adequate drainage, applied to new construction projects by the City of Fremont would avoid substantial impacts to pavements or buildings.

Impact GEO-1: The proposed General Plan amendment covers an area with expansive soils. Future improvements within this area would not be exposed to soil hazards that can not be avoided through standard engineering techniques. **(Less Than Significant Impact)**

4.2.2.3 *Slope Stability*

Landfill Closure

Slopes can fail under static conditions due to excess steepness or underlying differential settlement. If landfill slopes were to fail, refuse could be exposed, a path for rainwater into the refuse could be opened, or excess erosion of slopes could occur.

Golder Associates assessed slope stability of the proposed final side slopes of the landfill as a part of preparation of the *Final Closure and Postclosure Maintenance Plan for the TCRDF* (refer to Appendix B). Slope stability was calculated using the *Slide (version 3.0)* program for the permitted fill height of 150 feet msl. Factors considered in the analysis included shear strength and consolidation rates of both the underlying Bay Mud and the landfill refuse.

The analysis assumed, based upon work completed by *Geosyntec Consultants* in 2000, that 99 percent of Bay Mud consolidation will occur within seven years of placement of overlying waste and that most of the consolidation has occurred under the existing waste loading. The analysis also considered potential instability due to rapid loading from placement of all remaining waste at the same time (a conservative assumption). Such a rapid loading condition was found to have a very small impact on short-term stability under static conditions.

Golder Associates determined that the final grading design meets the minimum Title 27 California Code of Regulations requirements for slope stability. The static factor of safety is 1.5 or greater.

Impact GEO-2: Implementation of the proposed Final Closure and Postclosure Maintenance Plan for the TCRDF, in conformance with Title 27 of the California Code of Regulations, would not result in substantial slope instability under static conditions. **(Less Than Significant Impact)**

Borrow Area

Once excavation of the borrow area is completed, the borrow area would slope to the southwest (refer to Figure 2-9). Finish elevations would range from approximately four feet msl near the Union Pacific Railroad line to approximately one foot msl (an elevation change of approximately three feet) over a distance of approximately 1,400 feet.¹⁹ This gradual slope is not anticipated to be subject to slope instability.

Impact GEO-3: The proposed excavation of a borrow area within the TCRDF is not anticipated to result in slope instability. **(Less Than Significant Impact)**

4.2.2.4 Seismic Impacts

Landfill Closure

Analyses in the *Final Closure and Postclosure Maintenance Plan for the TCRDF* used a design Maximum Probable Earthquake (MPE) for both near-field and far-field seismic events. The design near-field event is a Mw 6.9 event along the southern segment of the Hayward fault resulting in a peak horizontal ground acceleration of .57g. The far-field event is a Mw 7.9 event along the San Andreas Fault resulting in a peak horizontal ground acceleration of .24g.

Seismic Slope Instability and Liquefaction

As discussed previously in *Section 4.2.2.1*, Golder Associates assessed slope stability of the proposed final side slopes of the landfill as a part of preparation of the *Final Closure and Postclosure Maintenance Plan for the TCRDF* (refer to Appendix B). Factors considered in the seismic analysis included shear strength and consolidation rates of both the underlying Bay Mud and the landfill refuse, and liquefaction.

The transition zone between the underlying Bay Mud and refuse is potentially susceptible to liquefaction during the design earthquake evaluated in the slope stability analysis. A post-liquefaction strength of 1,250 pounds per square foot (psf) was assumed in the slope stability analysis.

¹⁹ As described in *Section 2.38 Description of the On-Site Borrow Area*, the elevations shown on Figure 2-9 are maximum depths; if less soil is used, finish elevations in the borrow area could be higher.

For the Maximum Probable Earthquake, deformations of between four and 12 inches could occur on the side slopes of the landfill. A maximum permanent deformation of 12 inches is acceptable for composite-lined facilities. Golder Associates concludes that for the landfill on the TCRDF, which has a 30-foot thick natural clay liner (Bay Mud), this deformation is acceptable and is not expected to result in adverse impacts to the final cover, drainage system or other environmental controls. This conclusion in the Closure Plan will be reviewed and confirmed by regulatory agencies.

Impact GEO-4: Implementation of the proposed Final Closure and Postclosure Maintenance Plan for the TCRDF, in conformance with Title 27 of the California Code of Regulations, would not result in substantial seismic impacts due to liquefaction or slope failure. **(Less Than Significant Impact)**

**Corporation Yard and Concrete Recycling Facility
(General Plan Amendment Area)**

The proposed General Plan amendment would allow continued operation of the Corporation Yard and concrete recycling facility on 46-acres of the site. No specific modifications to the Corporation Yard, such as construction of new, one-story maintenance buildings, are currently proposed. If new structures are proposed in the future, standard engineering and design measures and conformance with Building Code criteria for Seismic Zone 4 would be required. This would avoid substantial seismic impacts to buildings.

Impact GEO-5: The proposed General Plan amendment covers an area underlain by Bay Mud in a seismically active area. Future improvements within this area would not be exposed to seismic hazards that can not be avoided through standard engineering techniques. **(Less Than Significant Impact)**

4.2.2.5 Erosion and Sedimentation

Landfill

Erosion of the proposed vegetative soil cover layer of the final cover at the end of the 30-year closure period was calculated by Golder Associates using the Universal Soil Loss Equation. The Universal Soil Loss Equation is used to estimate soil loss in tons per acre. The results of the calculations are presented in Table 4.2-1.

Table 4.2-1 Estimated Soil Erosion of Landfill Slopes At End of 30-Year Post-Closure Period		
Slope*	Annual Erosion (tons/acre/year)	Total 30-Year Erosion (inches)
3H:1V	1.00	0.17
2.75H:1V	1.07	0.18
2.5H:1V	1.15	0.19
2H:1V	1.34	0.22
*Slope expressed in horizontal to vertical (H:V). For example 3H:1V is equal to three foot horizontal (run) to one foot vertical rise.		

The projected erosion, approximately 0.2 inches over 30 years, would be a relatively small amount of the 12 inch vegetative soil layer.

Under the landfill closure plan, surface runoff drainage ditches will be installed as the final cover is placed over landfilled materials. Landfill drainage ditches will be lined with reinforced earth, gravel, or concrete to minimize infiltration of water into the landfill and sized to convey storm water runoff from a 100-year, 24-hour storm at acceptable velocities. Catch basins on the benches will include silt control measures, such as silt fences, straw wattles, debris sumps, gravel filter berms, gravel aprons, or concrete aprons, to minimize sediment in the stormwater discharge.

Impact GEO-6: Implementation of the proposed Final Closure and Postclosure Maintenance Plan for the TCRDF would not result in substantial new erosion or sedimentation. **(Less Than Significant Impact)**

Borrow Area

The borrow area would be graded with a gradual slope to the west and southwest. Near the Union Pacific Railroad line, finish elevations would be approximately four feet msl and final elevations to the west would be as low as approximately one foot msl over a distance of approximately 1,400 feet. The borrow area would remain unpaved and the proposed excavation would not substantially increase the rate or amount of surface stormwater runoff. Some water would also pond in the lower areas of the site, which would allow sediment to settle out. The gentle slopes within the proposed borrow area would avoid substantial erosion or off-site siltation.

Impact GEO-5: Excavation within the proposed borrow area would not result in substantial new erosion or sedimentation. **(Less Than Significant Impact)**

4.2.3 Mitigation and Avoidance Measures

No mitigation or avoidance measures are required.

4.2.4 Conclusions Regarding Geology, Soils and Seismicity

The proposed closure of the landfill and a General Plan amendment to allow continued use of the Corporation Yard and concrete recycling facilities on a portion of the TCRDF site would not result in substantial geology and soil impacts. **(Less Than Significant Impact)**

4.3 BIOLOGICAL RESOURCES

The following discussion is based upon a Biological Resource Report prepared by *H.T. Harvey & Associates, Inc.* Field surveys of the TCRDF project site were conducted on April 20, May 1, May 18, June 13 and June 20, 2006 by *H.T. Harvey & Associates, Inc.* A copy of the report documenting these surveys is included in Appendix C of this EIR.

In the following discussion, all plant and animal species are referred to using their common names, except for species of special status (i.e., endangered, threatened, rare or protected species). Readers wishing to view an expanded discussion which contains both the common and scientific/Latin names of the various species should refer to the technical report included in Appendix C.

4.3.1 Existing Setting

4.3.1.1 *Overview*

The 378-acre TRCDF is bounded by the railroad tracks to the east, salt evaporator ponds to the west and south, and the Alameda County Flood Control District channel (Line N) that flows to Mowry Slough to the north. Approximately 30 percent of the property (115-acres) has been used for active waste disposal operations (i.e., the landfill). The base elevation of the site is approximately zero to six feet mean sea level msl with the landfill reaching an artificial elevation of 103 feet msl. The average annual precipitation of the site is 16 inches, and the average annual temperature is 57 degrees Fahrenheit.

Historically, soils from six series extended to the ground surface on the site. All of the soil series present within the project site were either previously drained, ponded, or currently contain water. A summary of the soil types historically present on the project site is provided in Table 4.3-1.

Soil Type	Acres Within the Project Site	Percent of Site	Drainage Class	Permeability	Soil pH
Clear Lake clay, 0-2% slopes, drained	1.2	0.3%	Poorly drained	Slow	Neutral/moderately alkaline
Pescadero clay, drained	16.5	4.4%	Poorly drained	Very slow	Slightly acid
Reyes clay, drained	108.4	28.8%	Very poorly drained	Very slow	Strongly acid
Willows clay, drained	249.0	66.2%	Poorly drained	Very slow	Moderately alkaline
Open Water	1.1	0.3%	--	--	--
Total	376.2	100%	--	--	--

Source: Soil Conservation Service. 1975. *Soils of Alameda County, Western Part.*

Most of the site has been extensively manipulated and contains fill material from unknown sources. Soils within the current Resource Recovery Area (refer to Figure 2-3), have undergone frequent and

extensive disturbance due to the addition, translocation, and removal of fill and other materials. Most roads and developed areas contain compacted gravel. For these reasons, most of the project site is assumed to contain nonnative soils. The only areas of the project site that contain native soils are the pickleweed/cattail wetland in the northeastern part of the site (which consists primarily of *Willows clay, drained* series with a very small amount of *Clear Lake clay*), and the muted tidal salt marsh along the southern edge of the site (which consists primarily of *Reyes clay, drained*).

4.3.1.2 Biotic Habitats

Seven habitats occur on the project site.²⁰ These habitats include: *muted tidal salt marsh, disturbed seasonal depression, pickleweed/cattail wetland, aquatic* (in the landfill drainage ditch), *landfill/ruderal, ruderal, and developed*. The area covered by each of these habitats is shown on Figure 4.3-1 and listed in Table 4.3-2. Vegetation and wildlife associated with these habitats are described below.

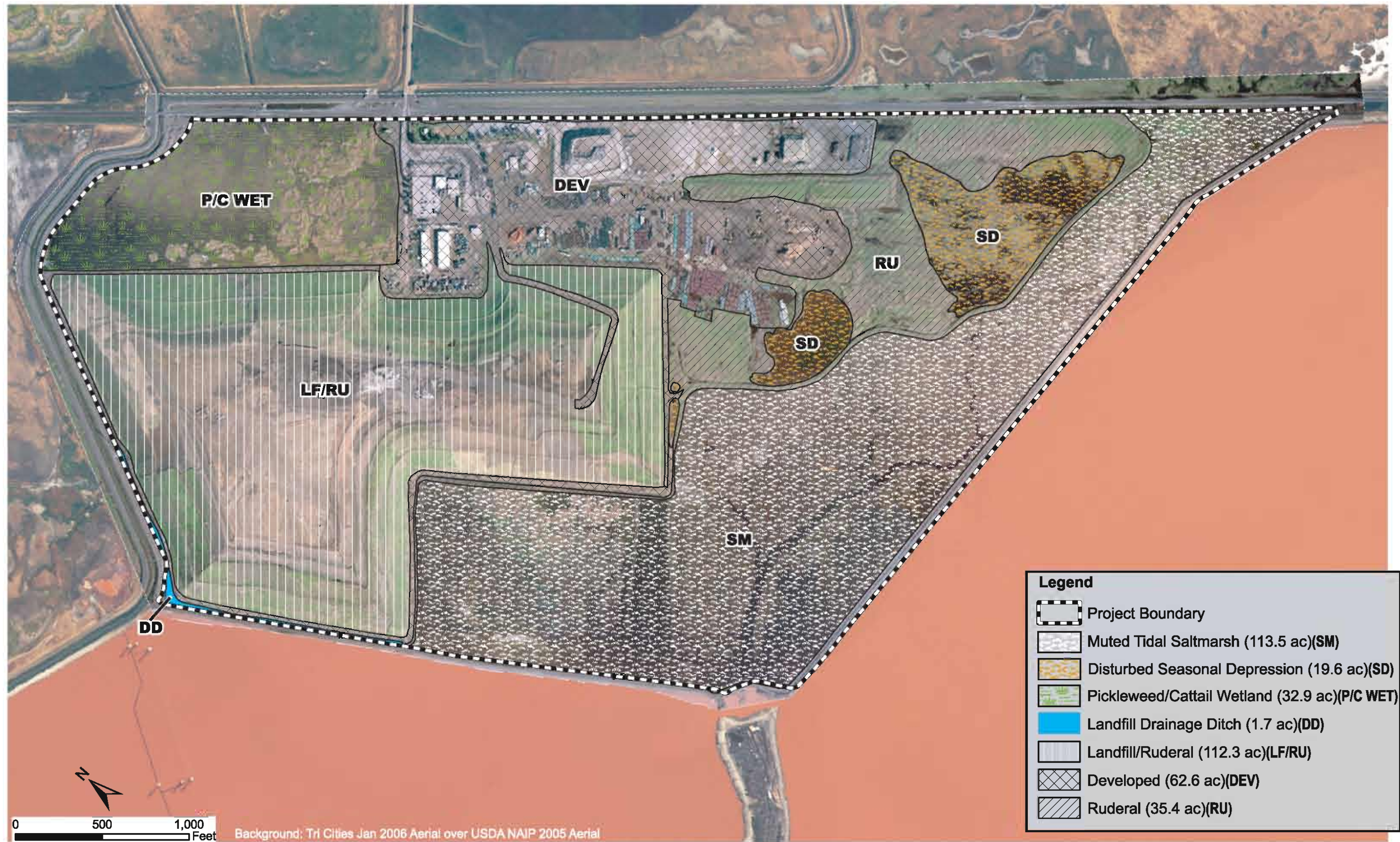
Habitat	Area (acres)	Within Landfill Area	Within Resource Recovery or Corporation Yard Area	Other Area
Muted Tidal Salt Marsh	113.5			X
Landfill/Ruderal	112.3	X		
Developed	62.6	X	X	
Ruderal	35.4		X	
Pickleweed/Cattail Wetland	32.9		X	
Disturbed Seasonal Depression	19.6		X	
Aquatic (Landfill Drainage Ditch)	1.7			X
Total	378.0	--	--	--

Muted Tidal Salt Marsh

Muted tidal salt marsh habitat is located in the southern portion of the project site, adjacent to a levee and the Don Edwards San Francisco Bay National Wildlife Refuge. This area contains bare soil, water, and channels in addition to vegetated areas. Pickleweed dominates this habitat with patches of rabbitsfoot grass, saltgrass, and spearscale occurring throughout.

Pickleweed is over 30 centimeters (cm), or approximately one foot, high with 100 percent cover in many areas of this habitat. The muted salt marsh within the TCRDF provides high-quality habitat for the federally endangered salt marsh harvest mouse (*Reithrodontomys raviventris*). Other mammals also expected in this habitat include the California vole, western harvest mouse, house mouse, saltmarsh wandering shrew, and long-tailed weasel. A number of waterbird species forage within this habitat including the Black-crowned Night-Heron, Great Egret, and several gull and shorebird

²⁰ Plant communities are described in terms of dominant tree, shrub, and herbaceous vegetation composition.



BIOTIC HABITATS

FIGURE 4.3-1

species. Raptors such as the White-tailed Kite, Red-tailed Hawk, and Northern Harrier also forage in this habitat. Other birds, including the Mallard, Gadwall, American Coot, Alameda Song Sparrow, American Avocet, and Black-necked Stilt breed in this habitat. The black-tailed hare, California ground squirrel, and desert cottontail occur along the upland edges of this habitat type.

Landfill/Ruderal

Ruderal communities are assemblages of plants that thrive in disturbed areas, and weedy, non-native annual forbs and grasses are typically the first species to colonize these sites following disturbance. Disturbance is constantly occurring on the landfill as new trash is buried, but most of the landfill is covered with ruderal vegetation that has been seeded to stabilize the landfill's surface in areas where trash is not being actively buried. Ruderal species observed on the project site included rigput brome, filaree, black mustard, wild radish, shepherd's purse, and yellow star-thistle.

The slopes on the sides of the landfill are vegetated and are less disturbed than the active area on the top of the landfill. As a result, several wildlife species associated with ruderal habitats occur on the landfill slopes. These include the western fence lizard, California ground squirrel, house mouse, nesting Western Meadowlarks, and foraging finches, sparrows, and blackbirds. In addition, Loggerhead Shrikes and raptors such as Red-tailed Hawks, White-tailed Kites, and Northern Harriers forage in these areas. The active landfill areas attract scavengers such as Common Ravens, American Crows, Turkey Vultures, Black-crowned Night-Herons, Norway rats, black rats, Virginia opossums, raccoons, and striped skunks, which feed on discarded food and other waste within the landfill. During winter, tens of thousands of gulls, including California Gulls, Herring Gulls, Thayer's Gulls, Ring-billed Gulls, Western Gulls, Glaucous-winged Gulls, and other species, forage on the refuse at the active landfill area. Gull numbers are substantially lower in summer, but thousands of California Gulls, which breed in the South Bay, use the landfill throughout the summer. Flocks of European Starlings, Brewer's Blackbirds, Red-winged Blackbirds, and Brown-headed Cowbirds also forage in and around the active area of the landfill.

Developed

Developed areas within the TCRDF consist of a combination of bare ground, pavement, compacted gravel, landfill office and maintenance structures, disposal and recycling equipment, and piles of recyclable materials. Most of the developed areas occur within the Corporation Yard and the portions of the Resource Recovery Area that are in active use. The landfill gas flare is also within the developed area of the site.

Some developed areas are landscaped with planted eucalyptus and alder trees, which are the only trees on the project site. A large area of compacted fill is being used to store and process a variety of materials. These materials include wood and compost used for alternative daily cover at the landfill and recyclable building materials (i.e., asphalt, concrete, wood). This area is leveled and sprayed with water for dust control on a continual basis and is devoid of vegetation.

Few wildlife species can tolerate the intensive disturbance that occurs within the active processing areas on the project site. A few bird species nest in and around the structures on the site. These include the native House Finch, Mourning Dove, Barn Swallow, Cliff Swallow, and Black Phoebe and non-native European Starling, Rock Pigeon, and House Sparrow. Western fence lizards occur in the developed portions of the site, as do mammals such as the black-tailed hare and introduced Norway rats. Other introduced species that commonly occur within developed habitats include house mice, and, where more cover exists, feral cats, Virginia opossums, and striped skunks. The high

level of human activity associated with this site likely precludes nesting by raptors in the small ornamental trees present on the site, although Loggerhead Shrikes may nest in these trees.

Ruderal

Ruderal habitat mapped within the Resource Recovery Area was predominantly covered by vegetation in Spring 2006. The extent of this habitat type changes as areas of active disturbance within the Resource Recovery Area change. This habitat type also includes the edges of the road that encircles the landfill. Plant species present vary with topography, disturbance, and flooding-tolerance. Grassland species present in the ruderal habitat include Italian ryegrass, wild oats, Mediterranean barley, riggut brome, saltgrass, and foxtail barley. Herbaceous species dominating this habitat include black mustard, field mustard, purple vetch, curly dock, wild radish, bull thistle, and charlock.

The ruderal habitat on the site provides limited wildlife habitat due to frequent disturbance and the low structural diversity of the ruderal vegetation present. The taller, dense ruderal vegetation provides nesting sites for Song Sparrows (possibly including the Alameda Song Sparrow), Saltmarsh Common Yellowthroats, and Red-winged Blackbirds, and ducks may nest in small numbers in this habitat type as well. A variety of raptors, finches, and sparrows forage in this habitat. Mammals such as the black-tailed hare, California ground squirrel, California vole, and Botta's pocket gopher occur in the vegetated ruderal habitats on the site.

Pickleweed/Cattail Wetland

The pickleweed/cattail wetland is found in the northeastern part of the site. While similar to the muted tidal pickleweed wetlands described above, it contains a greater degree of microtopography (small changes in surface elevation) and a more complex mosaic of vegetation in the wetter and drier areas.

This area may be transitioning to a freshwater wetland over time. Cattail appears to dominate in the southern portions of the habitat while pickleweed dominates in northern areas. Within the pickleweed-dominated areas of this habitat, rabbitsfoot grass, bulrush, sedge, and spearscale also occur, although these other species occur only sporadically.

Although most of the northern portion of this habitat is saline, the southern portion with cattails may have areas of permanent fresh water that provide habitat for the Pacific treefrog. The salt marsh harvest mouse may occur in the northern areas where pickleweed is the dominant cover. Common birds of this habitat include the Red-winged Blackbird and Marsh Wren. Saltmarsh Common Yellowthroats and Alameda Song Sparrows are also expected to breed in this habitat.

Disturbed Seasonal Depression

The Resource Recovery Area, located in the southeastern portion of the TCRDF site, is separated from the muted tidal salt marsh by a narrow berm. The area within this berm has undergone extensive disturbance, with fill and other materials having been placed, moved around, and removed repeatedly as a part of the facility's resource recovery operations. A wetland delineation prepared in 2002 by *Wetland Resource Associates* (WRA) defined this area as potentially non-jurisdictional, while all areas on the south side of the levee were considered to be jurisdictional.

Seasonally wet depressions over 19.6 acres were located in portions of the Resource Recovery Area in Spring 2006 where recent excavation of fill material had produced shallow depressions that

allowed rain to pond. These pools were quickly drying at the time of the field survey. These areas were historically filled, but as fill has been removed, hydrophytes have encroached and some areas now pond for long durations. Ruderal species such as black mustard invade these depressions (and the levees that allow access to them) in slightly elevated islands. Hydrophytes that appear in these depressions include brass buttons, small patches of pickleweed, common tarplant, and rabbitsfoot grass. It is expected that the presence and locations of these depressions varies from year to year due to variation in the extent and location of disturbance associated with resource recovery efforts, and these depressions are not considered stable pools or wetlands. This habitat type also includes two small depressions along the southern edge of the landfill that were apparently excavated as detention basins.

Impounded waters that collect in this ruderal habitat during wet months occur adjacent to the larger muted tidal salt marsh, and therefore, this area provides seasonal foraging habitat to several wildlife species associated with the salt marshes. Shorebirds such as the Greater Yellowlegs, Long-billed Curlew, Least Sandpiper, Western Sandpiper, and Long-billed Dowitcher forage in these depressional areas during migration, while a few pairs of species such as the American Avocet, Black-necked Stilt, Mallard, Gadwall, Cinnamon Teal, and Canada Goose nest in and around these depressions.

The western fence lizard may occur within the drier upland portions of this habitat. The thick stands of black mustard provide nesting and foraging habitat for the Red-winged Blackbird, Saltmarsh Common Yellowthroat, and possibly the Alameda Song Sparrow. Red-tailed Hawk and Northern Harrier often forage over this area for prey species, such as the California vole. No amphibians are expected to occur in these waters or within this habitat area because of the saline conditions. These depressional areas do not provide habitat for the salt marsh harvest mouse, however, because pickleweed is sparse.

Aquatic

A drainage ditch extends from the middle of the northwestern boundary of the property westward parallel to the Alameda County Flood Control Channel before turning south and ending at the southwestern corner of the landfill. This ditch was created as part of a runoff collection system around the perimeter of the active landfill and is located north of the access road around the landfill. Water that drains into this ditch is conveyed to the Alameda County Flood Control Channel through an existing 36-inch pipe and flapgate. The flood control channel discharges to Mowry Slough and ultimately San Francisco Bay. The ditch collects runoff from the landfill and the compacted gravel road that goes around the landfill. It begins as a dry ditch, containing ruderal species such as black mustard and riggut brome, but, as it begins to hold water, supports pickleweed and becomes large enough (approximately six to ten feet wide, three feet deep) to contain water for long periods of time. Water cress occurs in some areas.

Due to the small size and areas of open water in this ditch, few waterbirds are expected to occur in this habitat. Shorebirds such as the Killdeer, Greater Yellowlegs, and Black-necked Stilt, and ducks such as the Mallard and Gadwall, are likely to forage in this ditch occasionally. Although a record for the salt marsh harvest mouse occurs in a pickleweed-dominated ditch along the railroad tracks about one mile south of the project site, the on-site pickleweed habitat in this area is too isolated and degraded to support this species.

4.3.1.3 *Special Status Plant and Animal Species*

Regulatory Overview

Federal Endangered Species Act

The federal Endangered Species Act (FESA) protects listed wildlife species from harm or “take” which is broadly defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Take can also include habitat modification or degradation that directly results in death or injury to a listed wildlife species. An activity can be defined as “take” even if it is unintentional or accidental. Listed plant species are provided less protection than listed wildlife species. Listed plant species are legally protected from take under FESA if they occur on federal lands or if the project requires a federal action, such as a Section 404 fill permit.

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over federally listed threatened and endangered species under the FESA. The USFWS also maintains lists of proposed and candidate species. Species on these lists are not legally protected under the FESA, but may become listed in the near future and are often included in their review of a project.

California Endangered Species Act

The California Endangered Species Act (CESA) prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with the CESA, California Department of Fish and Game (CDFG) has jurisdiction over state-listed species (California Fish and Game Code 2070). Additionally, the CDFG maintains lists of “species of special concern” that are defined as species that appear to be vulnerable to extinction because of declining populations, limited ranges, and/or continuing threats.

Federal Migratory Bird Treaty Act

The Federal Migratory Bird Treaty Act (16 U.S.C. Sec. 703) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Most native bird species in the project area are covered by this Act.

California Native Plant Society Lists of Plant Species of Concern

The California Native Plant Society (CNPS), a non-governmental conservation organization, has developed and maintains lists of plant species of concern in California. Vascular plants included on these lists are defined as follows:

- List 1A Plants considered extinct.
- List 1B Plants rare, threatened, or endangered in California and elsewhere.
- List 2 Plants rare, threatened, or endangered in California but more common elsewhere.
- List 3 Plants about which more information is needed - review list.
- List 4 Plants of limited distribution-watch list.

CNPS is not a regulatory agency and plants on these lists have no formal regulatory protection. Plants on Lists 1A, 1B or List 2 are generally considered to meet CEQA’s Section 15380 criteria as endangered, threatened, or rare plants.

Special Status Plants

Information concerning the known distribution of threatened, endangered, or other special-status plant species with potential to occur in the area was collected from several sources and reviewed. The sources included the California Department of Fish and Game (CDFG) Natural Diversity Database (CNDDDB) and information available through the USFWS, CDFG, and technical publications. The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California and The Jepson Manual (Hickman, 1993) supplied information regarding the distribution and habitats of vascular plants in the vicinity.

A query of special-status plants in the CNDDDB was first performed for the USGS Milpitas topographical quadrangle in which the project site occurs, as well as the eight quadrangles surrounding the project site. The CNPS Inventory was then queried to produce a similar list for Alameda County. The specific habitats included in the query were valley and foothill grassland and marshes and swamps. These habitats were selected based on the similarity of their constituent species to those occurring on the project site. The habitat requirements of each special-status plant species were the principal criteria used for inclusion in the list of species potentially occurring on the site.

Many of the special-status plant species that occur in Alameda County are associated with habitat or soil types that did not occur on the project site historically, or no longer occur on the project site due to the extensive removal of soil and addition of fill material; such habitats and soil types that are absent from the project site include serpentine soils, strongly alkaline soils, clay soils, vernal pool habitat, and cismontane woodland habitat. Additionally, many of the species identified as potentially occurring in the area occur at much higher elevations than are present at the project site. This is particularly true considering that the only native habitat remaining on the site is at approximately sea level.

Nine grassland or marsh and swamp species are listed by the CNDDDB as occurring within five miles (eight km) of the project site: San Joaquin spearscale (*Atriplex joaquiniana*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), Contra Costa goldfields (*Lasthenia conjugens*), alkali milk-vetch (*Astragalus tener* var. *tener*), prostrate navarretia (*Navarretia prostrata*), Hoover's button-celery (*Eryngium aristulatum* var. *hooveri*), California seablight (*Suaeda californica*), arcuate bush mallow (*Malacathamnus arcuatus*), and Point Reyes bird's-beak (*Cordylanthus maritimus* ssp. *palustris*) (Table 4.3-3).²¹ Seven of these special-status species were rejected from further consideration due to the degraded nature of habitat on the site, the lack of associated native species, and/or the absence of specific microhabitat variables such as soil type, elevation, or hydrology. Two species, Contra Costa goldfields and Congdon's tarplant, could potentially occur on the site in its present condition. Focused surveys for these species were conducted on May 18 and June 20, 2006, but neither species was observed on the site. These two species are listed in Table 4.3-2 and are discussed in detail in the following paragraphs.

²¹ Forty-nine of the rare species associated with valley and foothill grassland or marsh and swamp habitats in Alameda County evaluated. Of these, 47 species were considered, but rejected, as potentially occurring on the site (refer to Sub-appendix A, *Special-Status Plant Species Considered but Rejected for Occurrence at the Project Site*, in Appendix C for a breakdown of the reasons individual special status plants are not considered likely to occur on the site).

**Table 4.3-3
Special-Status Species**

Species	Status	Habitat	Occurrence on the Project Site
Federal or State Endangered and Threatened Species			
Contra Costa Goldfields (<i>Lasthenia conjugens</i>)	FE, CNPS 1B	Vernal pools and mesic areas in valley and foothill grassland habitat.	Both native wetlands on the project site offer suitable habitat and the CDFG Rarefind Database contains reports of this species in the immediate vicinity. Surveys conducted on May 18, 2006 did not find any populations within the project site. Considered absent.
Vernal Pool Tadpole Shrimp (<i>Lepidurus packardii</i>)	FE	Vernal pools and swales containing clear to highly turbid water.	Recent records are known from areas northeast of the site (on the other side of the railroad tracks). No suitable habitat on the project site; the seasonal depressions are created by ongoing disturbance, and no stable pools are present. Likely absent from the site.
California Red-legged Frog (<i>Rana aurora draytonii</i>)	FT, SP, CSSC	Streams, freshwater pools and ponds with overhanging vegetation	Marginal habitat on site. No hydrological connection to known populations. Nearest record more than 5 miles to the east. Presumed absent
California Tiger Salamander (<i>Ambystoma californiense</i>)	FT, CSSC	Vernal or temporary pools in annual grasslands, or open stages of woodlands.	Recent records are known from areas less than 0.5 mi. from the site, on the other side of the railroad tracks. Occasional dispersants may cross the tracks and occur on the site. Given the extent and intensity of ongoing disturbance, however, the Resource Recovery Area does not provide high-quality dispersal or aestivation habitat, and the seasonal depressions are disturbed too frequently to provide stable breeding habitat. Unlikely to breed on the site.
American Peregrine Falcon (<i>Falco peregrinus anatum</i>)	SE, SP	Forages in many habitats; requires cliffs for nesting.	Occasional forager on site; no suitable breeding habitat on site.
Western Snowy Plover (<i>Charadrius alexandrinus nivosus</i>)	FT, CSSC	Sandy beaches on marine and estuarine shores.	Marginal foraging habitat is present on flats in the muted tidal salt marsh. Due to the limited nature of these flats, however, Snowy Plovers are not expected to breed on the site, and they likely occur here rarely, if at all.
California Clapper Rail (<i>Rallus longirostris obsoletus</i>)	FE, SE	Tidal salt marsh dominated by cordgrass and pickleweed; occasionally occurs in brackish marshes.	No suitable habitat on site due to lack of cordgrass, short stature of pickleweed, and lack of tidal channels. Likely absent from the channel northwest of the site due to the very narrow, brackish nature of the wetlands along this channel.
Salt Marsh Harvest Mouse (<i>Reithrodontomys raviventris</i>)	FE, SE	Pickleweed in saline emergent wetlands.	Pickleweed-dominated habitat in muted tidal salt marsh and pickleweed/cattail wetland on site provides high-quality habitat, and this species is presumed present in these areas. Only a few scattered pickleweed plants are present in

**Table 4.3-3
Special-Status Species**

Species	Status	Habitat	Occurrence on the Project Site
			the disturbed depressions, and this species is not expected to occur in these features.
California Species of Special Concern			
Western Pond Turtle (<i>Clemmys marmorata</i>)	CSSC	Permanent or nearly permanent water in a variety of habitats.	No suitable habitat on site; presumed absent.
American White Pelican (<i>Pelecanus erythrorhynchos</i>)	CSSC	Forages on fish found in freshwater lakes and rivers and breeds up to 150 miles from feeding area.	May forage occasionally in the inundated portions of the muted tidal salt marsh, but not expected to occur frequently or in large numbers. Does not breed on the site.
Double-crested Cormorant (<i>Phalacrocorax auritus</i>)	CSSC	Colonial nester on coastal cliffs, offshore islands, electrical transmission towers, and along interior lake margins. Feeds on fish.	Forages occasionally in the inundated portions of the muted tidal salt marsh, but not expected to occur frequently or in large numbers. Does not breed on the site.
White-faced Ibis (<i>Plegadis chihi</i>)	CSSC	Nest in dense marsh vegetation near foraging areas in shallow water or muddy fields.	Forages occasionally in wetland areas, but not expected to occur frequently or in large numbers. Does not breed on the site.
Long-billed Curlew (<i>Numenius americanus</i>)	CSSC	Nests in both dry and wet uplands; occurs on beaches along coast and inland lakes, salt marshes and grain fields.	May occur on site as occasional visitor during non-breeding season. Does not breed on the site.
California Gull (<i>Larus californicus</i>)	CSSC	In South Bay, nests on dried salt pond bottoms and levees. Forages in a variety of open habitats.	Abundant forager at the active landfill. Does not breed on the site.
Cooper's Hawk (<i>Accipiter cooperi</i>)	CSSC	Nests in trees, forages in many habitats.	Occasional forager, but not expected to breed on the site.
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	CSSC	Nests in a variety of dense woodlands, forages in many habitats.	Occasional forager, but not expected to breed on the site.
Merlin (<i>Falco columbarius</i>)	CSSC	Forages in many habitats in winter and migration.	Occasional forager during migration and winter. Does not breed on the site.
Prairie Falcon (<i>Falco mexicanus</i>)	CSSC	Nests on cliffs, forages on birds and small mammals in dry, open grasslands.	Occasional forager, but not expected to breed on the site.
Northern Harrier (<i>Circus cyaneus</i>)	CSSC	Nests in extensive grassland or tall wetland vegetation, forages in a variety of open habitats.	Forages on site; taller vegetation in the wetlands and the Resource Recovery Area could potentially support a single breeding pair on the site.
Ferruginous Hawk (<i>Buteo regalis</i>)	CSSC	Nests north/east of California, forages over grasslands during migration and while wintering.	Occasional forager during migration and winter. Does not breed on the site.
Golden Eagle (<i>Aquila chrysaetos</i>)	CSSC	Breeds on cliffs or in large trees or structures, forages in open grasslands and ruderal habitats.	Occasional forager, but not expected to breed on the site.

Table 4.3-3 Special-Status Species			
Species	Status	Habitat	Occurrence on the Project Site
Burrowing Owl (<i>Athene cunicularia</i>)	CSSC	Nests and roosts in burrows, usually of ground squirrels, in grasslands and ruderal habitats.	Known to occur in the site vicinity. Ground squirrels on the site provide potential burrows. Burrowing Owls may forage and possibly breed on the site.
Short-eared Owl (<i>Asio flammeus</i>)	CSSC	Requires tall emergent vegetation or grasses for mating.	Possibly a rare forager during the non-breeding season, but not expected to breed on the site.
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	CSSC	Nests in tall shrubs and dense trees, forages in grasslands, marshes, and ruderal habitats.	Likely forages on the site. Trees and shrubs provide potential breeding sites.
California Horned Lark (<i>Eremophila alpestris actia</i>)	CSSC	Short-grass prairies, annual grasslands, coastal plains, and open fields.	Likely forages on site, but breeding is unlikely due to heavy, frequent disturbance.
Saltmarsh Common Yellowthroat (<i>Geothlypis trichas sinuosa</i>)	CSSC	Breeds in fresh and salt marshes around South San Francisco Bay where there is thick foraging cover; breeds in tall grass, tules, willows.	Observed in the pickleweed-cattail wetland, muted tidal salt marsh, and in taller vegetation within the Resource Recovery Area. Likely breeds in these areas.
Alameda Song Sparrow (<i>Melospiza melodia pusillula</i>)	CSSC	Breeds and forages primarily in salt marsh habitats in the South San Francisco Bay.	Song Sparrows observed in the pickleweed-cattail wetland, muted tidal salt marsh, and in taller vegetation within the Resource Recovery Area, and likely breed in these areas. Whether these birds are of the race <i>pusillula</i> or the more widespread race <i>gouldii</i> is unknown, but <i>pusillula</i> is likely represented on-site.
California Yellow Warbler (<i>Dendroica petechia brewsteri</i>)	CSSC	Nests in dense stands of willow and other riparian habitat.	Yellow Warblers (subspecies not determined) occur on-site during migration, but breeding habitat absent from site.
Tricolored Blackbird (<i>Agelaius tricolor</i>)	CSSC	Breeds near fresh water in dense emergent vegetation.	May forage on site, but stands of herbaceous and emergent vegetation are likely not large enough to support nesting by this species. Not expected to breed on site.
Saltmarsh Wandering Shrew (<i>Sorex vagrans halicoetes</i>)	CSSC	Pickleweed-dominated salt marsh.	Potential habitat occurs in the muted tidal salt marsh and pickleweed/cattail marsh. Distribution poorly known, but may occur in these portions of the site.
Pallid Bat (<i>Antrozous pallidus</i>)	CSSC	Forages over many habitats; roosts in buildings, rocky outcrops and rocky crevices in mines and caves.	Unlikely forager; no roosting habitat on site. Presumed absent.
State Protected Species or CNPS Species			
Congdon's Tarplant (<i>Hemizonia parryi</i> ssp. <i>congdonii</i>)	CNPS 1B	Valley and foothill grassland often in clay soils.	Ruderal areas within both native wetlands on the project site offer suitable habitat and the CDFG Rarefind Database contains historic reports of this species occurring in the Fremont area. Surveys conducted on June 20 did not detect the species, and it is considered absent from impact areas on the site.

**Table 4.3-3
Special-Status Species**

Species	Status	Habitat	Occurrence on the Project Site
White-tailed Kite (<i>Elanus caeruleus</i>)	SP	Forages in open areas of many habitats.	Forages on site, but not expected to nest due to small size of, and frequent disturbance near, the few trees on site.
<p><i>Listing Status:</i> FE = Federally Listed Endangered FT = Federally Listed Threatened SE = State Listed Endangered ST = State Listed Threatened CSSC = California Species of Special Concern SP = State Protected Species CNPS 1B = Plants considered by CNPS to be rare, threatened, or endangered in California, and elsewhere</p>			

Contra Costa Goldfields (*Lasthenia conjugens*). Federal Listing Status: Endangered; State Listing Status: None; CNPS List 1B. This annual herb occurs in mesic (moderate moisture regime) valley and foothill grasslands and vernal pools. The blooming period is from March to June. The range of this species includes Alameda and six other counties. The CDFG Rarefind Database reports a single large population 0.4 miles west of Interstate 880, about 0.4-0.8 miles west/northwest of the junction of Cushing Road and Landing Road, near the Sky Sailing airport in Fremont. Due to the proximity of this known population, and the presence of potentially suitable habitat on site, surveys were performed for this species on May 18, 2006. The flooded pickleweed wetlands were not surveyed (to avoid impacts to salt marsh harvest mouse habitat), except in areas near the levee. However, Contra Costa goldfields was not detected anywhere on the site, and the portions of the extensive wetlands that were unsurveyed will not be impacted by this project. This species is likely absent from the site, and is considered absent from the landfill and Resource Recovery Areas of the site.

Congdon's Tarplant (*Hemizonia parryi* ssp. *congdonii*). Federal Listing Status: None; State Listing Status: None; CNPS List 1B. This annual herb occurs in valley and foothill grassland, particularly those with alkaline substrates, and in sumps or disturbed areas where water collects. The blooming period extends from June through November. The range of this species has been reduced to Monterey, San Luis Obispo, and Santa Clara counties. The CDFG Rarefind Database provides only historic reports of populations in the Warm Springs district of Fremont. Suitable habitat is present on the project site, primarily within the pickleweed/cattail wetland and in the disturbed seasonal depression habitat, but focused surveys performed on June 20, 2006 throughout the landfill and Resource Recovery Areas detected only the common tarplant.

Special Status Wildlife

Surveys were conducted on the project site by *H.T. Harvey & Associates* on April 20, May 1, and June 13, 2006 for habitats capable of supporting special-status wildlife species. Prior to site surveys, information concerning the known distribution of threatened, endangered, or other special-status wildlife species with potential to occur in the area was collected from several sources and reviewed. The sources included the CNDDDB and information available through the USFWS, CDFG, Museum of Vertebrate Zoology, and California Academy of Sciences.

The CNDDDB was queried for occurrences of special-status wildlife species within the USGS Milpitas topographical quadrangles in which the project site occurs and the eight surrounding quadrangles. The specific habitat requirements and the locations of known occurrences of each special-status wildlife species potentially occurring on the site are listed in Table 4.3-3.

The TCRDF site is outside the known range of, or lacks suitable habitat for, several special-status species that occur elsewhere in the Fremont area. These species include the California Clapper Rail (*Rallus longirostris obsoletus*), California red-legged frog (*Rana aurora draytonii*), western pond turtle (*Clemmys marmorata*), and pallid bat (*Antrozous pallidus*). Other special-status species may occur on the project site only as uncommon to rare visitors, migrants, or transients, or may forage on the site in low numbers while breeding in adjacent areas. However, these species are not expected to breed on the site, or to be substantially affected by the proposed project. These species include the American White Pelican (*Pelecanus erythrorhynchos*), Double-crested Cormorant (*Phalacrocorax auritus*), White-faced Ibis (*Plegadis chihi*), White-tailed Kite, Cooper's Hawk (*Accipiter cooperi*), Sharp-shinned Hawk (*Accipiter striatus*), American Peregrine Falcon (*Falco peregrinus anatum*), Merlin (*Falco columbarius*), Prairie Falcon (*Falco mexicanus*), Ferruginous Hawk (*Buteo regalis*), Golden Eagle (*Aquila chrysaetos*), Western Snowy Plover (*Charadrius alexandrinus nivosus*), Long-billed Curlew (*Numenius americanus*), California Gull (*Larus californicus*), Short-eared Owl (*Asio*

flammeus), California Horned Lark (*Eremophila alpestris actia*), California Yellow Warbler (*Dendroica petechia brewsteri*), and Tricolored Blackbird (*Agelaius tricolor*).

Species listed in Table 4.3-2 are special status species for which suitable habitat is present on or immediately adjacent to the site, or otherwise are of concern in the project vicinity. These species are also discussed in the following paragraphs.

Federal or State Endangered or Threatened Species

Vernal Pool Tadpole Shrimp (*Lepidurus packardii*). Federal listing status: Endangered; State listing status: None. Vernal pool tadpole shrimp occur primarily in the Central Valley and range from east of Redding in Shasta County south to the San Luis National Wildlife Refuge in Merced County. Outside of the Central Valley, a population of the vernal pool tadpole shrimp occurs in the Warm Springs Seasonal Wetland in Fremont, Alameda County. They have also been found on the Catellus Pacific Commons²² site, east of the Union Pacific railroad tracks. Tadpole shrimp eat microscopic organisms, detritus, dead tadpoles, earthworms, frog eggs and mollusks. Females deposit eggs on vegetation on the pool bottom. Pools containing vernal pool tadpole shrimp have clear to highly turbid water and range in size from less than an acre to 90 acres. Pools also generally have low conductivity, low total dissolved solids and low alkalinity. Periodic flooding that formerly allowed vernal pool species to disperse has become rare due to the construction of dams, drainage canals and other barriers that diminished periodic flooding. Vernal pool tadpole shrimp eggs can pass through bird digestive tracts, however, and may be dispersed by birds.

There are no records of tadpole shrimp on the TCRDF site, and the CNDDDB lists no records from the areas immediately east of the site (i.e., on the other side of the railroad tracks). Suitable habitat in the form of seasonal pools is present in the areas east of the railroad tracks, however, and the species may be present in those areas. On the site itself, the only areas of seasonal ponding that possess suitable hydrology for tadpole shrimp occur in seasonal depressions created by recent, and ongoing, disturbance. Due to the ongoing resource recovery activities, the location and extent of these pools (if present) change from year to year, and no stable pools are present on the site. Some of these pools contain composted material, and may therefore be acidic, while other pools may be too alkaline to support tadpole shrimp.

Because waterbirds foraging in the disturbed seasonal depressions on the site are likely to move between the site and other seasonal pools northeast of the railroad tracks (where habitat is more suitable for tadpole shrimp), it is possible that eggs or cysts of the tadpole shrimp may be dispersed on the feet of, or via the digestive tracts of, these birds. It is therefore possible that tadpole shrimp disperse to the TCRDF site on occasion. The ongoing resource recovery activities at the TCRDF likely preclude the presence and persistence of suitable, stable aquatic habitat for this species, however.

California Tiger Salamander (*Ambystoma californiense*). Federal listing status: Threatened; State listing status: Species of Special Concern. The California tiger salamander's preferred breeding habitat includes temporary, ponded environments (minimum of three to four months; e.g., vernal pool, ephemeral pool, or human-made ponds) surrounded by uplands that support small mammal

²² The 738-acre Catellus Pacific Commons project is located on the south side of Auto Mall Parkway, west of Interstate 880. The site is located approximately one-quarter mile east of the landfill at its closest point. Existing and planned development includes retail, commercial, research and development (R&D), corporate campus, hotel and industrial warehouse uses. Approximately 433 acres of the 738 acre site are designated as wetlands and open space (Source: Joint Technical Document, July 2003 (Revised December 2004)).

burrows. The species will utilize permanent ponds provided that aquatic, vertebrate predators are not present. Such ponds provide breeding and larval habitat, while small mammal burrows (e.g., ground squirrel and Botta's pocket gopher) in the upland habitats support juvenile and adult salamanders during the dry season. There are no records of tiger salamanders on the TCRDF site.

On the project site, the only areas of seasonal ponding occur in depressions created by recent, and ongoing, disturbance. Due to the ongoing resource recovery activities, the location and extent of these pools (if present) change from year to year, and no stable pools are present on the site. Ponding in these pools is not of sufficient duration (i.e., 3.5 months) for successful tiger salamander breeding in most years, although in very wet years, water may pond in such depressions for at least 3.5 months if they are deep enough. The disturbed seasonal depressions on the site and the ditch along the eastern boundary of the site and the railroad tracks are also likely too saline to support a breeding population of tiger salamanders. Although salinity of the pools on the TCRDF site was not measured, these ponds likely are too saline to support tiger salamanders. Eggs cannot survive in water of salinity greater than 6 to 7 parts per thousand, and larvae cannot survive in water of salinity greater than 7 to 8 parts per thousand.²³

Tiger salamanders have been recorded approximately one-half mile east of the site, and suitable habitat (seasonal freshwater pools) are present in the areas east of the railroad tracks. Tiger salamanders are known to disperse up to a mile or more from aquatic breeding sites to upland aestivation sites, and therefore, the TCRDF site is within dispersal distance of breeding sites to the east. The railroad tracks represent an impediment to dispersal, but voids in the rocky railroad bed are large enough to allow salamanders to disperse onto the TCRDF site. Dispersing individuals of this species, therefore, may occur on the site.

The California tiger salamander is unlikely to breed, or at least to breed successfully, on the TCRDF site due to the saline nature, frequent disturbance, and (in most years) short duration of ponding in the disturbed seasonal depressions on the site. Occasional dispersants from breeding sites to the east may reach the site, but the habitat within the Resource Recovery Area is considered unsuitable upland habitat for this species due to the paucity of mammal burrows and frequent, intensive disturbance of this area.

California Clapper Rail (*Rallus longirostris obsoletus*). Federal Listing Status: Endangered; State Listing Status: Endangered. The California Clapper Rail is a secretive marsh bird currently endemic to the marshes of San Francisco Bay. California Clapper Rails nest in salt and brackish marshes along the edge of the bay, and are most abundant in extensive salt marshes and brackish marshes dominated by cordgrass, pickleweed, and marsh gumplant, and containing complex networks of tidal channels. Although California Clapper Rails are typically found in tidal salt marshes, they have also been documented in brackish marshes in the South Bay.

The habitat on the TCRDF site is not suitable for Clapper Rails due to the absence of cordgrass and gumplant from the marsh habitats on the site, the absence of tidal channels, and the low stature of the pickleweed on the site. Clapper Rails occur along Mowry Slough, and likely along the lower portion of the channel that drains southwestward from the southwestern corner of the TCRDF site. The brackish, very narrow nature of the wetland vegetation along the channel on the northwest side of the landfill makes this area unsuitable for the Clapper Rail.

Western Snowy Plover (*Charadrius alexandrinus nivosus*). Federal listing status: Threatened; State listing status: Species of Special Concern. The Western Snowy Plover is a small shorebird that

²³ Source: Mark Jennings, Ph.D., Unpublished. data

breeds along sandy coastal beaches and, at scattered inland locations, on alkaline flats and playas. Populations of this race have declined due to beach disturbance, the loss of sandy dunes and swales as a result of dune stabilization, and habitat loss at inland breeding sites. Although Snowy Plovers are not thought to have bred historically within the San Francisco Bay due to lack of suitable habitat, they have begun breeding in salt ponds around the bay this century. They nest on the bottoms of dried-out ponds or on islands and separated levees in baylands where they are protected from mammalian predators.

Snowy Plovers breed in salt ponds around the south end of San Francisco Bay, and nesting has been recorded as close to the TCRDF site as salt ponds A22 and A23 southeast of the site. Within the project site, the flats within the muted tidal salt marsh are very limited in extent and are well vegetated, and therefore do not provide suitable breeding habitat. It is possible that Snowy Plovers occasionally forage on these flats, but their occurrence here is expected to be low and irregular, if they occur here at all.

Salt Marsh Harvest Mouse (*Reithrodontomys raviventris*). Federal listing status: Endangered; State listing status: Endangered, Protected. The salt marsh harvest mouse is found only in saline wetlands of San Francisco Bay and its tributaries. The southern subspecies *R. r. raviventris* is restricted to an area from San Mateo County and Alameda County along both sides of San Francisco Bay south to Santa Clara County. The salt marsh harvest mouse occurs with the closely related, ubiquitous and abundant western harvest mouse (*R. megalotis*) at upper edges of marshes and in marginal areas. Both animals occur in pickleweed, but the salt marsh harvest mouse replaces the western harvest mouse in denser areas of pickleweed. *R. raviventris* has declined substantially in recent decades. This decline is due primarily to diking and filling of marshes, subsidence, and changes in salinity brought about by increasing volumes of fresh water discharge into the bay

Although intensive, species-specific surveys were not conducted for this project, Dr. Howard Shellhammer captured two salt marsh harvest mice approximately one mile southeast of the site.²⁴ These individuals were captured in a narrow band of pickleweed that filled a shallow ditch between a fence line and the base of the bed of the railroad track. Although this habitat was not considered optimal habitat, this species may occur where similar pickleweed habitat is present near the railroad tracks along the southernmost end of the site along a non-tidal channel. Additionally, high-quality habitat for the salt marsh harvest mouse occurs throughout most of the muted marsh and in the northern portion of the pickleweed/cattail wetland within the TCRDF. The salt marsh harvest mouse is expected to occur in these portions of the project site. Although a few scattered pickleweed plants are present within the disturbed seasonal depressions within the Resource Recovery Area, no suitable salt marsh harvest mouse habitat occurs within the Resource Recovery Area.

California Species of Special Concern

Northern Harrier (*Circus cyaneus*). Federal listing status: None; State listing status: Species of Special Concern. The Northern Harrier is commonly found in open grasslands, agricultural areas and marshes. Nests are built on the ground in areas where long grasses provide cover and protection. Harriers hunt for a variety of prey, including rodents, birds, frogs, reptiles, and insects by flying slowly and at a low elevation over an area using both sight and sound to detect prey items.

Harriers forage throughout all but the developed habitat of the TCRDF site. The tall herbaceous vegetation in the southern part of the Resource Recovery Area and in marshes on the site may support breeding by a single pair of harriers.

²⁴ Source: California Natural Diversity Database, 2006.

Burrowing Owl (*Athene cunicularia*). Federal listing status: None; State listing status: Species of Special Concern. The Burrowing Owl is a small, terrestrial owl of open country. These owls prefer annual and perennial grasslands, typically with sparse or nonexistent tree or shrub canopies. In California, Burrowing Owls are found in close association with California ground squirrels. Owls use the abandoned burrows of ground squirrels for shelter and nesting. Burrowing Owl populations are thought to be declining throughout much of their range in the United States. Loss of habitat and campaigns against the burrowing mammals upon which Burrowing Owls depend for nesting habitat are suspected causes of this decline. The Bay Area Burrowing Owl population is estimated to have lost 61% of its nesting colonies since the late 1980's.²⁵ The South Bay region (from San Mateo on the Peninsula and Alameda County on the East Bay) supports the state's fourth largest discrete population.

No evidence of Burrowing Owls was observed on the site during surveys conducted for the project. However, this species is known to occur in some numbers in the grasslands and ruderal habitats east and north of the site, and Burrowing Owls are expected to occur on the site at least as occasional foragers. The Resource Recovery Area provides only marginal foraging habitat due to the tall vegetation present in less disturbed areas and the frequent, ongoing disturbance in much of this portion of the site. However, the shorter ruderal vegetation on the slopes of the landfill provide higher-quality foraging habitat for Burrowing Owls. California ground squirrel burrows on the site provide potential roosting and nesting sites for the species, and Burrowing Owls could potentially nest or roost on the site.

Loggerhead Shrike (*Lanius ludovicianus*). Federal Listing Status: None; State Listing Status: Species of Special Concern. The Loggerhead Shrike is a predatory songbird that prefers open habitats interspersed with shrubs, trees, poles, fences, or other perches from which it can hunt. Nation-wide, Loggerhead Shrike populations have declined significantly over the last 20 years. Even with this trend, Loggerhead Shrikes are still considered a fairly common species in California. Nests are built in densely foliated shrubs or trees, often containing thorns, which offer protection from predators and upon which prey items are impaled.

Loggerhead Shrikes forage in the ruderal habitats on the TCRDF site, and the trees near the corporation yard provide potential nesting sites for the species. At most, however, one or two pairs would be expected to breed on the site due to the paucity of trees and shrubs.

Saltmarsh Common Yellowthroat (*Geothlypis trichas sinuosa*). Federal listing status: None; State listing status: Species of Special Concern. The Saltmarsh Common Yellowthroat inhabits emergent vegetation and breeds in fresh and brackish marshes and associated upland areas in the San Francisco Bay Area. This subspecies is one of the approximately 12 subspecies of Common Yellowthroat recognized in North America. The Saltmarsh Common Yellowthroat breeds from mid-March through early August and pairs frequently raise two clutches per year. Because subspecies cannot be reliably distinguished in the field, determination of the presence of Saltmarsh Common Yellowthroat can be achieved only by locating a nest in the breeding range known for this subspecies, or by observing them during the summer months when only the Salt-marsh Common Yellowthroat is present. Wintering areas include coastal salt marshes from the San Francisco Bay region to San Diego County.

Despite the common name, Saltmarsh Common Yellowthroats breed primarily in fresh and brackish marshes. In the South Bay, this species is a fairly common breeder in such habitats virtually wherever they occur, although very small patches of marsh often lack this species. Several males

²⁵ Source: D.F. DeSante and E.D. Ruhlen, unpublished data.

were observed singing in portions of the muted tidal salt marsh, pickleweed/cattail wetland, and Resource Recovery area supporting tall vegetation such as cattails and mustard during site visits, and this species is expected to nest in these areas.

Alameda Song Sparrow (*Melospiza melodia pusillula*). Federal listing status: None; State Listing Status: Species of Special Concern. The Alameda Song Sparrow is one of three subspecies of Song Sparrow breeding only in salt marsh habitats in the San Francisco Bay area. This subspecies is found in marshes bordering the South San Francisco Bay. Here it is most abundant in the taller vegetation found along tidal sloughs, including pickleweed, salt marsh cordgrass and marsh gumplant. It nests from early March to mid-August. Populations of the Alameda Song Sparrow have declined due to the loss of salt marshes around the Bay, although within suitable habitat it is still fairly common.

Song Sparrows were observed to be fairly common in several areas of the TCRDF project site, including portions of the muted tidal salt marsh, pickleweed/cattail wetland, and Resource Recovery area supporting tall vegetation such as cattails and mustard, and Song Sparrows are expected to nest in these areas. The location of the interface between populations of the Alameda Song Sparrow and those of the race breeding in freshwater habitats (*M. m. gouldii*) in the vicinity of the project area is not well known due to difficulties in distinguishing individuals of these two races in the field. Conclusive identification of individual Song Sparrows as *pusillula* (rather than the widespread upland race *M. m. gouldii*) is not possible unless the birds are examined in the hand. It is therefore difficult to make confident determinations about the racial identity of Song Sparrows breeding on the project site.

Due to the freshwater influence in the upland areas of the project area, it is possible that at least some of the Song Sparrows breeding on the site are *gouldii*. However, given the proximity of these habitats to saline habitats on and adjacent to the site, the consulting biologists recommend assuming that all Song Sparrows breeding on the project site could be *pusillula* unless they can be examined in the hand.

Salt Marsh Wandering Shrew (*Sorex vagrans halicoetes*). Federal Listing Status: None; State Listing Status: Species of Special Concern. Formerly more widely distributed in the Bay Area, this small insectivorous mammal is now confined to salt marshes of the South Bay. Salt marsh wandering shrews occur most often in medium-high wet tidal marsh (6 to 8 feet above sea level), with abundant driftwood and other debris for cover. They have also been recorded occasionally in diked marsh. This species is typically found in fairly tall pickleweed, in which these shrews build nests. They breed and give birth during spring, although very little is known regarding the natural history of the species.

This subspecies was formerly recorded from marshes of San Pablo and San Francisco bays in Alameda, Contra Costa, San Francisco, San Mateo, and Santa Clara counties, but captures in recent decades have been very infrequent anywhere in these areas. Shrews are occasionally captured during salt marsh harvest mouse trapping studies, but the difficulty in identifying them to species has precluded a better understanding of the current distribution of this species in the South Bay. It is unknown whether the salt marsh wandering shrew occurs on the TCRDF site. However, because the species has been recorded in diked marshes, the pickleweed-dominated habitat in the muted tidal salt marsh and pickleweed/cattail marsh on the TCRDF site are considered potential habitat for this species.

4.3.1.4 Regulated Habitats

Jurisdictional Waters and Wetlands

Overview

Under Section 404 of the federal Clean Water Act and Section 10 of the Rivers and Harbors Act, areas meeting the regulatory definition of “Waters of the U.S.” (jurisdictional waters) are subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE). These waters may include all waters used, or potentially used, for interstate commerce, including all waters subject to the ebb and flow of the tide, all interstate waters, all other waters (intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of waters otherwise defined as “Waters of the U.S.,” tributaries of waters otherwise defined as “Waters of the U.S.,” the territorial seas, and wetlands (termed Special Aquatic Sites) adjacent to “Waters of the U.S.” (33 CFR, Part 328, Section 328.3). Wetlands on non-agricultural lands are identified using the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987).

The placement of fill into such waters must comply with permit requirements of the USACE. State water quality certification under Section 401 of the Clean Water Act is also required. The State Water Resources Control Board is the state agency (together with the Regional Water Quality Control Boards) charged with implementing water quality certification in California. The Regional Water Quality Control Board (RWQCB) may impose mitigation requirements even if the USACE does not.

On-Site Jurisdictional Waters and Wetlands

A formal wetland delineation prepared in 1992 for the project site and approved by the USACE located the jurisdictional wetland boundaries along the southwestern edge of the landfill and along the berm separating the Resource Recovery Area from the muted tidal salt marsh.²⁶ An updated delineation by WRA in 2002 again designated all areas south/southeast of this berm (i.e., the muted tidal salt marsh habitat in Figure 4.3-1) to be within the regulatory jurisdiction of the USACE; this delineation, which dealt primarily with Section 404 issues, was apparently not submitted to the USACE for confirmation, although the USACE did confirm in a November 18, 2002 letter to Waste Management that no historic Section 10 waters are present within the Resource Recovery Area.

The WRA delineation designated an area within an older berm in the extreme southeastern part of the site, and a linear feature extending northwestward along the eastern boundary of the property along the railroad tracks, as “jurisdictional seasonal wetland areas”, though the delineation report noted that repair of a tide gate may reduce ponding and saturation in these areas to the point that they revert to uplands. Based on habitat mapping by H.T. Harvey in May 2006, the narrow linear feature along the eastern boundary of the site is now upland, ruderal habitat, while the larger area in the outermost southeastern part of the site is at least botanically (and likely hydrologically) similar to the rest of the muted tidal salt marsh.

The disturbed seasonal depressions within the Resource Recovery Area on the project site, and the small detention basins along the southeastern edge of the landfill, have been created either specifically as detention basins or have been excavated incidental to ongoing resource recovery operations (e.g., frequent movement of fill material). Such features have generally been considered

²⁶ Source: LSA. 1992. *Biological Report of the Tri-Cities Recycling and Disposal Facility* (Prepared for Waste Management)

non-jurisdictional by the USACE in the past due to their manmade nature, USACE-authorized fill-material holding area, and ongoing use for construction and operations.²⁷

California Department of Fish and Game Jurisdictional Habitats

Overview

The CDFG has jurisdiction over the bed and banks of rivers, lakes, and streams according to provisions of Section 1601 to 1603 of the Fish and Game Code. The CDFG defines stream to include “intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams (USGS), and watercourses with subsurface flows. Canals, aqueducts, irrigation ditches, and other means of water conveyance can also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife”. The Fish and Game Code requires a Streambed Alteration Agreement for the fill or removal of material within the bed and banks of a watercourse or waterbody and for the removal of riparian vegetation.

On-Site Conditions

Reconnaissance-level field surveys were conducted within the TCRDF project area for streams and other waterways potentially under the regulatory jurisdiction of the CDFG.

The drainage ditch at the perimeter of the landfill was evaluated during the reconnaissance-level surveys using CDFG methodology described in *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607*.²⁸ Given the manmade nature of the landfill drainage ditch found within the project boundaries, and its lack of vegetative cover, it would not be a jurisdictional streambed. There are no on-site channels, drainages or waterways that appear to fall under CDFG jurisdiction.

4.3.1.5 Ordinance and Landmark Trees

The City of Fremont Tree-Removal Controls (Fremont Municipal Code, Sec. 4-5101) serve to protect all trees growing within the city limits having a trunk diameter of six inches or greater at a height measured 4.5 feet above the natural grade of slope. The ordinance protects all trees other than commercial nut and fruit bearing trees, except black walnut and olive trees, or any tree located on a lot or parcel of land which is less than ten thousand square feet in area. A tree-removal permit is required from the City of Fremont city manager for the removal of ordinance-sized trees. The City of Fremont also maintains a list of Landmark Trees (Fremont Municipal Code, Sec. 4-5109) which serves to protect trees having significant girth, height, spread, or is of some unique quality or species. It is unlawful to vandalize, mutilate, remove, or destroy landmark and ordinance trees. In addition, the City of Fremont requires, prior to the issuance of any approval or permit for construction of any improvement of the project site, that all trees on a project site be inventoried and categorized in a Tree Location Plan according to size, species, and spot elevation at the base of each tree (Fremont Municipal Code, Sec. 4-5107). Some of the eucalyptus trees on the site appear to be of ordinance size.

²⁷ The consulting biologists note that confirmation of the 2002 delineation by WRA, or an update to this delineation, would be necessary to ultimately define the limits of the USACE’s jurisdiction under Section 404 on this site.

²⁸ California Department of Fish and Game. 1994. *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607*. Environmental Services Division.

4.3.2 Biological Resources Impacts

4.3.2.1 Thresholds of Significance

For the purposes of this EIR, a biological resources impact is considered significant if the project will:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local ordinances protecting biological resources, such as a tree preservation ordinance; or
- conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.3.2.2 Impacts to Biotic Habitats

Under the proposed project, soil materials will be placed over the existing landfill as part of landfill closure operations. The Resource Recovery Area shown on Figure 2-3 would be used as a borrow area for soil materials for the foundation, low permeability and the vegetative layer.

Within the proposed borrow area, seasonal ponding occurs where there are small depressions due to poor drainage. Under the proposed project, elevations within the borrow area would be lowered by approximately two to four feet and water is likely to pond in the lowest areas, at least seasonally.²⁹ The areas immediately upslope from these ponding areas could support wetland vegetation in the future.

Muted Tidal Salt Marsh and Pickleweed/Cattail Wetlands

Closure of the landfill and continued operation of the Corporation Yard and concrete recycling facility would not directly impact on-site muted tidal salt marsh or pickleweed/cattail wetlands adjacent to the landfill and Resource Recovery Area.

As discussed in *Section 4.4, Hydrology and Water Quality*, Best Management Practices will be used during landfill closure and soil excavation and conditioning operations to avoid the inadvertent placement or movement of sediment into wetlands adjacent to landfill, Corporation Yard, and the Resource Recovery Area.

²⁹ Steve Rottenborn, Ph.D., H.T. Harvey & Associates, personal communications, November 28, 2006.

Disturbed Seasonal Depression, Ruderal, Developed, and Aquatic Habitat

Landfill, Corporation Yard, and Concrete Recycling Areas

The disturbance of the ruderal habitat on the landfill will result in a temporary loss of such habitat and a temporary displacement of wildlife species that use this area. Following landfill closure the landfill will be revegetated and will again provide ruderal habitat. Ruderal and developed habitats predominantly support common plant and wildlife species. These habitats are locally and regionally common, and most of biotic resources associated with these habitats will continue to be abundant following the capping of and closure of the Tri-Cities Landfill. Loss or temporary disturbance of these habitats would not result in significant impacts to biological resources.

The drainage ditch along the northwestern and southwestern sides of the landfill was man-made and was constructed to contain any sediment or pollution draining from the landfill to prevent it from entering the Alameda County Flood Control District channel to the north (and ultimately San Francisco Bay). This ditch provides limited, low-quality aquatic habitat for wildlife, and habitat of this type is regionally abundant. Impacts to the habitat within this drainage ditch (e.g., by filling or sedimentation during landfill closure) would be less than significant.

Borrow Area

Under existing conditions, the disturbed seasonal depression habitat and ruderal habitat within the Resource Recovery Area is continually manipulated to meet landfill operation needs. The fill material present in this area supports an assemblage of primarily non-native plant species. No special-status plant species were found in this area, nor are any expected to occur in this habitat. Its biological value is limited due to the frequent and ongoing disturbance of this area and the lack of stable (i.e., infrequently disturbed) wetlands or pools. Although the disturbed seasonal depressions provide some of the functions of wetlands or aquatic habitats by providing foraging habitat for waterbirds (and, in a wet year such as 2006, breeding habitat for some species), these artificial features are continuously disturbed. The much higher-quality, naturally occurring wetlands to the south are not manipulated and offer contiguous, natural habitat for plant and wildlife use. Loss of the disturbed seasonal depression and ruderal habitat as a result of borrow activities will result in the displacement of some common wildlife species and will result in a loss of habitat for these species. The borrow area, however, represents a very small fraction of such habitat available regionally, and the loss of such habitat will not result in significant impacts to biological resources.

Impact BIO-1: Landfill closure, excavation of a borrow area, and continued operation of a Corporation Yard and concrete recycling facility at the TCRDF would not result in substantial impacts to sensitive habitats. **(Less Than Significant Impact)**

4.3.2.3 *Impacts to Special Status Plant and Animal Species*

Impacts to Special Status Plant Species

As discussed in *Section 4.3.1.3*, no special status species are expected or have been observed on the project site. The proposed project therefore would not result in substantial impacts to special status plants or their habitat.

Impact BIO-2: The proposed project would not result in impacts to special status plants. **(Less Than Significant Impact)**

Impacts to Special Status Animal Species

Vernal Tadpole Shrimp

The TCRDF site does not provide suitable breeding habitat for vernal tadpole shrimp species due to ongoing disturbance associated with resource recovery activities. It is possible; however, that vernal pool tadpole shrimp may occasionally be transported to the site by birds. Given the infrequency with which individual vernal pool tadpole shrimp would occur on the site (if at all), impacts to occasional individuals would be less than significant.

Impact BIO-3: The proposed project would not result in substantial impacts to vernal tadpole shrimp, or their habitat. **(Less Than Significant Impact)**

California Tiger Salamander

The TCRDF site does not provide suitable breeding habitat for California tiger salamanders due to the absence of stable breeding ponds. Ongoing disturbance from resource recovery activities also limits the value of upland habitat for this species. More suitable habitat, managed for these species, is available northeast of the railroad tracks on the San Francisco Bay National Wildlife Refuge. Habitat in the Resource Recovery Area is of such limited value (due to disturbance) that the loss of habitat in this area would be less-than-significant.

California tiger salamanders are known to breed within about 0.5 miles from the project site and individuals could potentially disperse into impact areas on the project site. Construction activities, in particular activities in the Resource Recovery Area, have the potential to result in injury or mortality of tiger salamanders due to crushing or trampling. Tiger salamanders may also become trapped in the borrow pits, or attempt to breed in any pools that form within these pits, with little chance of successful breeding due to disturbance and the possible salinity of the water.

Although habitat quality on-site is poor, individual tiger salamanders could reach the Resource Recovery Area by dispersing from breeding ponds east of the project site. Extensive grading of the borrow area as a part of landfill closure activities could result in injury or mortality of California tiger salamanders that move onto the site.

Impact BIO-4: The proposed project would not result in substantial impacts to breeding or upland habitat for California tiger salamander. **(Less Than Significant Impact)**

Impact BIO-5: Grading and excavation activities in the borrow area during landfill closure could impact individual tiger salamanders if they move onto the site from breeding ponds to the east. **(Significant Impact)**

Habitat for Special Status Birds

A number of special-status wildlife species occur on the TCRDF site only as occasional visitors, migrants, or transients. These species may occasionally forage on the site, but they are not expected to breed there. These species include:

- Long-billed Curlew
- White-faced Ibis
- Double-crested Cormorant
- American White Pelican
- California Gull
- Sharp-shinned Hawk

- Cooper’s Hawk
- Short-eared Owl
- American Peregrine Falcon
- Merlin
- Prairie Falcon
- Golden Eagle
- White-tailed Kite
- Western Snowy Plover
- California Horned Lark
- California Yellow Warbler
- Tricolored Blackbird

The project will have no effect on the breeding success of these species, although it may result in a very small reduction of foraging habitat available to them locally or regionally. Due to the abundance of similar habitats locally and regionally and the infrequency with which most of these species occur on the project site, the project would have a less-than-significant impact on these species.

Several special-status species, including the Northern Harrier, Loggerhead Shrike, Alameda Song Sparrow, Saltmarsh Common Yellowthroat and Burrowing Owl may breed on the site. At most, one pair of harriers and one or two pairs of shrikes may nest on the site. Impacts to breeding habitat of one or two pairs of these birds will not substantially impact regional populations or habitat for the Northern Harrier and Loggerhead Shrike. The project would impact only a very small amount of habitat available to the Alameda Song Sparrow and Saltmarsh Common Yellowthroat regionally, and impacts to these species’ habitat would not be substantial. Impacts to Burrowing Owl habitat are expected to be minimal in the Resource Recovery Area (due to the paucity of ground squirrel burrows and frequent disturbance) and the landfill is expected to provide high-quality foraging habitat for owls following its closure. Impacts to Burrowing Owl habitat also would not be substantial.

Impact BIO-6: The proposed project would not result in substantial adverse impacts to special status animal species habitat. **(Less Than Significant Impact)**

Individual Burrowing Owls and Their Burrows

No Burrowing Owls were observed on the project site during reconnaissance-level surveys in 2006. Burrowing Owls occur in a number of locations immediately north and east of the site. All but the aquatic and developed portions of the TCRDF site provide suitable foraging habitat for Burrowing Owls, and the ground squirrel burrows on the site (primarily on the inactive slopes of the landfill) provide potential nesting and roosting burrows. Therefore, it is possible that Burrowing Owls could roost or nest in burrows on the site in small numbers at some time in the future.

Despite the occurrence of Burrowing Owls in multiple locations in the western Fremont and Newark areas, this species is regionally rare and declining. Therefore, any impacts from the TCRDF project that result in the injury or mortality of individual owls or active nests, such as excavation or grading, or project-related disturbance that results in the abandonment of eggs or nestlings, would be considered significant.

Impact BIO-7: Although not currently on the site, landfill closure activities could impact individual Burrowing Owls in the event Burrowing Owls move onto the landfill or borrow area in the future. **(Significant Impact)**

Nesting Alameda Song Sparrow and Saltmarsh Common Yellowthroat

Song Sparrows, possibly including the Alameda Song Sparrow, and Saltmarsh Common Yellowthroats are fairly common in dense wetland and ruderal vegetation on the project site. Both species are listed as Species of Special Concern by the CDFG. If project activities such as vegetation removal, excavation, and grading take place in the borrow area during the breeding season (roughly early March to mid-August for these two species) in areas supporting suitable nesting habitat, the nests, eggs, and/or young of these species could be destroyed. In addition, project activities performed in close proximity to active nests could cause disturbance resulting in the abandonment of eggs or young. Given the number of individuals of these species present on the site, including the proposed borrow areas, such destruction or abandonment of nests of these species would be a significant impact.

Impact BIO-8: Removal of dense vegetation during the nesting season could result in impacts to nesting Alameda Song Sparrow and Saltmarsh Common Yellowthroats. **(Significant Impact)**

Impacts to Individual Salt Marsh Harvest Mice and Salt Marsh Wandering Shrews

The endangered salt marsh harvest mouse is expected to occur in the muted marsh, the pickleweed/cattail habitat, and possibly the southernmost extreme of the ditch adjacent to the railroad and the muted tidal marsh. The salt marsh wandering shrew may also occur in these areas. These habitats would not be impacted directly by the TCRDF landfill closure project.

Salt marsh harvest mouse and salt marsh wandering shrew could potentially occur in dense vegetation at the edges of these habitats and grading of dense vegetation in these areas could result in the injury or mortality of individuals. Such loss would be considered a significant impact.

Impact BIO-9: The proposed project would not result in direct impacts to salt marsh harvest mouse or salt marsh wandering shrew habitat. **(Less Than Significant Impact)**

Impact BIO-10: Grading and excavation activities in dense vegetation in the borrow area near pickleweed areas during landfill closure could result in impacts to individual salt marsh harvest mice and salt marsh wandering shrews. **(Significant Impact)**

4.3.2.4 *Impacts to Regulated Habitats*

Landfill closure and excavation of soil materials are not proposed to extend into jurisdictional waters or wetlands identified on the TCRDF site.

Impact BIO-11: The proposed project would not directly impact federally protected wetlands through direct removal or filling. **(Less Than Significant Impact)**

4.3.2.5 *Impacts to Trees*

There are no planted trees on the landfill or within the borrow area that would be impacted by landfill closure activities.

Impact BIO-12: The proposed project would not result in impacts to ordinance trees. (**Less Than Significant Impact**)

4.3.2.6 Other Impacts of General Plan Amendment and Zoning

Future development of industrial uses of an unknown nature and extent could have impacts on the habitats of the nearby Don Edwards San Francisco Bay National Wildlife Refuge if they attract large numbers of people onto the site. No such development is proposed at this time. Since nothing is known of future uses other than the Corporation Yard and concrete recycling facility, other uses would be speculative at this time.

4.3.3 Mitigation and Avoidance Measures

4.3.3.1 Impacts to Special Status Animal Species

MM BIO-5.1: **Exclusion of California Tiger Salamanders from Project Site.** To minimize possible impacts to individual tiger salamanders from borrow activities, a barrier to tiger salamander dispersal shall be placed along the eastern boundary of the site, from the existing entrance road southeast to the southeastern limit of the borrow area. This barrier should be designed to prevent salamanders dispersing from breeding sites east of the railroad tracks from entering the project area. This barrier shall be designed by a qualified herpetologist, and checked and maintained regularly to ensure that gaps that could allow salamanders to enter the project site do not occur. Because the borrow activities are proposed to be phased, such a barrier shall also be placed between borrow areas and portions of the Resource Recovery Area not being used for borrow activities, to prevent any salamanders from entering the active borrow area.

MM BIO-5.2: **Salvage of Individual Tiger Salamanders During Project Activities.** While Mitigation Measure BIO-5.2 would minimize the probability of salamanders entering the site, any salamanders already present in the borrow area shall be salvaged and translocated off site to the extent practicable. Although detecting every tiger salamander on a site is not feasible due to this species' secretive, subterranean habits, a qualified herpetologist shall be present during removal of debris and initial clearing and grubbing on the Resource Recovery Area prior to excavation at a particular borrow area. The herpetologist would look for individual tiger salamanders that may be taking refuge under debris or in the few mammal burrows present on the site. Any individuals detected would be captured and translocated to a safe location outside the project area; this relocation site shall be approved by the USFWS prior to translocation.

MM BIO-5.3: **On-site Construction Crew Education Program for Tiger Salamander.** A worker education program shall take place before the commencement of borrow excavation activities. A USFWS-approved biologist shall explain to construction workers how best to avoid impacts to California tiger salamanders. The approved biologist will conduct a training session that would be scheduled as a mandatory informational field meeting for contractors and all construction personnel. The field meeting will include topics on species identification, life history, descriptions, and habitat

requirements during various life stages. Handouts, illustrations, photographs, and project mapping showing areas where minimization and avoidance measures are being implemented will be included as part of this education program. The program will increase the awareness of the contractors and construction workers about existing federal and state laws regarding endangered species as well as increase their compliance with conditions and requirements of resource agencies.

Prior to the start of work each day, dedicated construction personnel will inspect pits that were left open overnight for tiger salamanders. If a tiger salamander is encountered during project construction, the following protocol will be implemented:

- All work that could result in direct injury, disturbance, or harassment of the individual animal must immediately cease;
- The foreman will be immediately notified;
- The foreman will immediately notify a qualified biologist, who in turn will immediately notify USFWS and CDFG; and
- If approved by the USFWS and CDFG, the qualified biologist will remove the individual to a safe location nearby.

MM BIO 7.1:

Pre-construction Surveys for Burrowing Owl. Pre-construction surveys for Burrowing Owls shall be conducted in potential habitat (inactive slopes of the landfill and the borrow area) in conformance with CDFG protocols, no more than 30 days prior to the start of any ground-disturbing activity such as clearing and grubbing, excavation, or grading. If no Burrowing Owls are located during these surveys, no additional action would be warranted. However, if Burrowing Owls are located on or immediately adjacent to the site the following mitigation measures will be implemented.

- **Buffer Zones.** If Burrowing Owls are present during the nonbreeding season (generally September 1 to January 31), a 150-foot buffer zone, within which no new project-related activity will be permissible, shall be maintained around the occupied burrow(s). During the breeding season (generally February 1 to August 31), a 250-foot buffer, within which no new project-related activity will be permissible, will be maintained between project activities and occupied burrows. Owls present at burrows on the site after February 1 will be assumed to be nesting on or adjacent to the site unless evidence indicates otherwise. This protected area will remain in effect until August 31, or at the discretion of the CDFG and based upon monitoring evidence, until the young owls are foraging independently.
- If ground-disturbing activities will directly impact occupied burrows, eviction outside the nesting season may be permitted pending evaluation of eviction plans by, and receipt of formal written approval of the relocation from the CDFG. No Burrowing Owls shall be evicted from burrows during the nesting season (February 1 through August 31) unless evidence indicates that nesting is not actively occurring (e.g., because the owls have not yet begun nesting early in the season, or because young have already fledged late in the season).

A report on the results of the pre-construction survey(s) for Burrowing Owls, including any required buffer zones or protection measures, shall be submitted to the Planning Director prior to the start of grading each year and/or at the start of a new phase of grading or landfill closure.

MM BIO-8.1:

Prior to ground disturbing activities in the borrow area, suitable habitat for breeding by Alameda Song Sparrow or Saltmarsh Common Yellowthroats (e.g., dense wetland and ruderal vegetation) will be identified and mapped by a qualified biologist. To the extent feasible, vegetation that could be used for breeding by these species within the area to be graded during the next year will be removed during the non-breeding season (mid-August to late February). In addition, all vegetation that could serve as suitable nesting habitat for these species, and that is located within 50 feet of areas of disturbance, shall be removed to prevent the project from disturbing active nests. During the construction period, the project site and adjacent areas shall be maintained so that no vegetation suitable for nesting by Song Sparrows and Common Yellowthroats is allowed to develop. If vegetation is removed during the non-breeding season prior to construction, no impacts to nesting would occur.

A report documenting the removal of vegetation within the active borrow area shall be submitted to the Planning Director prior to the start of grading each year.

MM BIO 8.2

In the event suitable vegetation has not been removed and project activities are to occur during the breeding season in or near potential nesting habitat for Alameda Song Sparrow or Saltmarsh Common Yellowthroats, a qualified ornithologist shall conduct pre-disturbance surveys no more than 15 days prior to the initiation of disturbance in any given area. If Song Sparrow or Common Yellowthroat nests are found to be present within or near (i.e., within 50 feet of) the impact areas during the breeding season, a buffer free from any new project-related disturbance shall be established around any active nest, the width of this buffer being determined by an experienced ornithologist in consultation with CDFG. This buffer shall be maintained until nesting has been completed.

A report on the results of any pre-construction surveys for Alameda Song Sparrow and Saltmarsh Common Yellowthroats, including any required buffer zones or protection measures, shall be submitted to the Planning Director prior to the start of grading each year.

MM BIO 10.1:

Exclusion of Individual Salt Marsh Harvest Mice and Salt Marsh Wandering Shrews from Project Site. A barrier to exclude salt marsh harvest mice and salt marsh wandering shrews from the project's impact areas shall be constructed under the guidance of a qualified biologist. The fence shall consist of a three-foot tall, tight cloth silt fence toed into the soil at least three inches deep and supported with stakes. Additionally, vegetation within the impact area and within ten feet of the barrier shall be removed by hand; such bare areas are unlikely to be crossed by salt marsh harvest mice and salt marsh wandering shrews and provide additional insurance against the

dispersal of individuals into the project site. Alternatively (if the barrier of bare ground is not practicable), a three-foot-high smooth metal fence toed into the soil at least three inches shall be constructed instead. All fence construction and vegetation removal shall be conducted under the supervision of a qualified biological monitor who is permitted by the USFWS to move salt marsh harvest mice out of the construction area.

MM BIO-10.2: **Salvage of Individual Salt Marsh Harvest Mice and Salt Marsh Wandering Shrews During Project Activities.** While Mitigation Measure BIO-10.1 would minimize the probability of salt marsh harvest mice and salt marsh wandering shrews entering the site, any individuals already present in the impact areas should be salvaged and translocated off site to the extent practicable. Although detecting every individual on a site is not feasible due to these species' secretive habits, a qualified mammalogist shall be present during construction of the barrier fence, removal of vegetation, and initial clearing and grubbing within ten feet of the barrier fence. The mammalogist would look for individual salt marsh harvest mice and salt marsh wandering shrews that may be present within the project area. Any individuals detected would be captured and translocated to a safe location within the closest suitable, pickleweed-dominated habitat.

A report documenting the construction of the exclusionary fencing and translocation of any salt marsh harvest mice or salt marsh wandering shrews shall be submitted to the Planning Director prior to the start of grading of the borrow area each year.

MM BIO-10.3: **On-site Construction Crew Education Program for Salt Marsh Harvest Mice or Salt Marsh Wandering Shrews.** A worker education program will take place before the start of borrow excavation each year. A USFWS-approved biologist will explain to construction workers how best to avoid impacts to salt marsh harvest mice and salt marsh wandering shrews. The approved biologist will conduct a training session that would be scheduled as a mandatory informational field meeting for contractors and all construction personnel. The field meeting will include topics on species identification, life history, descriptions, and habitat requirements. Handouts, illustrations, photographs, and project mapping showing areas where minimization and avoidance measures are being implemented will be included as part of this education program. The program will increase the awareness of the contractors and construction workers about existing federal and state laws regarding special-status species as well as increase their compliance with conditions and requirements of resource agencies.

4.4.4 Conclusions Regarding Biological Resources Impacts

Implementation of the proposed landfill closure, General Plan amendment, and zoning, including soil borrow activities, and continued operation of a Corporation Yard and concrete recycling facility, would not result in significant impacts to sensitive habitats or special status plants or substantial impacts to habitat for special status animal species. **(Less Than Significant Impacts).**

Implementation of proposed mitigation measures would reduce or avoid possible impacts to individual California tiger salamanders, Burrowing Owls, Alameda Song Sparrows, Salt Marsh

Yellowthroats, Salt Marsh Harvest Mice, and Salt Marsh Wandering Shrews to a less than significant level. **(Less Than Significant Impacts with Mitigation)**

4.4 HYDROLOGY AND WATER QUALITY

The following discussion on drainage and hydrology is based in part on information in the Final Closure/Post Closure Maintenance Plan and Joint Technical Document for the TCRDF site. A copy of the text of the Final Closure and Postclosure Maintenance Plan is included in Appendix B of this EIR.

4.4.1 Existing Setting

4.4.1.1 *Regulatory Framework*

Solid Waste Facility and Industrial Wastewater Regulations

The San Francisco Regional Water Quality Control Board (RWQCB) regulates landfills, waste ponds, and other waste disposal to land operations, including both active and closed facilities. The primary concern of the RWQCB is to assure that wastes contained in these facilities do not escape to either surface water or groundwater. Regulation consists of design standards for liners and covers, environmental monitoring, and cleanup when necessary.

Environmental monitoring of landfills is required under Title 27 of the California Code of Regulations [Section 21760(a)(3)]. This monitoring includes monitoring of groundwater, the unsaturated zone (or vadose zone) beneath the landfill, leachate, stormwater, and landfill gas.

Monitoring of underlying groundwater is required on a semi-annual basis. Site-specific monitoring programs evaluate hydrogeologic conditions, background water quality, and the chemical and physical constituents of landfill leachate. The constituents of concern (such as specific volatile organic compounds, pH, and total nitrogen) for each site are identified in a Monitoring and Reporting Program. Sampling from a network of monitoring wells around a site is a part of the required environmental monitoring.

Leachate monitoring wells are used to collect leachate at the bottom of the refuse within the landfill. Levels of leachate in the monitoring wells are measured regularly to assess the buildup and/or removal of leachate.

Wastewater discharges by industrial facilities, such as a landfill, are governed by Wastewater Discharge Permit requirements of the Union Sanitary District. At the TCRDF, monitoring of hydrocarbons, heavy metals, and general constituents (such as pH) is required.

Nonpoint Source Pollution Regulations and Programs

Under Section 304(1) of the Federal Clean Water Act, the U.S. Environmental Protection Agency (EPA) was mandated to develop the National Pollution Discharge Elimination System (NPDES) Permit application requirements for various storm water discharges, including those from industrial sites, municipal storm drain systems, and construction sites. The State Water Resources Control Board also has adopted a Nonpoint Source Management Program Plan in an effort to control nonpoint source pollution in California. The Nonpoint Source Management Program Plan and NPDES Permits are administered statewide by the Regional Water Quality Control Boards.

The NPDES General Permit for Construction Activities applies for projects that disturb over one acre of soil. The permit requires submittal of a Notice of Intent (NOI) to the RWQCB and development

and implementation of a Stormwater Pollution Prevention Plan (SWPPP) to control discharge associated with construction activities.

The RWQCB also has issued a municipal stormwater NPDES permit to the Alameda Countywide Clean Water Program (ACCWP) and 14 Alameda County cities (including Fremont), the Alameda County Flood Control and Water Conservation District, and the Zone 7 Water Agency as co-permittees. ACCWP assists the co-permittees with the implementation of local stormwater pollution prevention programs and the municipal permit.

4.4.1.2 *Flooding*

The natural topography of the site is relatively flat; however, the landfill mound is over 135 feet above mean sea level (msl).

According to the Flood Insurance Rate map produced by the Federal Emergency Management Agency (FEMA), the project site is located within a 100-year tidal flood zone. In the event of 100-year flooding conditions, water up to an elevation of eight feet msl would flood the area.³⁰ The landfill, with surface elevations over 135 feet msl, is above the mapped flood elevation and an existing flood control levee at the perimeter of the landfill area protects the landfill from inundation in the event of a 100-year storm or 100-year high tide in nearby San Francisco Bay. The existing levee is 15 feet thick and 10.5 feet high.³¹

The landfill is located adjacent to two salt evaporation ponds (Pond M5 and M6) that are separated from San Francisco Bay by levees. Waves generated by a 100-year storm would be minimized by surrounding levees. The ponds are relatively shallow, which also would minimize wave size.

4.4.1.3 *Drainage*

The project site drains to the Alameda County Flood Control channel and Mowry Slough to the north and Albrae Slough to the south. Albrae Slough drains to the lower reach of Coyote Creek. Both Mowry Slough and Coyote Creek connect to San Francisco Bay (refer to Figure 4.4-1). The site drains to channels considered by the RWQCB to be tidally influenced or primarily depositional near their outfall in San Francisco Bay.³²

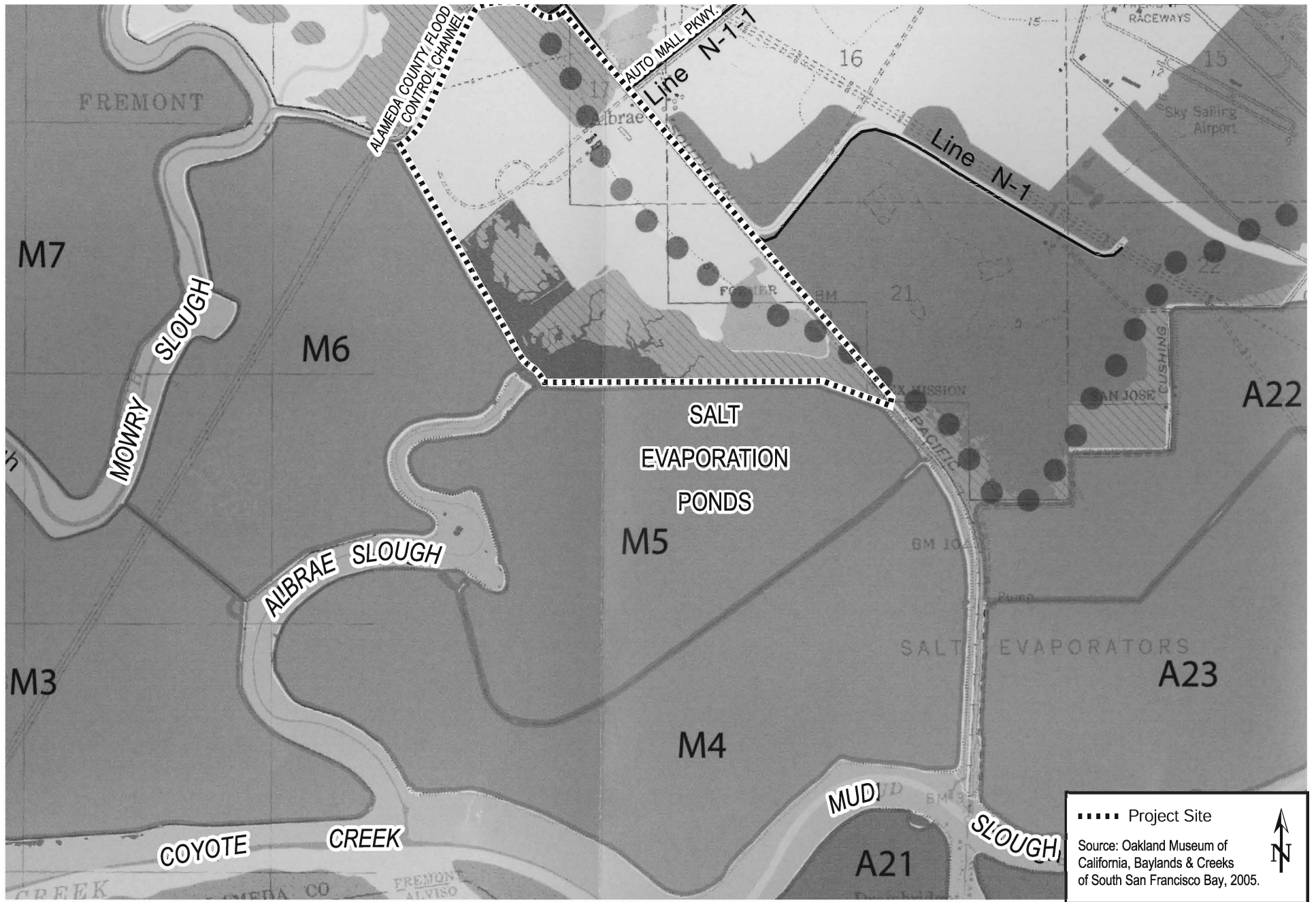
Most of the undeveloped or less developed areas of the TCRDF site drain to Albrae Slough. Local surface ponding occurs in the undeveloped areas during the rainy season because of the shallow drainage gradients.

The landfill is an elevated knoll. Stormwater runoff from bench and slope areas is directed to ditches and conveyed to the perimeter of the landfill. Storm water runoff from the northern one-third of the landfill flows to a ditch along the easterly edge of the landfill. Flows are pumped to the north perimeter ditch and discharged to the adjacent Alameda County Flood Control District channel (Line N) by way of a 36-inch concrete outfall and flap gate. Runoff from the southern two-thirds of the landfill drains to the southwest corner of the site, where it collects. A pump lifts this water to the

³⁰ Federal Emergency Management Agency. *Flood Insurance Rate Map*. Community-Panel Number 0650280045C. July 16, 1987.

³¹ Source: Joint Technical Document (2004).

³² Source: RWQCB Amendment Revising Order No. R2-2003-0021, March 14, 2007. Under the RWQCB municipal stormwater NPDES permit requirements for the City of Fremont, a Hydromodification Plan (HMP) is not required for new development in tidally influenced areas as these areas are not considered susceptible to substantial modification (e.g. new erosion or sedimentation) of the channels by new runoff.



..... Project Site

Source: Oakland Museum of California, Baylands & Creeks of South San Francisco Bay, 2005.

LOCAL HYDROLOGY

FIGURE 4.4-1

perimeter ditch around the landfill. Water in the ditch flows north and is discharged via the flapgate to the Alameda County Flood Control District channel. Currently, stormwater flows from the Corporation Yard drain towards the perimeter ditch for the landfill (refer to Figure 2-7).

Leachate is water that infiltrates into and moves through the landfill. Leachate and intercepted groundwater collected from the landfill is conveyed to the Union Sanitary District for treatment. It is not discharged to the local storm drainage system.

Storm water from the active face of the landfill (i.e., areas actively receiving waste materials) is collected separately from vegetated or covered areas of the landfill. Runoff from the open, active areas of the landfill is directed to the leachate collection system for disposal.

4.4.1.3 Groundwater and Hydrogeology

Groundwater is found in two principal zones, a surficial zone in Younger Bay Mud and the underlying Newark Aquifer where groundwater is found under confined conditions.³³

Groundwater levels near the surface fluctuate seasonally and the groundwater occurs under unconfined conditions.³⁴ Groundwater levels are generally higher in the spring and winter than in the summer and fall. Groundwater flow is generally toward the west, toward San Francisco Bay. Groundwater flow, however, is locally influenced by the Alameda County Flood Control Channel to the north, salt evaporation ponds to the west and south and water drainage channels to the east. The surface of the water-table underlying the site, therefore, is locally complex. The water table locally receives recharge from salt evaporation ponds and discharges to or recharges from the flood control channel. Under the landfill, groundwater levels can be raised due to hydrostatic pressure associated with the weight of the overlying landfilled materials.

Water levels in the salt evaporation ponds immediately west of the site were measured at five feet msl. The water levels in the salt ponds appear to serve as a boundary to the movement of shallow groundwater from the site and, as noted above, there appears to be some local recharge of the water table under the site from the salt evaporation ponds. Groundwater in this shallow aquifer maybe two to four feet below the existing ground surface.³⁵

Regionally, the project site lies within the Niles Cone Groundwater Basin.³⁶ The groundwater basin encompasses the alluvial fan of Alameda Creek, extending south and west across the East Bay Plain and under San Francisco Bay. The Niles Cone consists of several flat-lying aquifers, the shallowest of which is the Newark Aquifer. This aquifer is bracketed by clay aquitards. Beneath the landfill, the upper layer of the Newark Aquifer consists of alternating layers of clean, fine to coarse-grained sands, with sandy to clayey gravel lenses. The top of the Newark Aquifer is found at elevations ranging from 11 feet to 35 feet below msl. The Newark Aquifer is separated from the unconfined aquifer in the Younger Bay Mud by Older Bay Mud, which serves as an impervious confining layer. Groundwater in the Newark Aquifer is principally replenished by the infiltration of streamflow in the

³³ Golder Associates, Inc., 2004. *Final Closure and Postclosure Maintenance Plan for Fill Area 1, Tri-Cities Recycling and Disposal Facility, Fremont, California.*

³⁴ In an unconfined aquifer the upper surface of the water table is open to the atmosphere through permeable overlying material and the movement of the groundwater is influenced by gravity. The height of the water table in an unconfined aquifer will be the same as the water level in a drilled well.

³⁵ Earth Tech. 1998. *Site-Specific Monitoring and Reporting Program* (for TriCities Waste Management). November 1998.

³⁶ Earth Tech. 1998. *Site-Specific Monitoring and Reporting Program* (for TriCities Waste Management). November 1998.

upper part of the groundwater system in alluvial cone areas. Groundwater conditions in the underlying Newark Aquifer were found to be slightly artesian.³⁷

Capillary Rise

The capillary fringe is a zone in the soil above the ground water table that remains saturated or almost saturated due to the attraction of water molecules to soil surfaces (pore space). Based on the grain size of the sediments in the Young Bay Mud on the site, the capillary fringe (height of saturation above free-flowing groundwater due to capillary forces) is estimated to be between 23 and 98 inches above the uppermost groundwater level.

Separation of Waste From Groundwater and the Leachate Collection System

Landfills are currently required to have a minimum five foot separation between groundwater and waste materials. Landfilling at the TCRDF, formerly known as the Durham Landfill, was started prior to these regulatory requirements and there is not a five foot separation between shallow groundwater or the capillary rise in the underlying Young Bay Mud and waste at the site.

The leachate collection and removal system at the landfill, installed in 1991, is designed to create an inward gradient around the landfill to prevent migration of leachate from the landfill into groundwater. The system consists of an approximately 7,000 foot perimeter drainage trench that is sloped to collection sumps. Leachate collected in the sumps is pumped to a force main and discharged to the sanitary sewer. As described above, the leachate is conveyed to the Union Sanitary District for treatment.

As outlined in the 2006 Leachate Management Plan for the TCRDF, standard practices to reduce the generation of leachate at the landfill are used at the site. These measures include: prohibiting disposal of liquid wastes, restricting the size of the active disposal area to minimize infiltration of rainwater, minimizing the use of dust control water to the extent practicable, placing adequate daily cover or alternate daily cover over wastes, maintaining vegetation on interim closed areas, intercepting stormwater run-on to the landfill, collecting and handling stormwater run-off, and collection and removal of landfill gas which helps to remove moisture from the landfill.³⁸

4.4.1.4 Water Quality

Surface Water

Sources of nonpoint source pollutants on the site include sediment from ground surfaces and roadways and some oil and grease from trucks, equipment and other vehicles using the site.

Runoff from the landfill area is controlled and monitored (including testing and reporting) in conformance with existing Waste Discharge Requirements issued by the Regional Water Quality Control Board and a Stormwater Pollution Prevention Plan (SWPPP) for the industrial (landfill) uses on the site. If seepage from the landfill occurs and reaches surface waters, identified constituents of

³⁷ Source: Earth Tech. 1998. *Site-Specific Monitoring and Reporting Program* (for TriCities Waste Management). November 1998. Under artesian conditions in a confined aquifer, layers of impermeable materials, such as clay, impede the movement of water in and out of the aquifer and the water can be “pressurized” (i.e., it will rise in a drilled well).

³⁸ Source: Waste Management Western Group Engineering. 2006. *2006 Leachate Management Plan, Tri-Cities Recycling and Disposal Facility Auto Mall Parkway, Fremont, California*. May 2006.

concern include volatile and semi-volatile organic compounds, pesticides, metals and various water quality parameters, such as pH, nitrogen, and total suspended solids.

Groundwater

Groundwater is monitored on a routine basis at the TCRDF. The constituents of concern related to landfilling activities on the site include:

- Volatile organic compounds (such as vinyl chloride and 1,1, Dichloroethane)
- Semi-volatile organic compounds (such as phenol)
- Pesticides
- Metals
- Basic water quality parameters such as alkalinity, chemical oxygen demand, chloride, dissolved iron, nitrate-nitrogen, ammonium-nitrogen, total nitrogen, total organic carbon, total phenols, total dissolved solids, total suspended solids, pH, and electrical conductivity

Groundwater monitoring wells are located at the perimeter of the landfill, along the eastern boundary of the site, and in the wetland area west of the Resource Recovery Area levee.³⁹ Groundwater monitoring is conducted semi-annually. Constituents of concern have not been detected in the groundwater monitoring wells at concentrations exceeding regulatory limits. Detection of constituents in groundwater above regulatory limits requires immediate corrective action measures in accordance with Regional Water Quality Control Board requirements and TCRDF operating permits.

Leachate Monitoring

As noted previously, the landfill has a perimeter leachate collection and removal system designed to prevent the migration of leachate from landfill materials to groundwater. Levels of leachate liquid in the landfill are monitored and leachate is removed from the landfill to avoid “leachate breakout” from the landfill to groundwater.⁴⁰

Leachate within the landfill is also collected periodically and analyzed as part of the leachate monitoring program at the landfill. The leachate, which has been in contact with waste materials, can contain elevated concentrations of organic compounds, pesticides, metals, nitrogen, and other compounds. These constituents are common to landfill leachate and are expected to occur in the leachate collected at the landfill. The collected leachate is discharged to the Union Sanitary District treatment facility to avoid effecting groundwater below the site.

4.4.2 Hydrology and Water Quality Impacts

4.4.2.1 *Thresholds of Significance*

For the purposes of this EIR, a drainage and water quality impact is considered significant if the project will:

³⁹ Source: Earth Tech. 1998. *Site-Specific Monitoring and Reporting Program* (for TriCities Waste Management). November 1998.

⁴⁰ Source: Waste Management Western Engineering Group. 2006. *2006 Leachate Management Plan, Tri-Cities Recycling and Disposal Facility Auto Mall Parkway, Fremont, California*. May 2006.

- violate any water quality standards or waste discharge requirements; or
- substantially degrade or deplete groundwater resources or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level; or
- substantially alter the existing drainage pattern of the site or area, including through the alteration of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; or
- substantially alter the existing drainage pattern of the site or area, including through the alteration of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site; or
- create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
- provide substantial additional sources of polluted runoff or otherwise substantially degrade surface or groundwater quality; or
- place within a 100-year flood hazard area structures which would impede or redirect flood flows; or
- expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- expose people or structures to inundation by seiche, tsunami, or mudflow.

4.4.2.2 *Flooding Impacts*

The 115-acre landfill and adjacent perimeter road are located above the 100-year flood elevation of eight (8) feet msl. The perimeter road has been constructed as a levee, protecting the lower portions of the landfill from erosion in the event of high water levels.

The proposed borrow area, existing Corporation Yard, and concrete recycling area are within the mapped flood zone. Existing elevations in the borrow area range from approximately three feet to twelve feet msl and over 20 feet where there are piles of material. The borrow area also is bordered by levees. Elevations in the Corporation Yard range from approximately six to twelve feet msl, with some areas above and some areas below the eight foot msl flood elevation. Structures constructed on the site will be required to conform to the City of Fremont flood ordinance. This may require the placement of fill to pad up building elevations.

The intensity of the development within the Corporation Yard and concrete recycling area is not anticipated to substantially increase or impede flood flows. Due to the nature of these uses the proposed project would not expose people or structures to a significant risk of loss, injury or death involving flooding.

Impact H/WQ-1: The lower areas of the site are within the 100-year flood zone. The proposed continued use of a portion of the site as a Corporation Yard and concrete recycling facility would not result in substantial new flooding impacts to people or property. **(Less Than Significant Impact)**

4.4.2.3 *Drainage Impacts*

Landfill Area

Under the landfill closure plan, runoff from the landfill will drain to the Alameda County Flood Control District channel north of the landfill (refer to Figure 2-7). This would be similar to the

existing runoff pattern. Surface runoff drainage ditches will be installed as the final cover is placed over landfilled materials. Landfill drainage ditches will be lined with reinforced earth, gravel, or concrete to minimize infiltration of water into the landfill and sized to convey storm water runoff from a 100-year, 24-hour storm at acceptable velocities. Catch basins on the benches will include silt control measures, such as silt fences, straw wattles, debris sumps, gravel filter berms, gravel aprons, or concrete aprons, to minimize sediment in the stormwater discharge.

Impact H/WQ-2: The proposed landfill closure plan includes measures to provide adequate on-site drainage. Sediment control measures incorporated in the landfill drainage system would minimize erosion and sedimentation in downstream areas. **(Less Than Significant Impact)**

Borrow Area

The borrow area would be graded with a gradual slope to the west and southwest. Near the Union Pacific Railroad line, elevations would be approximately four feet msl and elevations to the west would be as low as approximately one foot msl, a reduction of approximately two to six feet. Stormwater could collect and pond during the rainy season adjacent to the existing levee at the lower elevations. This area currently is poorly drained and some ponding occurs already. The borrow area would remain unpaved and the proposed excavation would not substantially increase the rate or amount of surface runoff. The gentle slopes within the proposed borrow area would avoid substantial erosion or siltation.

Impact H/WQ-3: Excavation of the borrow area would not substantially increase runoff from the site or result in substantial erosion or sedimentation. **(Less Than Significant Impact)**

Corporation Yard and Concrete Recycling Facility (General Plan Amendment Area)

Stormwater flows from the Corporation Yard currently drain towards the perimeter ditch for the landfill. Flows in the perimeter ditch are discharged via a flapgate to the Alameda County Flood Control District channel.

The proposed General Plan Amendment would allow continued operation of the Corporation Yard and concrete recycling facility on 46-acres of the site. No specific modifications to the Corporation Yard, such as construction of new maintenance buildings or parking area paving, are currently proposed. If activities in the Corporation Yard include draining fluids such as oil and antifreeze from vehicles, areas where fluids are transferred and handled should be paved to comply with existing hazardous materials regulations. It is likely that such changes will occur under the proposed land use designation (*Light Industrial*) and zoning. The exact nature and extent of such future changes is not known at this time, however.

As part of architectural and environmental review, future improvements to the 46-acre area, such as new paving and maintenance buildings, will be evaluated by the City's Development Organization for conformance with the flood damage prevention and storm water sizing requirements in the Fremont Municipal Code (see *Section 4.4.3.1 Program Mitigation Measures*). Implementation of these standard measures would avoid substantial drainage and flooding impacts within the proposed General Plan amendment area.

Impact H/WQ-4: Continued operation of the Corporation Yard and concrete recycling facility, using the existing site plans, would not result an increase in runoff from the site. The proposed General Plan Amendment and zoning would allow future on-site improvements, such as additional paving, that could increase impervious surfaces. Any future improvements will be required to conform with standard flooding and storm water drainage requirements in the City of Fremont Municipal Code to avoid substantial drainage impacts. **(Less Than Significant Impact)**

4.4.2.3 *Surface Water Quality*

Landfill Closure and Excavation of Borrow Area

Construction Phase

Installation of the final cover for the landfill would involve excavation in the borrow area and earthmoving and grading on the side slopes and top of the landfill.

Measures to reduce stormwater pollution from landfilling activities, including earthmoving and placement of daily and intermediate cover on the landfill, are currently included in a Stormwater Pollution Prevention Plan (SWPPP) as a part of the TCRDF's NPDES Industrial Permit. The Best Management Practices (BMPs) in the SWPPP for the landfill would continue to apply during installation of the final cover. Under permit requirements, the SWPPP is periodically reviewed for adequacy with regard to SWPPP requirements. The SWPPP also must eliminate unauthorized non-stormwater discharges to storm drainage systems.

The excavation of the borrow area will expose disturbed soils to the erosive forces of wind and rain, which can result in off-site deposition of sediments that could adversely affect the Alameda County Flood Control District channel, as well as San Francisco Bay downstream. In addition, hazardous materials such as fuels are used in vehicles and equipment during soil conditioning and handling, and the accidental spill or release of these substances could adversely affect water quality. While construction activities would be temporary in nature, the potential impacts to water quality could last beyond the duration of construction, depending on the extent of degradation. The degradation of water quality flowing to San Francisco Bay during excavation of the borrow area could be a significant impact.

Impact H/WQ-5: Substantial impacts to water quality associated with installation of the final cover on the landfill would be avoided by implementation of measures included in the NPDES Industrial Permit for the TCRDF. Grading and excavation in the proposed borrow area and soil conditioning and handling could result in substantial short-term impacts to surface waters quality during construction. **(Significant Impact)**

30-Year Maintenance Period

The surface of the landfill will be seeded for erosion control following placement of the upper layer of the final cover, the vegetative layer. Slopes and benching of the side slopes and slopes on the top of the landfill will conform to requirements of Title 27 of the California Code of Regulations for the purpose of maintaining drainage and avoiding excessive erosion and sedimentation. Drainage ditches will also be lined and sediment catchments installed at intervals within the drainage system for the landfill. The drainage system also will be routinely inspected and maintained following

placement of the final cover. In the event slumping or settlement occurs, these areas will be repaired as required under state regulations for landfill closure. These measures would avoid excessive erosion of the final cover that could degrade surface water quality.

Impact H/WQ-6: The design of the final cover will be reviewed by regulatory agencies for conformance with landfill closure requirements. Proper installation and maintenance of the final cover, including the drainage system, would avoid substantial impacts to surface water quality from erosion and sedimentation. **(Less Than Significant Impact)**

**Corporation Yard and Concrete Recycling Facility
(General Plan Amendment Area)**

For the purposes of this EIR analysis, the General Plan amendment and Use Permits are assumed to allow continued operation of the existing Corporation Yard and concrete recycling facility on 46-acres of the TCRDF. Areas used for the maintenance and servicing of vehicles, specifically where fluids such as oils, grease, and antifreeze are handled, are required to be paved and/or have containment to avoid spills reaching soil or groundwater. Paving parking areas also would avoid oils and grease from vehicles dripping directly on the ground surface. No specific modifications to the Corporation Yard, such as construction of new maintenance buildings or parking area paving, are currently proposed.

Future improvements consistent with the allowed uses in the CUP would be reviewed by the City's Development Organization. In accordance with the City of Fremont's standard conditions of approval and the General National Pollutant Discharge Elimination System Storm Water Permit for Construction Activities, future projects over one acre would prepare a Storm Water Pollution Prevention Plan (SWPPP) and, if required, an Erosion Control Plan. The plans would be submitted to the Community Development Department for review and approval, prior to issuance of grading or building permits. The SWPPP would demonstrate how the project would eliminate or reduce non-stormwater discharges into the stormwater system, how discharges into the stormwater system would be monitored, and what Best Management Practices (BMPs) would be implemented by the project to avoid water quality impacts during construction (e.g., street sweeping, fiber rolls, temporary cover and/or permanent cover) and post-construction periods. Under Chapter 11 of the Fremont Municipal Code, projects must also meet the requirements of the Alameda County Flood Control and Water Conservation District (ACFCWCD) for discharge to channels that are their responsibility. Program measures to avoid water quality impacts are described in more detail in *Section 4.4.3.1 Program Level Mitigation Measures*.

Impact H/WQ-7: Continued operation of the Corporation Yard and concrete recycling facility, under their existing configurations and level of activity, would not result in an increase in nonpoint source pollution in storm water runoff. Implementation of standard measures, including preparation and implementation of a SWPPP, would avoid water quality impacts resulting from implementation of the proposed General Plan Amendment and Use Permits. **(Less Than Significant Impact)**

4.4.2.4 Groundwater Quality

Landfill Closure

Overview

Placement of the layered, low permeability final cover will reduce the amount of leachate within the waste in the landfill. Over time, leachate generation from waste materials will also decrease as waste is more completely decomposed.

The project proposes use of an Alternative Final Cover on the top of the landfill. The alternative cover design for the landfill consists of the use of a geosynthetic clay liner (GCL) as a substitute for one foot of compacted soil called for under the prescriptive standards in Title 27. The prescriptive standard establishes a compacted soil layer with a permeability of 1×10^{-6} cm/sec. This is equivalent to approximately one foot of infiltration over a one year period, under specific testing conditions.

The GCL consists of a layer of bentonite sandwiched between a geotextile backing. The proposed Alternative Final Cover Design is shown on Figure 2-6. The saturated hydraulic conductivity of the GCL is reported to be 5×10^{-9} cm/sec, which is substantially lower than the required 1×10^{-6} cm/sec. The GCL is only proposed on the top deck of the landfill and not on the side slopes.

The slope on the top deck of the landfill is designed to promote runoff, prevent ponding, and limit water infiltration. Initially, the slope of the top deck is proposed to be five percent to accommodate anticipated settlement of waste and final cover materials. The final minimum slope on the top deck is proposed to be three percent.

As previously described in *Section 2. Project Description*, installation of the final cover will include continued operation of a leachate collection and disposal system and groundwater monitoring. The constituents in groundwater samples, including volatile organic compounds, will be monitored and corrective action taken in the event substantially elevated concentrations are found.

Infiltration Estimates

One of the primary purposes of the final cover is to minimize infiltration of water into the underlying waste materials.

Golder Associates evaluated the performance of the proposed cover on the side slopes (a Prescriptive Cover Design)⁴¹ and the top of the landfill (Alternative Cover Design) using the HELP computer program (refer to Appendix B).⁴² The results are a water balance of the cover system based upon precipitation, run-off, evaporation, soil storage, and percolation. Results for selected rainfall years are summarized in Table 4.4-1.

⁴¹ A “Prescriptive” Cover Design refers to the final cover design requirements included in Title 27 of the California Code of Regulations, Section 21090(a)(1-3). The “prescriptive” cover design includes: A foundation layer of not less than 2 feet of appropriate materials, Permeability layer not less than 1 foot thick and of hydraulic conductivity not more than 1.0×10^{-6} cm/sec, and a erosion resistant layer not less than 1 foot thick capable of sustaining vegetation and resistant to wind, raindrop impact, or runoff or mechanically resistant. In recent years, some design exceptions (such as the use of high-density polyethylene (HDPE) layers, clay geotextiles and monolithic or mono-covers) have been allowed that fall outside the prescriptive standards.

⁴² HELP stands for *Hydrologic Evaluation of Landfill Performance*.

Table 4.4-1 Estimated Infiltration			
Selected Model Year	Annual Precipitation (inches)	Estimated Percolation (inches)	
		Prescriptive Cover Design Side Slopes of Landfill	Alternative Cover Design Top Deck of Landfill
Year 6	14.6	2.7	0.7
Year 7	27.8	4.1	0.9
Year 30	23.8	3.9	0.8

Source: Golder Associates. 2004. *Final Closure and Postclosure Maintenance Plan for Fill Area 1 Tri-Cities Recycling and Disposal Facility, Fremont, California.*

Notes: The estimates are from HELP model calculations using default precipitation data for San Francisco, California over a 30 year period. The average annual precipitation modeled was 13 inches per year, which is the cited mean annual rainfall for the site based upon a rainfall map prepared by the Alameda County Flood Control District. Year 6 has a rainfall of 14.6 inches, which is slightly higher than the average. Year 7 and Year 30 are both relatively wet years.

Based upon these modeling results, infiltration of the alternative cover on the top deck (using a geosynthetic clay liner) is calculated to be four times less than the prescriptive cover.

The HELP model estimates provide one means of comparing the design performance of the proposed prescriptive and alternative cover designs. Factors that can affect the performance of the proposed alternative cover are described below.

Performance of Alternative Final Cover Design for Top Deck of Landfill

The following discussion is based upon an assessment of the Alternative Final Cover Design by CDM (Appendix C).

As noted above, the infiltration through the GCL calculated by the HELP model is four times less than the prescriptive cover system (12-inches of low permeability soil material). This would indicate that the performance of the alternative design in terms of infiltration rate is better than the performance of the prescribed low-hydraulic conductivity layer.

The installation of the final cover, continued operation of the gas recovery system and leachate collection and removal system, and maintenance of the final cover will all serve to reduce and avoid the possibility of landfill leachate from impacting local groundwater. The final design of the leachate collection system and proposed monitoring will be reviewed by the Regional Water Quality Control Board for conformance with landfill closure requirements. Installation of the proposed GCL alternative cover, along with maintenance activities, will reduce possible impacts to groundwater to a less than significant level.

The project proposes one foot of soil over the GCL. Several design and construction issues associated with the proposed GCL were identified as part of the review of the alternative cover design (refer to Appendix C). These issues include improper installation, stretching or puncture of the GCL, and possible damage by heavy equipment during installation or maintenance activities. In relatively dry climates, such as Fremont, cracking of the GCL can occur if the clay material dries out. An alternative design, using a thicker layer of soil above the geosynthetic clay liner would minimize the potential for desiccation cracking (that does not self-heal when rewetted) to occur in the GCL. A thicker vegetative layer also could provide greater protection against damage to the liner from earthmoving equipment during

routine maintenance. An alternative design using 18-24 inches of soil over the GCL is discussed in *Section 8.0. Alternatives to the Proposed Project*. This design would not avoid an identified significant impact; however, it may reduce maintenance or other management activities required to avoid leachate from the landfill reaching groundwater.

Impact H/WQ-8: The proposed alternative cover (GCL layer) on the top deck would exceed performance requirements for landfills. With the proposed maintenance and monitoring of the landfill, placement of the final cover would reduce the potential for leachate and pollutants to degrade groundwater quality. **(Less Than Significant Impact)**

Borrow Area

Excavation in the borrow area is proposed from late spring to late summer (May through September). As previously discussed, groundwater levels near the ground surface fluctuate seasonally and are higher in the spring than the summer and fall.

Excavation would stop if groundwater is encountered and moved to an area of the borrow area where groundwater was lower. No dewatering of the borrow area is proposed. A condition of approval for grading in the borrow area will specify that dewatering of excavations in the borrow area is prohibited.

Impact H/WQ-9: Excavation of the borrow area would not be undertaken where groundwater is encountered and no dewatering of the borrow area is proposed. This would avoid potential impacts to groundwater quality in the proposed borrow area. **(Less Than Significant Impact)**

4.4.3 Mitigation and Avoidance Measures

4.4.3.1 *Program Level Mitigation Measures*

Standard measures that would avoid or reduce possible future hydrology or flooding impacts associated with the General Plan amendment are identified below, in the form of Plan policies or programs and local, regional, state or federal regulations. Program level mitigation measures would be applicable to future modifications to the Corporation Yard or concrete recycling facility.

PMM H/WQ-4.1: Future modifications to the Corporation Yard and concrete recycling facility will be required to conform with the Flood Damage Prevention requirements outlined in Title VIII, Chapter 8 of the Fremont Municipal Code. This chapter includes methods and provisions for restricting or prohibiting uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion of flood heights or velocities; requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction; controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters; controlling filling, grading, dredging and other development which may increase flood damage; and preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

Stormwater controls, calculations and sizing of stormwater facilities will also be required to conform with Title VIII, Chapter 11 of the Fremont Municipal Code design requirements.

PMM H/WQ-7.1: Future modifications to the Corporation Yard and concrete recycling facility will be required to conform with the requirements and guidelines of the Alameda Countywide Clean Water Program and the City of Fremont to reduce nonpoint pollution in storm water runoff.

Fremont Grading and Erosion and Sediment Control Requirements

Grading and Erosion and Sediment Control requirements are outlined in Title VIII, Chapter 4 of the Fremont Municipal Code. This chapter sets forth minimum standards and requirements relating to land grading, excavations and fills and establishes procedures by which these standards and requirements may be enforced.

One of the purposes of this chapter is to protect water quality by avoiding pollution of watercourses with nutrients, sediments or other earthen materials generated on or caused by surface runoff on or across private property. The City's grading, erosion and sediment control requirements are implemented during site development or redevelopment. These would be requirements would be applied through grading permit(s) for soil borrow and any site redevelopment.

Fremont Stormwater Management and Discharge Control Requirements

Title VIII, Chapter 11 of the Fremont Municipal Code calls for reducing pollutants in storm water discharges to the maximum extent practicable. The intent of the chapter is to protect and enhance the water quality of our watercourses, water bodies, and wetlands in a manner pursuant to and consistent with the Federal Clean Water Act. Under this chapter, projects must also meet the requirements of the Alameda County Flood Control and Water Conservation District (ACFCWCD) for discharge to channels that are their responsibility.

This chapter requires that development projects include Best Management Practices in order to reduce water quality impacts to stormwater runoff from the site. The City of Fremont requires that stormwater treatment details and calculations of increased impervious surfaces be submitted for review and approval prior to issuance of development permits. An Operations and Maintenance Agreement for Stormwater Treatment Measures is also required for projects effecting 10,000 square feet or more.

NPDES Permit Programs

The NPDES storm water permits that would apply to the area of the General Plan amendment are the municipal permit for Alameda County and the general construction activities permit.

The NPDES permit for Alameda County (including City of Fremont) was updated and reissued February 19, 2003. Under the provisions of the Municipal Storm Water NPDES Permit, the City is required to take steps within their area of authority to reduce or eliminate pollutants in storm water to the maximum extent practicable. As described above, the City of Fremont has incorporated requirements of the permit in their Municipal Code and implements the NPDES permit for Alameda County during development review and approval processes.

NPDES General Permits for stormwater discharge associated with construction require the utilization of a full range of structural and non-structural control measures and management practices designed to reduce potential contamination of runoff during construction.

Applicants for construction projects over one acre in size would file a Notice of Intent (NOI) and Stormwater Pollution Prevention Plan (SWPPP) with the Regional Water Quality Control Board prior to commencing construction. The SWPPP must address mitigation for both the construction and post-construction periods. The SWPPP would include erosion and sediment control measures, waste disposal controls, post construction sediment and erosion control measures and maintenance responsibilities and non-stormwater management controls.

4.4.3.2 Project Level Mitigation Measures

MM H/WQ 5.1: The project will be required to conform with the requirements and guidelines of the Alameda Countywide Clean Water Program and the City of Fremont to reduce nonpoint pollution in storm water runoff. The project also proposes to comply with nonpoint pollution control measures during construction as required under the NPDES General Construction Permit for activities in the borrow area.

Erosion and Sedimentation Control. Contractors shall implement erosion control measures on site to retain all debris, dirt and pollutants, and prevent said pollutants from flowing into the on-site storm water collection system. Erosion control plans and/or SWPPPs shall be submitted for review and approval by the Community Development Department prior to issuance of any grading permits.

MM H/WQ 7.1: Dewatering of the borrow area is not proposed by the project. The following measure is included in the project to avoid possible impacts to groundwater quality during excavation of the borrow area:

- Dewatering of excavations within the 88-acre borrow area as a part of landfill closure activities is prohibited.

4.4.4 Conclusions Regarding Hydrology and Water Quality Impacts

The proposed landfill closure would not result in significant drainage or water quality impacts to surface waters or groundwater. **(Less Than Significant Impacts)**

Implementation of programmed mitigation measures would reduce or avoid possible hydrology and water impacts associated with the proposed General Plan Amendment. **(Less Than Significant Impacts)**

Implementation of proposed mitigation measures would reduce or avoid possible water quality impacts from excavation of the soil borrow area to a less than significant level. **(Less Than Significant Impact with Mitigation)**

4.5 HAZARDS AND HAZARDOUS MATERIALS

The following discussion is based in part on the Joint Technical Document for the TCRDF revised in December 2004.

4.5.1 Existing Setting

4.5.1.1 *Regulatory Overview*

Hazardous Materials Use and Storage

Within the City of Fremont, a number of local, state, and federal regulations govern the use, transport, and storage of hazardous materials. A Hazardous Materials Management Plan is generally required of any facility which generates any quantity of hazardous waste or which handles hazardous materials in amounts greater than 55 gallons for liquids, 500 pounds for solids, and 200 cubic feet for compressed gases. The implementation and enforcement of these local, and state and federal regulations regarding the use, storage and transport of hazardous materials (including setbacks for flammable storage from property lines) reduce the potential for impacts to off-site land uses, in the event of an accidental release.

Landfill Gas

The federal Resource Conservation and Recovery Act (RCRA) requires that landfill gas (LFG) be controlled and that the concentration at a landfill's property line is less than five percent by volume (40 CFR Part 258.23). Landfill gas contains methane, which is flammable or explosive at some concentrations. Requirements for landfill gas monitoring and control under RCRA are related to the protection of adjacent areas from explosive conditions.

Landfill gas can also contain other constituents (such as volatile organic compounds and carbon dioxide) that have health risks. Monitoring of landfill gas as well as other general requirements for landfills are contained in Title 27 of the California Code of Regulations. These requirements are administered by the California Integrated Waste Management Board, the State and Regional Water Quality Control Board, and the Local Enforcement Agency (Alameda County Department of Environmental Health).

The routine emission of hazardous materials is also locally regulated by the Bay Area Air Quality Management District (BAAQMD). Landfill gas emissions and landfill gas collection at solid waste facilities are regulated under the District's Rule 34. The purpose of this rule is to limit the emission of organic compounds and methane from solid waste disposal sites.

4.5.1.2 *Hazardous Materials Found in In-Coming Waste Materials*

The TCRDF currently does not accept hazardous waste for disposal. Prior to 1990, some designated wastes, including asbestos, infectious bio-medical wastes, and liquid wastes (such as grease trap pumped wastes) were disposed of in the landfill.

The TCRDF maintains a storage facility for unacceptable wastes collected from loads brought to the site. The storage facility is located in the Resource Recovery Area, near the waste oil collection facility. It is fenced and posted with warning signs. Two chemical storage containers are used to segregate incompatible waste materials (i.e., corrosives are separated from oxidizers). Hazardous

materials removed from incoming waste may be stored on-site for a maximum of 90 days, before off-haul is required.

4.5.1.3 Hazardous Materials Use

Hazardous materials use on the site includes diesel and gasoline in vehicles and motorized equipment and associated oil, grease, and other fluids for servicing trucks and equipment used at the landfill and for resource recovery activities. There are above ground fueling stations at both the TCRDF and concrete recycling facility. Welding gases are also stored and used in maintenance areas.

4.5.1.4 Landfill Gas

Landfill gas is a product of the degradation of biodegradable waste, such as paper, wood or food. It is a mixture of methane, carbon dioxide and other components, including volatile organic compounds. Landfill gas is predominantly methane, which can be burned.

Landfill gas can present hazards due to fire and/or explosion, toxicity and asphyxiation if concentrations build up in a confined space (such as an underground vault). Landfill gas is mobile and depending on the surrounding pressure levels can move laterally and vertically through waste and soil materials.

Landfill gas at the TCRDF is collected through vertical gas collection wells installed in the landfill and extending to the base of refuse. The vertical gas wells are kept under vacuum and gas is drawn into the wells from the surrounding areas of the landfill. Collected landfill gas is conveyed to an on-site, high temperature flare on the east side of the landfill (refer to Figure 2-4). The flare can burn landfill gas at a rate of up to 1,275 cubic feet per minute. The flare is equipped with an automatic shutoff, audible alarm, and a system to notify personnel of an after-hours shutdown. The gas collection system will remain operational as long as there are sufficient quantities of gas being generated within the landfill to warrant operation of the vacuum and flare system. The gas collection system is estimated to remain in operation for at least 15 years after landfill closure.⁴³

Condensate is liquid that condenses within the landfill gas collection system. The condensate forms as water and other vapors come out of the landfill gas due to temperature and pressure changes within the landfill gas collection system. It is mostly water with trace amounts of organic compounds, similar to those in the leachate in the landfill.⁴⁴ The condensate must be removed before the landfill gas is burned in the flare. Condensate is collected in dropout lines that convey the liquid to a holding tank next to the flare station. The holding tank is lined and has secondary containment. The condensate is discharged to the sanitary sewer and conveyed to treatment facilities at the Union Sanitary District. Although the condensate can contain organic compounds, if concentrations do not exceed defined limits as hazardous waste under state law, the condensate can be discharge to the sanitary sewer.

⁴³ Source: Joint Technical Document for the TCRDF, revised December 2004.

⁴⁴ The organic compounds found in landfill gas condensate can include hydrocarbons, xylenes, chloroethanes, chloroethenes, benzene, toluene, and other compounds (Source: Briggs, Jeffrey. 1988. *Project Summary: Municipal Landfill Gas Condensate*. U.S. EPA, Hazardous Waste Engineering Research Laboratory (EPA/600/S2-87/090 February 1988)).

4.5.1.5 *Reported Contamination*

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. The California Department of Toxic Substances Control is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List. As of December 2006, there were no contaminated sites listed in the Department of Toxic Substances Control *EnviroStor Database* (Cortese List) for the cities of Fremont or Newark.⁴⁵

There also are no underground fuel tanks or reported leaking underground fuel tanks on or adjacent to the project site.

4.5.1.6 *Sensitive Receptors*

Sensitive receptors are facilities where sensitive receptor population groups (children, elderly, acutely ill and chronically ill) are likely to be located. These land uses include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics. The closest such receptors in the project area are residences located approximately one mile northeast of the TCRDF.

4.5.2 Hazardous Materials Impacts

4.5.2.1 *Thresholds of Significance*

For the purposes of this EIR, a hazardous materials impact is considered significant if the project will:

- create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials; or
- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; or
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school; or
- be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment; or
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

4.5.2.2 *Landfill Closure Operations*

Landfill closure will involve grading and construction of the final landfill cover over the landfill. Materials for the landfill cap will be obtained, in part, from an on-site borrow area. Hazardous materials use and storage associated with construction of the final landfill cover would be limited to fuels, oil, grease, and equipment cleaning materials used in mobile equipment, such as trucks and

⁴⁵ Source: http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm, November 2006.

graders. Proper handling of these materials during servicing or fueling of equipment would avoid substantial hazards to the public or the environment.

Impact HAZ-1: Landfill closure operations would not result in hazards to the public or the environment through the routine transport, use or disposal of hazardous materials. **(Less Than Significant Impact)**

4.5.2.3 Proposed Landfill Gas Collection System

The landfill gas collection system will be extended and partially reconstructed during placement of refuse and installation of the final landfill cover. During the 30-year post-closure period, the landfill gas control system, including the landfill flare and condensate collection system, will be maintained and monitored as outlined in the Final Closure and Postclosure Maintenance Plan, in accordance with federal and state regulations for solid waste disposal facilities.

As-built maps of the landfill gas control system will be prepared at landfill closure and submitted to regulatory agencies as a part of a closure construction quality assurance report. Conformance with the requirements in the plan for design, operation, and maintenance of the landfill gas collection system and the final cover will reduce fire and explosive hazards associated with the generation and dispersion of landfill gas.

Impact HAZ-2: Implementation of the proposed landfill closure and post-closure plan would control landfill gas emissions that could adversely impact people or the environment. **(Less Than Significant Impact)**

4.5.2.3 Corporation Yard and Concrete Recycling (General Plan and Zoning Areas)

The proposed General Plan and zoning on 46 acres of the site would allow the use of hazardous materials for industrial purposes. Accidental releases of hazardous materials could pose a risk to the environment, including wildlife that inhabiting the nearby Don Edwards San Francisco Bay National Wildlife Refuge. Since no new uses are proposed at this time, it would be speculative to discuss the nature of those risks.

Hazardous materials storage at the site is regulated under local, state and federal regulations. Businesses must complete a Hazardous Materials Business Plan for the safe storage and use of chemicals. Firefighters, health officials, planners, public safety officers, health care providers and others rely on the Business Plan in an emergency.

Impact HAZ-3: Conformance with relevant laws and regulations would minimize the likelihood that hazardous materials releases from industrial development allowed by the General Plan and zoning would create a significant impact on the environment or wildlife present in the nearby Don Edwards San Francisco Bay National Wildlife Refuge. **(Less Than Significant Impact)**

4.5.3 Mitigation and Avoidance Measures

No additional mitigation and avoidance measures are required.

4.5.4 Conclusions Regarding Hazards and Hazardous Materials Impacts

Implementation of the proposed landfill closure, including on-site borrow activities, would not result in substantial hazardous materials impacts. **(Less Than Significant Impact)**

Conformance with relevant laws and regulations would minimize the likelihood that hazardous materials releases from industrial development allowed by the General Plan and zoning would create a significant impact on the environment or wildlife present in the nearby Don Edwards San Francisco Bay National Wildlife Refuge. **(Less Than Significant Impact)**

4.6 TRANSPORTATION

4.6.1 Existing Setting

The following discussion describes the existing street system, transit services, pedestrian and bicycle facilities, parking, freight and passenger rail transportation, and existing weekday truck traffic to and from the TCRDF.

4.6.1.1 *Regional and Local Access*

This section describes the major arterials in the vicinity of the proposed project, as well as other primary roads in the area. Figure 4.1-1 shows the major roadways in the project area.

Interstate 880 (I-880) runs north-south through Fremont. It is a major regional freeway serving the East Bay and South Bay, connecting SR 17 in San Jose to I-980 in Oakland. In Fremont, it has four through lanes, including a High Occupancy Vehicle (HOV) lane, in each direction north of Mission Boulevard. South of Mission Boulevard it has four lanes in each direction within Alameda County. Local connections to the freeway near the project study area are provided at Auto Mall Parkway, Stevenson Boulevard and Cushing Parkway/Fremont Boulevard.

Interstate 680 (I-680) runs north-south, parallel to I-880, through the eastern part of Fremont. It is a major regional freeway connecting I-280 in San Jose to I-80 in Solano County. In Fremont, I-680 is a six-lane facility. There is a local connection at the Auto Mall Parkway/Durham Road interchange.

Auto Mall Parkway/Durham Road runs east-west through Fremont east of the project site, terminating west of Boyce Road at the TCRDF site. It is a major four- to six-lane arterial connecting I-880 and I-680 via Auto Mall Parkway. There are presently restrictions on truck use on Auto Mall Parkway between I-680 and I-880. The proposed project is located at the western terminus of Auto Mall Parkway.

Boyce Road is a four-lane arterial running north-south between Stevenson Boulevard and Auto Mall Parkway. North of Stevenson, in Newark, Boyce becomes Cherry Street; south of Auto Mall Parkway, Boyce becomes Auto Mall Circle.

Stevenson Boulevard is a four-lane arterial that runs east-west, north of the project. West of I-880, Stevenson Boulevard is the boundary between the cities of Newark and Fremont. It connects Boyce Road to I-880.

4.6.1.2 *Transit Service*

Alameda-Contra Costa County (AC) Transit operates local bus routes in the Fremont area, with connections to the Fremont Bay Area Rapid Transit Station (BART) near Mowry Avenue and Civic Center Drive. Bay Area Rapid Transit (BART) provides service between San Mateo, San Francisco, Alameda, and Contra Costa Counties

Route 235 is the closest bus route to the project site. Route 235 provides service between Silicon Valley College, near the proposed project, and the Fremont BART station. Route 235 runs along Boyce Road and Stevenson Boulevard north of the project site.

4.6.1.3 Pedestrian and Bicycle Facilities

There are no concrete sidewalks along Auto Mall Parkway in the vicinity of the proposed project. Field observation showed no pedestrian traffic in the project area.

Near the project site, bike lanes or wide shoulders, are provided on Boyce Road between Auto Mall Parkway and Stevenson Boulevard, and also on Auto Mall Parkway.

Planned Trail Route

The Bay Trail is a planned regional hiking and bicycling trail around the perimeter of San Francisco and San Pablo Bays.⁴⁶ A planned, but not developed, segment of The Bay Trail is shown along the northeast side of the UPRR line in the vicinity of the project.⁴⁷ This planned segment extends from Thornton Avenue in the City of Newark to Cushing Parkway in the City of Fremont. Another planned segment of the trail would extend along Boyce Road and a segment of Auto Mall Parkway near Nobel Drive and cross the Pacific Commons property. The segment along Boyce Road is mapped as an on-street “Unimproved Bay Trail”. Planned Bay Trail routes are shown in Figure 4.1-2.

4.6.1.4 Site Access

There is one access driveway to the TCRDF site from a public street. The site entrance is at the western terminus of Auto Mall Parkway, west of the Union Pacific Railroad line.

4.6.1.5 Existing Truck Traffic

In 2005 there was an average of approximately 898 truck trips per day to and from the TCRDF.⁴⁸ During peak activity months (April-October), the average number of truck trips ranged from 916 to 1,072 trips to and from the site per day. This does not include employee trips to and from the site.

Trucks using the existing concrete recycling facility are not included in the counts for the TCRDF. Approximately 8,800 trucks bring loads to the concrete recycling facility per year. Approximately 6,000 outbound trucks transport crushed concrete and asphalt products from the site, in trucks with larger average capacities than inbound loads. In the most active month, the Raisch recycling facility processed 1,400 inbound truck loads of concrete and asphalt.⁴⁹ Estimated average truck traffic during the most active month is approximately 220 truck trips (inbound and outbound) per day.

4.6.2 Transportation Impacts

The proposed project would result in a significant impact if the addition of project traffic would:

- cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system; or

⁴⁶ ABAG. 1989. *The Bay Trail Planning for a Recreational Ring Around San Francisco Bay*. San Francisco Bay Trail Project. Reprinted March 2001.

⁴⁷ Sources: City of Fremont General Plan maps and *San Francisco Bay Trail, South Bay-Redwood Shores to Newark* map with recommended routes for walking and bicycling.

⁴⁸ The 898 truck trips represent 449 trucks traveling to and from the site (449 trips in and 449 trips out).

⁴⁹ Source: Rick Navarro, Raisch Products, personal communications, November 17, 2006.

- exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways; or
- substantially increase hazards due to a design feature; or
- result in inadequate emergency access; or
- conflict with adopted policies, plans, or programs supporting alternative transportation.

4.6.2.1 Estimated Truck Trips During Landfill Closure

Transporting of soil materials to the site for placement of the final cover would take place during a five month period, from May to December, with soil hauling concentrated during a two to four month period. Transportation of the soil could require from 2,080 to 27,250 truck loads over four years (16-20 months). During peak periods of soil hauling, 15 to 20 trucks per hour could make deliveries, for a daily total of approximately 125 to 150 trucks (250 to 300 truck trips).⁵⁰ Under the proposed project, the Corporation Yard could be used for parking of up to 50 haul trucks. Under existing conditions and the proposed project, the concrete recycling facility is capable of receiving up to 65 truck loads per day and sending out approximately 45 larger trucks during the peak season. Currently, there are approximately 35-38 employees on the site, generating up to approximately 115 vehicle trips daily.⁵¹ The number of on-site employees and associated vehicle trips are not anticipated to increase under the proposed project.

During the four year construction of the final cover, the maximum number of daily truck trips would be approximately 620 (refer to Table 4.6-1). Compared to existing conditions, there would be approximately 800 fewer truck trips during the peak summer season during landfill closure.

Table 4.6-1 Comparison of Existing Truck Trips to Estimated Trips During Landfill Closure		
Source	Approximate Annual Truck Trips	Total Truck Trips Per Day (In and Out)
<i>Existing Trips</i>		
Truck Trips to TCRDF	323,800	1,200
Concrete Recycling Facility (per year	29,600	220
Subtotal (Existing Trips)	353,400	1,420
<i>Near-Term (During Final Cover Installation)</i>		
Estimated Truck Trips for the transport of Landfill Cover Materials (2,080 to 27,250 over Four Years)	18,000	300
Estimated Truck Trips to Corporation Yard	36,000	100
Concrete Recycling Facility	29,600	220
Subtotal	83,600	620

Impact TRAN-1: Traffic to and from the site is not anticipated to increase during installation of the final cover at the TCRDF. **(Less Than Significant Impact)**

⁵⁰ Source: Guy Petraborg, Waste Management, Inc., written communications, January 19, 2007.

⁵¹ Trip generation estimates based upon Institute of Traffic Engineers (ITE) trip generation rates for General Light Industrial (110) uses of 3.02 trip ends per employee (ITE Trip Generation, 7th Edition, 2003). The trip generation assumes 1.3 employees vehicle for general industrial uses. There are no ITE rates given for landfills.

4.6.2.2 Estimated Truck Trips During the Post-Closure Period

Following placement of the final cover of the landfill, the Corporation Yard and the concrete recycling facility would continue to operate. In addition to equipment for landfill cover maintenance⁵², up to 50 haul trucks would be allowed to park or be serviced at the Corporation Yard (refer to Table 4.6-1 and Table 4.6-2) and approximately 220 truck trips per day would be generated at the concrete recycling facility during a peak day.

Table 4.6-2 Comparison of Existing Vehicle Trips to Estimated Trips After Landfill Closure	
Source	Total Trips Per Day (In and Out)
<i>Existing Trips</i>	
Truck Trips -- TCRDF	1,200
Employee Trips -- TCRDF	115
Concrete Recycling Facility	220
Subtotal (Existing Trips)	1,535
<i>After Final Cover Installation</i>	
Estimated Haul Truck Trips --Corporation Yard	100
Employee Trips – Corporation Yard	193
Concrete Recycling Facility	220
Subtotal (Proposed One-way Trips)	513
Note: The trip generation estimate for haul truck drivers assumes 1.3 employees vehicle for general industrial uses. Trip generation estimates for an estimated 38 Corporation Yard employees based upon Institute of Traffic Engineers (ITE) trip generation rates for General Light Industrial (110) uses of 3.02 trip ends per employee (ITE Trip Generation, 7th Edition, 2003).	

Employees that would travel to and from the Corporation Yard would include haul truck drivers, office workers, and service workers in maintenance areas. Haul truck drivers to and from the Corporation Yard in private vehicles to report to work would generate approximately 78 daily trips. If none of the trucks was out of service for repairs, there could be roughly 100 truck trips per day plus an additional 115 vehicle trips by up to 38 on-site Corporation Yard employees.

On weekdays, there would be up to 293 vehicle trips (including approximately 100 truck trips) generated by the proposed Corporation Yard operations. Under existing conditions, there are approximately 1,200 truck trips per day (maximum). Total trips to and from the TCRDF are not anticipated to increase during the post-closure period when compared to existing conditions.

Impact TRAN-2: Traffic to and from the site is not anticipated to increase during the post-closure period. **(Less Than Significant Impact)**

⁵² Mechanized equipment currently used and stored at the landfill includes three bulldozers, two compactors, two scrapers, one front-end loader, one haul truck, one waste compactor, one water truck, one vacuum truck, one grader, one excavator, one backhoe, one transfer truck tipper, one maintenance/fuel service truck, one mechanics truck, and four pickup trucks (Source: Guy Petraborg, Waste Management Systems, written communications, January 19, 2007). Some equipment (such as a water truck, pickup trucks, and equipment to maintain the landfill gas collection and drainage systems) would remain on-site during the post-closure period.

4.6.2.3 Impacts to Transit Facilities

The site will continue to be served by bus stops on Boyce Road and Auto Mall Parkway within approximately ½ mile of the project site. Activities during the post-closure period of the landfill, including continued operation of a Corporation Yard and concrete recycling facility, would not substantially increase demand for transit service in the area.

Impact TRAN-3: Implementation of the proposed General Plan Amendment and closure of the landfill would not result in impacts to transit. **(Less Than Significant Impact)**

4.6.2.4 Impacts to Pedestrian and Bicycle Facilities

Activities during the post-closure period of the landfill, including continued operation of a Corporation Yard and concrete recycling facility, would not substantially increase demand for pedestrian or bicycle facilities in the area.

As discussed above and in *Section 4.1. Land Use*, a proposed alignment of the Bay Trail would cross Auto Mall Parkway near the entrance to the TCRDF. One concern would be possible conflicts between trucks and bicycles and pedestrians. At the time this segment of trail is designed, sight distance and the physical arrangement of any street crossings will need to be addressed. Any discussions at this time would be speculative.

As discussed above, the number of trucks accessing the site will decrease compared to existing conditions and the proposed project would not substantially change the character of the TCRDF site. The proposed project, therefore, would not result in new impacts to the planned Bay Trail in the vicinity of the project.

Impact TRAN-4: The proposed landfill closure and continued use of the site as a Corporation Yard and concrete recycling facility will not conflict with the planned Bay Trail, a pedestrian and bicycle facility shown in the City of Fremont's General Plan. **(Less Than Significant Impact)**

4.6.2.5 Other Impacts of General Plan Amendment and Zoning

Any future development or redevelopment under the proposed General Plan designation and zoning will also increase traffic. Since no specific proposal is currently available and the unusual nature of the site makes it difficult to predict either the amount or type of such development, estimates of future traffic at this time would be speculative.

Access to the site is limited to one access driveway. For emergency purposes, this single access point would not be adequate for greater employment densities than currently proposed. Any additional development will require a project specific CEQA review that addresses trip generation and site access.

4.6.3 Mitigation and Avoidance Measures

No mitigation or avoidance measures are required.

4.6.4 Conclusions Regarding Transportation Impacts

The proposed closure of the landfill and a General Plan amendment to allow continued use of the Corporation Yard and concrete recycling facilities on a portion of the TCRDF site would not result in transportation impacts. **(Less Than Significant Impact)**

4.7 AIR QUALITY

The following discussion is based upon an air quality assessment prepared by *Illingworth & Rodkin, Inc.* A copy of the analysis is included in Appendix F of this EIR.

4.7.1 Existing Setting

4.7.1.1 *Regional Climate and Air Pollution*

The TCRDF project site is located in Fremont, in the southwestern portion of Alameda County, which is within the San Francisco Bay Area Air Basin. The air basin includes the counties of San Francisco, Santa Clara, San Mateo, Marin, Napa, Contra Costa, Alameda, along with the southern portion of Sonoma County and the southwest portion of Solano County. The local air quality regulatory agency responsible for this air basin is the Bay Area Air Quality Management District (BAAQMD).

The climate of the San Francisco Bay Area is Mediterranean in character, with mild, rainy winter weather from November through March and warm, dry weather from June through September. Temperatures in the region are moderated by the effects of San Francisco Bay and the overall influence of the Pacific Ocean. Rainfall in the Bay Area averages two to three inches per month during the rainy season (November through March), with a total annual rainfall average of approximately 15 inches.

The Fremont area is indirectly affected by marine airflow. Marine air entering through the Golden Gate is blocked by the East Bay hills, forcing the air to diverge into northerly and southerly paths. The southern flow is directed down the bay, parallel to the hills, where it eventually passes over southwestern Alameda County. Although sea breezes affect the climate of Fremont, it is less affected than those regions of the Bay Area that are closer to the Golden Gate.

Pollution within the Bay Area is generated by stationary, area-wide, and mobile sources of emissions. Air pollution in and around the Fremont area is primarily related to on-road vehicle traffic and industrial sources operating in the area. The Fremont area is susceptible to the build-up of pollutant concentrations during the summer and fall when high pressures dominate the area. High pressures result in low pollutant mixing depths (i.e., close to ground surface) and prevent the dispersion of pollutants out of the South Bay. Pollutant build-up is further enhanced by San Francisco Bay and ocean wind patterns that can concentrate and carry pollutants from other cities to the Fremont area, adding to locally emitted pollutants. In wintertime, the Pacific high-pressure system moves further off the coast resulting in higher mixing depths and greater dispersion of pollutants.

4.7.1.2 *Regulatory Framework*

Ambient Air Quality Standards

The federal and state governments each have established ambient air quality standards for common pollutants that are known to adversely affect human health. At the federal level, national ambient air quality standards (NAAQS) have been established for the following “criteria” pollutants⁵³: carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), respirable particulate matter with a diameter less than 10 microns (PM₁₀), fine particulate matter with a diameter less than 2.5 microns (PM_{2.5}),

⁵³ The ambient air quality standards cover what are called “criteria” pollutants because the health effects of each pollutant are described in criteria documents.

sulfur dioxide (SO₂), and lead (Pb). The State of California has also established ambient air quality standards (CAAQS) which are generally more stringent than the national standards and additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. Federal and California state air quality standards are summarized in Table 4.7-1.

Pollutant	Averaging Time	California Standards	Federal Standards ¹
Ozone	8-hour	0.07 ppm	0.08 ppm
	1-hour	0.09 ppm	— ²
Carbon monoxide	8-hour	9 ppm	9 ppm
	1-hour	20 ppm	35 ppm
Nitrogen dioxide	Annual	—	0.053 ppm
	1-hour	0.25 ppm	—
Sulfur dioxide	Annual	—	0.03 ppm
	24-hour	0.04 ppm	0.14 ppm
	1-hour	0.25 ppm	—
PM ₁₀	Annual	20 µg/m ³	-- ³
	24-hour	50 µg/m ³	150 µg/m ³
PM _{2.5}	Annual	12 µg/m ³	15 µg/m ³
	24-hour	—	35 µg/m ³ ^f
Notes: ¹ Standards, other than for ozone and those based on annual averages, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.			
² The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005.			
³ The annual PM ₁₀ standard was revoked by U.S. EPA on September 21, 2006 and a new PM _{2.5} 24-hour standard was established.			
ppm = parts per million µg/m ³ = micrograms per cubic meter			

A brief description of the criteria air pollutants generated from on-road vehicle traffic and industrial operations is provided below.

Ozone

Ground-level ozone is the principal component of smog. It is not directly emitted into the atmosphere, but is formed by the photochemical reaction of reactive organic gases (ROG) and nitrogen oxides (known as ozone precursors) in the presence of sunlight. Approximately half of the reactive organic gas and nitrogen oxide emissions in the Bay Area are from motor vehicles. Ozone levels are highest during late spring through early summer when precursor emissions are high and meteorological conditions are favorable for the complex photochemical reactions to occur. Adverse health effects of ground-level ozone include respiratory impairment and eye irritation.

Reactive Organic Gases (ROG)

Reactive organic gases, sometimes referred to as Volatile Organic Compounds (VOCs), are organic compounds emitted directly into the atmosphere from a variety of sources, including motor vehicles and industrial processes. Once in the atmosphere, ROG combine with oxides of nitrogen (NO_x) to form ozone.

Nitrogen Dioxide (NO₂)

Nitrogen dioxide is a reddish-brown gas that is a by-product of combustion processes. Like ozone, NO₂ is not directly emitted, but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO₂ are collectively referred to as nitrogen oxides (NO_x) and are major contributors to ozone formation. NO₂ also contributes to the formation of PM₁₀ (see discussion of PM₁₀ below). Automobiles and industrial operations are the primary sources of nitrogen oxides. Adverse health effects associated with exposure to high levels of nitrogen dioxide include the risk of acute and chronic respiratory illness.

Carbon Monoxide (CO)

Carbon monoxide is a colorless and odorless gas that can interfere with the transfer of oxygen to the brain. Adverse health effects of carbon monoxide include the impairment of oxygen transport in the bloodstream, increase of carboxy-hemoglobin, aggravation of cardiovascular disease, impairment of central nervous system function, and fatigue, headache, confusion, and dizziness. Exposure to carbon monoxide can be fatal in the case of very high concentrations in enclosed places. It is formed by the incomplete combustion of fuels. The largest source of carbon monoxide emissions is motor vehicles. Wood stoves and fireplaces also contribute to high levels of carbon monoxide. Unlike ozone, carbon monoxide is directly emitted to the atmosphere. The highest carbon monoxide concentrations occur during the nighttime and early mornings in late fall and winter. Carbon monoxide levels are strongly influenced by meteorological factors such as wind speed and atmospheric stability.

Suspended Particulate Matter

Particulate matter pollution consists of very small particles suspended in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when industry and gaseous pollutant undergo chemical reactions in the atmosphere. Respirable particulate matter, PM₁₀ (particulate matter 10 microns or less in diameter), and fine particulate matter, PM_{2.5} (particulate matter 2.5 microns or less in diameter), refer to a wide variety of solid or liquid particles in the atmosphere. Although particulates are found naturally in the air, most particulate matter found in the Bay Area is emitted either directly or indirectly by motor vehicles, industry, construction, agricultural activities, and wind erosion of disturbed areas. Most PM_{2.5} is comprised of combustion products from fossil fuels (motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. PM₁₀ include all PM_{2.5} sources as well as emissions from dust generated by construction, landfills, and agriculture; wildfires and brush/waste burning, industrial sources, windblown dust from open lands, and atmospheric chemical and photochemical reactions.

PM₁₀ and PM_{2.5} pose a greater health risk than larger-size particles, because these small particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract increasing the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Whereas, larger particles tend to collect in the upper portion of the respiratory system, PM_{2.5} is so small that they can penetrate deeper into the lungs and

damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

United States Environmental Protection Agency (U.S. EPA) recently adopted a new more stringent standard of 35 $\mu\text{g}/\text{m}^3$ for 24-hour exposures, based on a review of the latest new scientific evidence. At the same time, U.S. EPA revoked the annual PM_{10} standard due to a lack of scientific evidence correlating long-term exposures of ambient PM_{10} with health effects.

Toxic Air Contaminants

In addition to "criteria" air pollutants, there is another group of substances found in ambient air referred to as toxic air contaminants (TACs). TACs are a broad class of compounds known to have adverse health effects, such as respiratory problems and cancer. TACs are found in ambient air, especially in urban areas, and are emitted by industry, agriculture, fuel combustion, and commercial operations, such as dry cleaners. TACs are typically found in low concentrations, even near their source (e.g., benzene near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under State of California Proposition 65 or under the federal Hazardous Air Pollutants programs. California has adopted a comprehensive diesel risk reduction program. The U.S. EPA and CARB have adopted low sulfur diesel fuel standards that will substantially reduce diesel particulate matter over time.

Regional Air Quality Regulations

The BAAQMD has jurisdiction over most of the nine-county Bay Area counties. The BAAQMD is responsible for assuring that the federal and state ambient air quality standards are attained and maintained in the Bay Area and for the development of attainment plans designed to achieve attainment of the air quality standards. BAAQMD adopts and enforces rules and regulations concerning air pollutant sources, issues permits for stationary sources of air pollutants, inspects stationary sources of air pollutants, responds to citizen complaints, monitors regional air pollutant levels (including measurement of toxic air contaminants), develops air quality control strategies, and conducts public awareness programs.

The TCRDF is permitted by the BAAQMD as a Title V source (Facility No. A2246) and is subject to specific BAAQMD rules and regulations. The TCRDF includes several stationary sources of emissions that are permitted by the BAAQMD. The largest source of emissions at the TCRDF is the landfill itself, which emits methane gas from the decomposition of solid waste. Methane is part of the landfill gas which is controlled by the facility's landfill gas collection system. The system consists of extraction wells and a gas combustion flare. Landfill gas is collected in the extraction wells and conveyed by vacuum pressure to the flare. The combustion of the landfill gas creates combustion pollutants, including NO_x , CO, ROGs, SO_2 (sulfur dioxide), and PM_{10} . Other existing permitted sources of emissions at the TCRDF include a portable generator used to power the equipment that chips and grinds yard, landscaping, and wood waste, and diesel engines used in air compressors, a vacuum truck, and a sweeper truck.

A summary of the pertinent BAAQMD regulatory requirements applicable to the TCRDF is provided below.

Regulation 1 (General Provisions and Definitions): Regulation 1 contains the provisions and definitions that apply to all other District rules and regulations. Section 523 of Regulation 1 sets the Parametric Monitoring and Recordkeeping requirements of the TCRDF.

Regulation 2 (Permits), Rule 6 (Major Facility Review): Regulation 2, Rule 6 implements the operating permit requirements of Title V of the Federal Clean Air Act and enforces the NSPS and NESHAP limitations and conditions for MSW Landfills. The Rule requires a facility wide review of the potential to emit regulated pollutants, including criteria air pollutants and TACs.

Regulation 6 (Particulate Matter and Visible Emissions): Regulation 6 limits the quantity of particulate matter in the air by limiting emissions rates, concentrations and visible emissions and opacity of PM emissions from stationary sources. Section 310 of Regulation 6 limits the amount of PM to a maximum of 0.15 grains / dry standard cubic feet of exhaust gas volume.

Regulation 8 (Organic Compounds), Rule 2 (Miscellaneous Operations): Regulation 8, Rule 2 limits the emissions of precursor organic compounds to no more than 15 pounds per day and 300 PPM total carbon on a dry weight basis for soil handling and disposal activities at the TCRDF.

Regulation 8, Rule 34 (Solid Waste Disposal Sites): Rule 34 limits the amount of NMOC and methane emissions from the waste decomposition process at solid waste sites and requires facility operators to continuously operate a gas collection and control system with a minimum 98% control efficiency for NMOC emissions.

Regulation 9 (Inorganic Gaseous Components), Rules 1 (SO₂) and 2 (H₂S): Regulation 9, Rules 1 and 2 limits the concentration of SO₂ and H₂S emissions that can occur from the TCRDF gas control system.

Existing Air Quality Monitoring Data

The BAAQMD monitors air quality conditions at over 30 locations throughout the Bay Area. There are several BAAMQD monitoring stations in the project vicinity. The closest BAAQMD monitoring station to the TCRDF site is located on Chapel Way in Fremont, approximately 3 miles from the TCRDF. Criteria pollutants monitored at the station include ozone, carbon monoxide, nitrogen dioxide, and particulate matter (PM₁₀ and PM_{2.5}). Table 4.7-2 summarizes the number of days that pollutant concentrations at the Fremont monitoring station exceeded national and state air quality standards for the four-year period from 2003 through 2006.

The pollutant of most concern in the Fremont area is ozone, since prevailing summertime wind conditions tend to cause a build up of ozone.

Data from all BAAQMD monitoring stations for the same four year period shows that ozone levels in the Bay Area exceeded the federal 8-hour ozone standard between 1 and 12 days per year. The more stringent state ozone standard was exceeded on 7 to 19 days annually.

Pollutant	Standard	Days Exceeding Standard			
		2003	2004	2005	2006
Ozone	State 1-hour	4	0	1	4
	National 8-hour	1	0	0	0
Carbon Monoxide	State 1-hour	0	0	0	0
	National 1-hour	0	0	0	0
	State & Federal 8-hr	0	0	0	0
Respirable Particulate Matter (PM ₁₀)	State 24-hr	0	0	1	0
	National 24-hr	0	0	0	*
	State Annual	0	0	0	*
	National Annual	0	0	0	0
Fine Particulate Matter (PM _{2.5})	National 24-hr	0	0	0	*
	State Annual	0	0	0	*
	National Annual	0	0	0	0
Nitrogen Dioxide	State 1-hour	0	0	0	0
	State Annual	0	0	0	0
	National Annual	0	0	0	0

Source: California Air Resources Board Air Quality Data Statistics, 2006. Accessed online at: http://www.arb.ca.gov/adam/php_files/aqdphp/sc8start.php
 * = Insufficient data to make determination.

Attainment Status

Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant. The Federal Clean Air Act and the California Clean Air Act of 1988 require that the State Air Resources Board, based on air quality monitoring data, designate portions of the state where the federal or state ambient air quality standards are not met as “nonattainment areas.” Because of the differences between the national and state standards, the designation of nonattainment areas is different under the federal and state legislation. The San Francisco Bay Area as a whole does not meet state or federal ambient air quality standards for ground level ozone and state standards for particulate matter.

Under the Federal Clean Air Act, the U.S. EPA has classified the region as marginally nonattainment for the 8-hour ozone standard. EPA requires the region to attain the standard by 2007. The Bay Area has met the carbon monoxide standards for over a decade and is classified attainment maintenance by the U.S. EPA. The US EPA considers the region unclassified (which is treated as an attainment area for regulatory purposes) for all other air pollutants, which include PM₁₀ and PM_{2.5}.

At the state level, the region is considered serious nonattainment for ground level ozone and nonattainment for PM₁₀. The area is considered attainment or unclassified for all other pollutants with respect to the state standards.

Sensitive Receptors

The Bay Area Air Quality Management District defines sensitive receptors as facilities where sensitive receptor population groups (children, elderly, acutely ill and chronically ill) are likely to be located. These land uses include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, and medical clinics. The closest such receptors in the project area are residences in the City of Newark that are located approximately one mile north of the facility, north of Stevenson Boulevard, between Cherry Street and Cedar Boulevard.

In 2005 an average of 449 haul trucks (approximately 600 per day maximum) traveled to and from the landfill on weekdays. Most of these trucks use diesel fueled and are a source of diesel particulates during operation. During peak summer periods, a maximum of 64 large trucks travel to and from the concrete recycling facility per day. Most trucks travel to and from the site on Auto Mall Parkway and do not pass by the closest sensitive receptors in the area.

4.7.2 Air Quality Impacts

4.7.2.1 *Thresholds of Significance*

For the purposes of the development project, an air quality impact is considered significant if the project will:

- conflict with or obstruct implementation of the 1982 *Bay Area Air Quality Plan* and 2005 *Ozone Plan*;
- violate an ambient air quality standard or contribute substantially to an existing or projected air quality violation; or
- result in substantial emissions or deterioration of ambient air quality; or
- create objectionable odors; or
- expose sensitive receptors or the general public to substantial levels of toxic air contaminants.

For the San Francisco Bay Area Air Basin, the BAAQMD has developed significance criteria in its *BAAQMD CEQA Guidelines* (1996, revised December 1999). These thresholds of significance are recommended for use in assessing impacts associated with construction, project operations, odors, toxic air contaminants, accidental releases, cumulative impacts and regional planning projects/programs associated with project implementation. The thresholds in the BAAQMD Guidelines for construction impacts and operational impacts are described below.

Thresholds for Construction Impacts

PM₁₀ is the pollutant of greatest concern from construction activities and the BAAQMD significance threshold for construction dust impacts is based on the suitability of construction dust controls. Because of the difficulty in quantifying daily construction dust emissions (PM₁₀), the BAAQMD Guidelines are oriented toward effective mitigation of PM₁₀ rather than precise quantification. BAAQMD has developed a list of measures which, if fully implemented, are presumed to reduce air quality impacts from construction to less than significant. The mitigation measures include a set of “Basic Control Measures” and a set of “Enhanced Control Measures” which should be required if the project construction area exceeds four acres. If the appropriate construction controls are implemented, air pollutant emissions for construction activities are considered less than significant.

Thresholds for Operational Impacts

Consistent with the BAAQMD CEQA Guidelines, a proposed project would have a significant impact if it would result in:

- Emissions that exceed 80 pounds per day or 15 tons per year for direct and indirect sources of ROG, NO_x, and PM₁₀.
- Emissions of carbon monoxide that cause a projected exceedance of the ambient carbon monoxide state standard of 9.0 ppm for 8-hour averaging period. For carbon monoxide, an increase of 550 pounds per day would be considered significant if it leads to a possible local violation of the carbon monoxide standards (i.e., if it creates a “hot spot”).
- Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million for toxic air contaminants.

4.7.2.2 Landfill Closure Impacts (Construction of the Landfill Final Cover)

The proposed landfill cover would be constructed in phases over a period of four years. Landfill side slopes would be covered first, followed by the top deck. Phase 1 of the proposed project would begin in June 2008 and would cover the eastern side-slope of the TCRDF landfill. Subsequent phases would be in 2009, 2010, and 2011 and would cover the western side-slope, southern-side slope, and top deck, respectively. Each phase of construction would last three to four months. The proposed construction schedule would allow for settlement of solid waste prior to installation of the final closure liner on the top deck and limits the area of disturbance at any one time. It also limits the work to a time period unlikely to experience rain.

Up to 541,000 cubic yards of soil material could be required to construct the proposed landfill cover, which would consist of soil layers of varying depth up to four feet. Soil material used for the cover would be obtained from an on-site borrow area, south of the landfill mound, and from off-site sources. The amount of soil material to be hauled from off-site locations would depend on the quality and quantity of the soil available from the on-site borrow area. As a worst-case estimate, the total amount of off-site soil material that would be required is approximately 185,000 cubic yards. This soil could be obtained from sites in east and south Fremont, Milpitas, and Sunol.

The proposed landfill cover construction schedule, summaries of the area to be covered during each construction season, and the estimated amount of soil required for each project phase is listed in Table 4.7-3.

Phase	Schedule	Cover Placement Location	Acreage to be Covered	Total Soil Material Required (cubic yards)	Soil From Off-Site Sources (Maximum Quantity in cubic yards)
1	June – Sept. 2008	East Side-Slope	20.9	98,320	33,620
2	June – Sept. 2009	West Side-Slope	19.8	93,150	31,850
3	June – Sept. 2010	South Side-Slope	33.0	155,240	53,090
4	June – Sept. 2011	Top Deck	41.3	194,290	66,440
Note: Most or all of the soil material for the landfill final cover is projected to come from on-site. The estimates of soil from off-site sources represent an estimated maximum.					

During construction of the landfill cover, grading and other cover construction activities would intermittently generate fugitive dust and exhaust emissions. The amount of dust generated would be highly variable and is dependent on the size of the area being worked, amount of activity, soil conditions, and meteorological conditions. Dust generating construction activities would occur for about three months per year for each of the phases of the landfill cover construction. Standard construction equipment, including bulldozers, excavators, backhoes, scrapers, rollers, and graders would be used to install the final cover. This equipment is similar to the equipment the TCRDF currently operates at the landfill on a year-round basis. Once the closure activities begin, the existing landfill equipment would no longer be operated.

Construction Dust

Although grading and cover construction activities would be temporary, they have the potential to cause both nuisance and health-related air quality impacts. PM_{10} is the pollutant of greatest concern associated with dust. If uncontrolled, PM_{10} levels downwind of actively disturbed areas could exceed State standards. In addition, dust fall on adjacent properties could be a nuisance. If uncontrolled, dust generated by grading and landfill cover construction activities would result in a significant impact.

Impact AIR-1: Landfill closure activities would intermittently generate fugitive dust and exhaust emissions from construction equipment. This could result in short-term air quality impacts. **(Significant Impact)**

Mobile Emissions During Construction of the Final Cover

Criteria Pollutants

Landfill closure activities could involve the transport of up to 185,000 cubic yards of off-site soil material over the approximately four years of final cover construction. Use of heavy-duty diesel-fueled trucks to haul the soil to the project site would result in additional exhaust emissions and fugitive dust being generated from the trucks traveling over the haul route roadways.

Emissions of air pollutants from the haul trucks exhaust were estimated using emission factors for heavy-duty diesel-fueled trucks from the CARB's mobile source emission factor model EMFAC2007. Particulate matter emissions from truck tire and brake wear were also calculated using EMFAC2007 emission factors. Fugitive dust (PM_{10}) emissions from haul truck travel over the haul routes were calculated using U.S. EPA emission factors for vehicle travel on paved roadways. In calculating the exhaust and dust emissions summer conditions and a haul route length of 11 miles were assumed. The 11-mile haul distance represents the greatest distance to an off-site source of soil (i.e., Sunol). The average truck travel speed was assumed to be 40 miles per hour to account for both freeway and surface street travel.

As shown in Table 4.7-3, Phase 4 of the proposed project would require the greatest amount of soil material and could result in the transport of up to 66,440 cubic yards of off-site soil material. The estimated emissions associated with the transport of 66,440 cubic yards of soil materials are presented in Table 4.7-4.

Table 4.7-4 Estimated Emissions from Off-Site Soil Transport				
	Daily Emissions (lbs/day)			
	ROG	NO _x	CO	PM ₁₀ ²
Emissions	3.0	53.7	14.7	38.4
BAAQMD Threshold	80	80	550	80
	Annual Emissions (tons/year)			
	ROG	NO _x	CO	PM ₁₀ ²
Emissions	0.1	1.8	0.5	1.3
BAAQMD Threshold	15	15	--	15

Notes: Based on 5,537 trucks traveling 22 miles roundtrip for 66 days using EMFAC2007 Emission Factors. PM₁₀ includes PM₁₀ from exhaust, tire and break wear, and fugitive road dust.

The daily and annual emissions generated from off-site soil transport during Phase 4 would be below BAAQMD daily and annual significance thresholds of 80 lb/day and 15 tons per year, respectively for ROG, NO_x, and PM₁₀. CO emissions would be well below the 550 lbs/day threshold and are not expected to result in increased local ambient CO concentrations. The amount of truck traffic generated by landfill closure would also be substantially below that generated by the operating landfill. Many of the vehicles hauling waste to the landfill will be going to the new Materials Processing Facility (MRF) on Boyce Road. The air quality impacts of operating a MRF at that location were addressed in an EIR certified by the City of Fremont in December 2003.⁵⁴

Impact AIR- 2: Exhaust emissions and road dust from on-road haul trucks bringing soil materials to the site during landfill closure activities would not generate substantial regional or local air emissions. **(Less Than Significant Impact)**

Toxic Air Contaminants

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known Toxic Air Contaminant. The BAAQMD has not developed any procedures or guidelines for identifying these impacts from temporary construction activities where emissions are transient. They are typically evaluated for stationary sources (e.g., large compression ignition engines such as generators) in health risk assessments over the course of lifetime exposures (i.e., 24 hours per day over 70 years). Diesel exhaust poses both a health and nuisance impact to nearby receptors. These construction activities will occur during a relatively short time, and therefore, the impacts are considered to be less than significant.

Impact AIR-3: Construction activities associated with installation of the final cover of the land would occur over a relatively short time and would not be a substantial new source of diesel exhaust and toxic air contaminants. **(Less Than Significant Impact)**

⁵⁴ City of Fremont. 2003. *Revisions to the City of Fremont Waste Management System Final EIR (SCH#2001122003)*.

4.7.2.3 Long-Term Operational Emissions of the Tri-Cities Landfill

Criteria Pollutants

Landfill Emissions

As previously discussed in the existing setting section, the TCRDF operates several stationary sources of emissions that are permitted by the BAAQMD. The largest source of emissions at the TCRDF is the landfill itself, which generates emissions of methane gas from the decomposition of solid waste. Emissions of methane are controlled by the facility's landfill gas collection system, which consists of extraction wells and a gas combustion flare. Landfill gas is collected in the extraction wells and conveyed by vacuum pressure to the flare. The combustion of the landfill gas creates combustion pollutants, including NO_x, CO, ROGs, SO₂ (sulfur dioxide), and PM₁₀. As a Municipal Solid Waste (MSW) facility approaches its capacity, the decomposition of solid waste will peak and then gradually decrease as less solid waste is added to the landfill. As less solid waste decomposes, less methane is generated from the landfill and thus less secondary combustion pollutants are generated from the gas flare. TCRDF gas generation was estimated to peak during 2006.⁵⁵ Closure of the landfill would ensure that an increase in methane gas and associated secondary combustion pollutants would not occur from the TCRDF. Emissions from these sources, therefore, would gradually decrease as the landfill generates less methane gas over time.

Other existing permitted sources of emissions at the TCRDF include a portable generator used to chip and grind yard, landscaping, and wood waste for cover materials and diesel engines used in air compressors, a vacuum truck, and a sweeper truck. Active landfill operations also generate emissions from approximately 449 daily haul trucks delivering solid waste to the landfill and mobile equipment used to dispose, move, and cover the solid waste. Closure of the TCRDF landfill would eliminate emissions from the mobile equipment used to dispose, move, and cover solid waste at this location.

Under the proposed project, there would be a net decrease in the number of truck trips to and from the site and, therefore, a local air quality benefit to the immediate project area (refer to Table 4.6-2). Exhaust emissions from the haul trucks used to transport waste, however, would likely continue to occur on the regional level as these trucks haul solid waste to other landfills within the San Francisco Bay Air Basin. Thus, closure of the landfill would reduce emissions of criteria pollutants from the landfill equipment sources but as reflected in the EIR prepared for the MRF on Boyce Road, these emissions would still exist at the regional level.

Closure of the landfill, would also reduce emissions of criteria air pollutants from permitted sources of emissions, including the portable generators and diesel engines, as well as eliminate fugitive dust generated from ongoing landfill operations. These emissions could occur at other landfills that would receive waste currently being disposed of at the TCRDF.

Corporation Yard and Concrete Recycling Emissions

Under the proposed General Plan amendment and rezoning, the Corporation Yard at the TCRDF could be used for parking, maintenance, and repair of up to 50 trucks per day. Employees that would travel to and from the Corporation Yard would include haul truck drivers, office workers, and service workers in maintenance areas. Haul truck drivers traveling to and from the Corporation Yard in private vehicles to report to work would generate approximately 78 daily trips. If none of the trucks

⁵⁵ Source: EMCON/OWT. 2003. Joint Technical Document.

was out of service for repairs, there could be roughly 100 truck trips per day plus an additional 115 vehicle trips by up to 38 on-site Corporation Yard employees (refer to Table 4.6-2). The number of employees at the Corporation Yard (35-38 employees), and associated employee vehicle trips, would be similar to existing conditions. Implementation of the proposed General Plan amendment would generate approximately 178 new daily vehicle trips, consisting of 100 truck trips and 78 automobile trips. These new trips would not be a source of substantial new regional air emissions (i.e., over 80 pounds per day of NO_x, ROG or PM₁₀).

Impact AIR-4: Landfill closure would reduce emissions of criteria pollutants from active landfill operations. Operation of a 50-truck Corporation Yard and a concrete facility would not result in substantial new regional air emissions. **(Less Than Significant Impact)**

Toxic Air Contaminants

Mobile Sources

As previously discussed, the CARB has designated diesel particulate matter from diesel engine exhaust as a toxic air contaminant. The TCRDF's existing diesel landfill equipment that are operated year round would not be operated at this location once closure of the landfill begins, thus, reducing emissions from these sources.

Closure of the landfill would also reduce solid waste haul trucks and other vehicle traffic along access routes and at the TCRDF facility itself. Closure of the landfill would therefore result in reduced diesel particulate emissions at the local level.

Under the proposed General Plan amendment and rezoning, the Corporation Yard could be used for parking, maintenance, and repair of up to 50 trucks per day. These trucks would travel to and from the site daily, generating approximately 100 trips. The number of employees at the Corporation Yard would be similar to existing conditions (approximately 35-38 employees). Currently, approximately 449 daily haul trucks deliver solid waste to the landfill (approximately 900 daily trips) and mobile equipment is used to dispose, move, and cover the solid waste. Under the proposed project, there would be a net decrease in the number of truck trips to and from the site and, therefore, a net decrease in diesel exhaust emissions in the immediate area.

Landfill Gas

In addition to methane, landfill gas contains trace amounts of TACs produced during decomposition of solid waste. As part of its Major Facility Review Permit, the BAAQMD performed a health risk screening analysis for TCRDF based on the projected landfill gas peak flow and continuous 24-hour combustion of the landfill gases. The BAAQD determined operation of the TCRDF facility would result in a carcinogenic health risk 0.13 in one million, well below the threshold of 10 in one million. Placement of the final cover and maintenance of the landfill as proposed under the Closure Plan would ensure that no increase in methane gas and associated secondary combustion pollutants would occur from the TCRDF landfill and gas collection system. This would avoid any increase in the potential exposure of sensitive receptors to TACs.

Impact AIR-5: Closure of the landfill would not result in an increase in toxic air contaminants emissions or increased exposure of sensitive receptors to diesel particulate matter and other toxic air contaminants. **(Less Than Significant Impact)**

4.7.3 Mitigation and Avoidance Measures

4.7.3.1 *Construction Dust Impacts (Borrow Area and Landfill Cover Construction)*

MM AIR 1.1: Implementation of the measures recommended by the BAAQMD would reduce the air quality impacts associated with grading and other landfill cover construction activities. Contractors shall implement the following measures during excavation of the borrow area and placement of the final cover over the landfill:

- Water all active construction areas twice daily and more often during windy periods.
- Cover all trucks hauling soil, sand, and other loose materials or maintain at least two feet of freeboard.
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas.
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas and sweep streets daily (with water sweepers) if visible soil material is deposited onto the adjacent roads.
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas.
- Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles.
- Limit traffic speeds on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.
- Suspend excavation and grading activity when high winds cause visible dust clouds to extend beyond the construction site.
- Limit the area subject to excavation, grading, and other construction activity at any one time.

MM AIR-3.1: Although not a significant impact, the following measures are included in the project to reduce emissions of diesel particulates during construction of the final cover of the landfill:

- Opacity is an indicator of exhaust particulate emissions from off-road diesel powered equipment. The project shall ensure that emissions

from all construction diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately.

- The contractor shall install temporary electrical service whenever possible to avoid the need for independently powered equipment (e.g., compressors).
- The proposed project shall limit idling of construction equipment to five minutes and properly tune and maintain equipment for low emissions.

4.8 NOISE

The following discussion is based upon an environmental noise study prepared by *Illingworth & Rodkin, Inc.* A copy of the noise study is provided in Appendix E.

4.8.1 Existing Setting

4.8.1.1 *Overview*

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its loudness. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is amplitude of sound waves combined with the reception characteristics of the ear. Amplitude may be compared with the height of an ocean wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales that are used to describe noise in a particular location. A *decibel* (dB) is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its level. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level* (or dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 4.8-1. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq} . The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level* (CNEL) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level*, L_{dn} , is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Table 4.8-1 Typical Sound Levels Measured in the Environment		
Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
Jet fly-over at 300 meters	120 dBA	Rock concert
	110 dBA	
Pile driver at 20 meters	100 dBA	Night club with live music
	90 dBA	
Large truck pass by at 15 meters	80 dBA	Noisy restaurant
	70 dBA	Garbage disposal at 1 meter
Gas lawn mower at 30 meters		Vacuum cleaner at 3 meters
Commercial/Urban area daytime		Normal speech at 1 meter
Suburban expressway at 90 meters	60 dBA	Active office environment
Suburban daytime		
	50 dBA	Quiet office environment
Urban area nighttime		
	40 dBA	
Suburban nighttime		Library
Quiet rural areas	30 dBA	Quiet bedroom at night
	20 dBA	
Wilderness area	10 dBA	Quiet recording studio
	0 dBA	
Threshold of human hearing		Threshold of human hearing

4.8.1.2 Regulatory Background

The State of California and the City of Fremont have established guidelines, goals, policies, and standards that are designed to limit noise exposure at noise-sensitive land uses. These include: 1) the California Environmental Quality Act (CEQA) guidelines; 2) the City of Fremont Noise Element of the General Plan; and 3) the City of Fremont Municipal Code.

State CEQA Guidelines

CEQA has established guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. Under Appendix G of the CEQA Guidelines, the environmental checklist, a project would normally be considered to have a significant impact if the resulting noise levels conflict with standards in the local General Plan or Noise Ordinance or applicable standards of other agencies, if noise levels generated by the project would substantially increase existing noise levels, if persons would be exposed to excessive ground-borne noise or vibration, if persons would be located within two miles of a public airport and exposed to excessive noise levels, or if persons would be exposed to a substantial temporary or periodic increase in ambient noise levels in the project vicinity.

CEQA does not define what noise level increase would be considered substantial. Typically, in high noise environments, if the L_{dn} due to the project would increase by more than three dBA at noise-sensitive receptors, the impact would be considered significant. Where the existing noise level is lower and considered normally acceptable for a particular use, a noise increase of 5 dBA or greater would be considered a substantial increase in noise levels.

Fremont General Plan

Noise and land use planning issues are addressed in the Health and Safety Chapter of the City of Fremont General Plan (adopted in 1991). The noise policies of the General Plan that are relevant to the project are listed below.

Health and Safety Policies

- HS 8.1.2 In general, the City will require the evaluation of mitigation measures for projects under the following circumstances:
- The project would cause the L_{dn} to increase by 3 dBA or more;
 - An increase would result in an L_{dn} greater than 60 dBA;
 - The L_{dn} already exceeds 60 dBA;
 - The project has the potential to generate significant adverse community response.
- HS 8.1.3 Noise created by commercial or industrial sources associated with new project or developments shall be controlled so as not to exceed the noise level standards set forth in Table 10-2 as measured at any affected residential use.

General Plan Table 10-2: Noise and Land Use Compatibility Standards for New Industrial and Commercial Sources		
Maximum Cumulative Duration of Noise Event in any One-Hour Period	Exterior Noise Level Standards, dBA	
	Daytime 7:00 AM to 10:00 PM	Nighttime 10:00 PM to 7:00 AM
30 Minutes	50	45
15 Minutes	55	50
5 Minutes	60	55
1 Minute	65	60
0 Minutes	70	65

HS 8.1.4 Control noise at its source to maintain existing noise levels, and in no case to exceed the acceptable noise levels as established in the Land Use Compatibility for Community Exterior Noise Environments (Figure 10-11 of the General Plan).

City of Fremont Municipal Code

The Fremont Municipal Code includes noise performance standards for activities within the City in Title VIII (Planning and Zoning), Chapter 2 (Zoning), Article 19 (Performance Standards), Section 8-21904. Under these standards, the maximum normally acceptable sound level generated by any user at the property line nearest the source shall not exceed an L_{dn} level of 70 dB when adjacent uses are industrial or wholesale users. When adjacent to offices, retail, or sensitive industries, the sound shall be limited to an L_{dn} level of 65 dB. When uses are adjacent or contiguous to residential, park, or institutional uses, the maximum sound shall not exceed an L_{dn} level of 60 dB. Excluded from these standards are occasional sounds generated by the movement of railroad equipment, temporary construction activities, or warning devices. Each of the noise level standards specified in the Municipal Code is reduced by five (5) dBA for single-tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises when the site is adjacent to residential uses.

4.8.1.3 Existing Noise Levels

The project site is located at the west end of Auto Mall Parkway adjacent to the Union Pacific Railroad tracks west of Interstate 880. The nearest developed land is a light industrial development located about 1/3-mile northeast of the site on the south side of Auto Mall Parkway. The nearest noise-sensitive residential receivers are located over one-mile from the landfill site (refer to Figure 4.1-2).

Sources of community noise in the area include ongoing operations at the site, intermittent railroad train operations on the UPRR tracks, vehicular traffic on Auto Mall Parkway, and vehicular traffic on Interstate 880.

Noise generating activities associated with existing operations at the TCRDF site include truck trips to and from the site, processing of materials for recycling, maintenance activities, and placement and cover of materials at the landfill. These activities are described below.

Existing On-Site Noise Sources

Transport of Materials to the Site

Material is transported to and from the TCRDF landfill and resource recovery area roughly between 2:00 AM and 5:00 PM daily. Trucks traveling to the landfill and resource recovery area (i.e., with appliances, tires, or wood waste) travel on an access haul road and stop at truck scales and collection booths.

Trucks going to the concrete recycling facility go directly to the facility to drop off or pick up materials from 7:30 AM to 4:00 PM, Monday through Saturday. The busiest time of year for concrete recycling activities is May through August.

On-Site Materials Processing

Processing of materials for recycling includes concrete crushing approximately once per month at the concrete recycling facility and grinding of wood and landscape materials in a barrel grinder in the yard and wood waste area.

Maintenance Activities

Equipment maintenance activities are carried out at the Corporation Yard. Noise-generating activities include equipment maintenance at the shop facility and waste oil recycling area, a truck and container washing facility, tank filling at a water supply station, and equipment operation at the wastewater pump station.

Landfilling Activities

There are a number of pieces of mobile equipment that currently operate at the landfill. This equipment include bulldozers, compactors, scrapers, front-end loaders, bulldozers, water and vacuum trucks, graders, excavators, backhoes, and various trucks. There are approximately 15 large pieces of mobile equipment operating intermittently at the landfill.

Existing Noise Levels on Auto Mall Parkway

Noise levels were measured at the nearest light industrial facility located east of the project site on Auto Mall Parkway (refer to Figure 4.1-1). During a mid-morning measurement, noise levels ranged from 51 dBA to 76 dBA. The most significant source of noise affecting the environment at this nearest receptor was vehicular traffic on Auto Mall Parkway. Thirteen heavy trucks passed by the noise measurement location during a 10-minute period. Noise levels reached 75-76 dBA. The trucks included dump trucks, and smaller trucks, such as pickups with trailers. The average noise level (L_{eq}) during the measurement was 65 dBA, 60 feet from the roadway centerline. Noise resulting from ongoing landfill operations did not contribute measurably to the noise environment at the noise measurement location, approximately 1/3 mile from the TCRCF.

4.8.2 **Noise Impacts**

4.8.2.1 ***Thresholds of Significance***

For the purposes of this EIR, a noise impact is considered significant if the project will result in:

- exposure of persons to or generation of noise levels in excess of standard established in the local general plan or noise ordinance, or applicable standards of other agencies; or
- exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels; or
- a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; or
- for a project located within an airport land use plan or, where such a plan as not been adopted, within two miles of a public airport, will the project expose people residing or working in the project area to excessive noise levels.

The following criteria were used to evaluate the significance of noise impacts:

Noise and Land Use Compatibility. Land use proposals where existing or future noise levels exceed *Noise and Land Use Compatibility Standards for New Industrial and Commercial Sources* in the Fremont General Plan or Performance Standards for noise levels at the closest property line in the Fremont Municipal Code would be considered a significant impact.

Substantial Increase in Ambient Noise Levels. The California Environmental Quality Act does not define what noise levels increase would be considered substantial. Typically, in high noise environments in Fremont (over 60 dBA DNL), if the L_{dn} due to the project would increase by more than 3 dBA at noise-sensitive receptors, the impact is considered significant.

4.8.2.2 ***Project-Generated Noise***

Project activities that could generate substantial amounts of noise include: 1) installation of a final cover over the active landfill; 2) excavation and conditioning of soil materials; 3) import of offsite materials for landfill cover; and 4) continued use of the Corporation Yard and concrete recycling facility on up to 46 acres of the site. Noise generated by landfill closure activities (items 1-3) and by continued use of the Corporation Yard and concrete recycling facility (item 4) are described below.

Noise Generated By Landfill Closure Activities

The installation of the landfill cover would occur in four phases in four consecutive years with work occurring between May and September of each year. The final cover for the side slopes would be completed during the first three years and final cover on the top of the landfill would be completed during the fourth, and final, year. During the closure process, mobile equipment (such as bulldozers and graders) will operate on the landfill site. There would be 15-20 pieces of heavy equipment operating at any one time during the first three phases of landfill closure (i.e., placement of cover over the side slopes). During the last phase, there would be an approximately 25-30 percent less equipment needed to place the final cover over the top of the landfill. Equipment anticipated to be used to construct the final cover includes water trucks, scrapers, excavators, haul trucks, soil compactors or smooth drum rollers, motor graders, bulldozers, and backhoes and/or front end loaders.

Primary noise sources associated with the landfill closure are the mobile equipment used to construct the landfill cover and to excavate and condition on-site borrow materials (soil). The numbers and types of pieces of equipment that would operate during the closure period are similar to the number and types of pieces of equipment that currently operate at the landfill. There could be, during maximum utilization of equipment, five more pieces of heavy equipment operating at any one time than currently occurs. Noise generation from the site could increase about 1 dBA L_{eq} during daytime operations. That increase in noise from the site would be imperceptible in the surrounding areas and would not be a substantial increase in ambient noise levels.

Noise Generated by Off-Site Fill Material Transport

Most of the soil for the final cover is planned to be obtained from an on-site borrow area. As described in *Section 2.3.10 Off-Site Sources of Soil for Landfill Cover*, some soil could come from off-site sources, however. The following discussion describes peak truck traffic for hauling soil to the site. These levels of traffic could be generated if the upper ranges of projected quantities of soil from off-site sources are used.

Haul trucks for soil deliveries from offsite sources could travel to the site at rates of 10-12 trucks per hour on average, 15-20 trucks per hour during the peak periods, with daily totals on the order of 125-150 truck trips. At a maximum of 15-20 trucks per hour, the calculated maximum hourly average noise level resulting from closure truck traffic is 62 dBA L_{eq} hour during a peak truck traffic hour.

As previously noted in *Section 4.8.1.3*, the measured noise level along Auto Mall Parkway was 65 dBA L_{eq} during a mid-morning measurement. One of the major contributors to existing noise levels is truck traffic to and from the landfill. The projected noise from peak off-site soil material transport (62 dBA L_{eq} hour) would be less than existing noise generated by trucks traveling to and from the landfill. Existing truck traffic from waste hauling would stop once landfill closure activities start. Noise levels during the landfill closure, therefore, would be equal to or less than noise levels than currently exists along Auto Mall Parkway.

Impact NOI-1: During installation of the final cover, noise generation from the site would not increase substantially. In addition, ambient noise levels on Auto Mall Parkway would be equal to or less than existing noise levels. **(Less Than Significant Impact)**

Noise Generated By Operation of the Corporation Yard and Concrete Recycling Facility

As previously described, maintenance activities at the Corporation Yard and concrete recycling facility are currently sources of environmental noise and the closest sensitive receptors are over one mile from the site.

Both of these facilities would continue to operate at the same levels during the closure period and noise levels from their operations would not be expected to change substantially during this period.

Up to 50 trucks would be parked and serviced at the Corporation Yard under the proposed Conditional Use Permit. If none of the trucks was out of service for repairs, there could be roughly 100 truck trips per day plus an additional 192-200 vehicle trips by employees⁵⁶. As shown in Table

⁵⁶ Assuming 78 daily trips (39 in, 39 out) by haul truck drivers to the site in their personal vehicles and approximately 115 daily trips by up to 38 Corporation Yard employees using ITE rates for General Light Industrial

4.6-1, the truck traffic generated from proposed operations at the Corporation Yard would be substantially less than existing truck traffic to and from the TCRDF and would not result in an increase in ambient noise levels on the roadways nearest the site.

Haul trucks and heavy equipment have audible beepers that sound when the trucks are backing up, which would be a source of short-term, periodic noise during the construction of the cover, and as part of the Corporation Yard operation. As discussed in *Section 4.1.2.1 Land Use Conflicts*, there are no sensitive receptors near the site under existing conditions. Vacant land north of the Alameda County Flood Control District channel within the City of Newark, however, is designated for low density residential use, a possible golf course, and open space. The closest area designated for these uses is approximately 1,800 feet from the Corporation Yard. At this distance, noise from backup beepers would be approximately 44 dBA L_{max} . These noise levels would be below maximum ambient noise levels and, while audible, are not loud enough to result in sleep disturbance.⁵⁷

The concrete recycling facility was originally anticipated to operate until the landfill closes. The project includes extension of the operation of the existing concrete facility into the future in the same general configuration and scope of activities as currently exists at the site. The continued operation of the concrete recycling facility would cause no change in noise levels above levels currently existing.

Impact NOI-2: Continued operation of the Corporation Yard and concrete recycling facility as they are proposed would not result in increased ambient noise levels or impacts to sensitive receptors. **(Less than Significant Impact)**

4.8.3 **Mitigation and Avoidance Measures**

No mitigation or avoidance measures are required.

4.8.4 **Conclusions Regarding Noise Impacts**

The proposed closure of the landfill and a General Plan amendment and zoning to allow industrial development, plus approval of a conditional use permit to allow continued use of the Corporation Yard and concrete recycling facilities on a portion of the TCRDF site would not result in significant adverse noise impacts compared to existing conditions. **(Less Than Significant Impact)**

uses. The trip generation for haul truck drivers assumes 1.3 employees per vehicle for general industrial uses. Trip generation estimates for Corporation Yard employees based upon Institute of Traffic Engineers (ITE) trip generation rates for General Light Industrial (110) uses of 3.02 trip ends per employee (ITE Trip Generation, 7th Edition, 2003).

⁵⁷ Michael Thill, Illingworth & Rodkin, Inc., personal communications, March 12, 2007.

4.9 CULTURAL RESOURCES

4.9.1 Existing Setting

4.9.1.1 *Archaeological Resources*

An archaeological literature review and surface reconnaissance of the proposed borrow area was conducted in 2000 to search for evidence of recorded archaeological and/or historic archaeological sites in and around the project area.⁵⁸ No recorded archaeological sites (historic and/or prehistoric sites) are located inside the project boundaries and no sites were reported within one-half mile of the site. By 2000, several studies had been conducted within a half mile of the site.⁵⁹

Visibility of native soils is limited on the site by landfill activities and import of fill materials. Modern debris includes stockpiles of sorted materials, imported fill and shredded materials. The review conducted in 2000 concluded that the native soils on the TCRDF site were located at and just above sea level in a marsh environment that likely would not have been well-suited to historic or prehistoric habitation.

4.9.1.2 *Historic Resources*

Buildings on the site consist of modern modular buildings and metal structures. Based upon a review of the City of Fremont General Plan Primary Historic Resources list, there are no listed historic resources on the site.⁶⁰

Landfilling is reported to have begun on the site in 1967. Debris on the site is therefore unlikely to include historic materials.

4.9.2 Cultural Resource Impacts

4.9.2.1 *Thresholds of Significance*

For the purposes of this EIR, a cultural resources impact is considered significant if the project will:

- cause a substantial adverse change in the significance of a historic resources as defined in §15064.5-of the CEQA Guidelines; or
- cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5-of the CEQA Guidelines; or
- disturb any human remains, including those interred outside of formal cemeteries; or
- directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

⁵⁸ Source: City of Fremont. 2000. *Long-Term Solid Waste Disposal Facility Final Environmental Impact Report*. This environmental review was undertaken as part of a proposed expansion of solid waste disposal activities at the TCRDF.

⁵⁹ Source: City of Fremont. 2000. *Long-Term Solid Waste Disposal Facility Final Environmental Impact Report*.

⁶⁰ Source: City of Fremont General Plan, Appendix I.

4.9.2.2 *Impacts to Buried Cultural Resources*

Landfill Area

Native soils underlying the existing landfill would not be disturbed during installation of the final cover and other landfill closure activities. Impacts to cultural resources, therefore, would not occur in this area of the TCRDF site.

Borrow Area

The proposed project includes excavation of one to several feet of materials from the proposed borrow area, including native soils.

Cultural resources have not been report on or immediately adjacent to the project site. Although unlikely, previously unidentified archaeological resources could be encountered during excavation of soil materials.

Impact CUL-1: The proposed project includes excavation of native soil materials in an on-site borrow area. Although unlikely, buried archaeological resources could be encountered during soil excavation for landfill cover material. **(Significant Impact)**

Corporation Yard and Concrete Recycling Facility (General Plan Amendment Area)

Continued operation of the concrete recycling facility would not disturb underlying native soils or disturb possible buried cultural resources. Under the proposed General Plan amendment and Use Permit, some redevelopment of the Corporation Yard could occur. Disturbance would likely be limited to grading to prepare for construction of paved parking areas or concrete slabs for maintenance facilities. Although unlikely at this site, previously unidentified archaeological resources could be encountered during site preparation.

Impact CUL-2: Future modifications to the Corporation Yard to facilitate the parking and maintenance of haul trucks could disturb native soils. Although unlikely, buried archaeological resources could be encountered during site grading. **(Significant Impact)**

4.9.3 Mitigation and Avoidance Measures

4.9.3.1 *Program Level Mitigation Measures*

Measures that would avoid or reduce possible future cultural resources impacts associated with the General Plan amendment are identified below, in the form of Plan policies or programs and local, regional, state or federal regulations. Program level mitigation measures would be applicable to future modifications to the Corporation Yard or concrete recycling facility.

PMM CUL-2.1: The California Health and Safety Code Section 7050.5 outlines the requirements for handling human remains if found outside of a dedicated cemetery. The county coroner is required to contact the Native Heritage Commission within 24 hours if the coroner recognizes the remains to be those of a Native American. The Native American Heritage Commission then

identifies the Most Likely Descendant (MLD) of the deceased Native American. Provisions for reburial will be made with the MLD.

PMM CUL-2.2: Section 15064.5 of the CEQA Guidelines identifies steps that should be taken in the event Native American remains, historical resources or unique archaeological resources are accidentally discovered during construction. These steps include immediate evaluation of the find by a qualified archaeologist and implementation of avoidance measures or appropriate mitigation. For future projects that involve ground disturbance, the City of Fremont will include standard conditions that incorporate these measures outlined in the CEQA Guidelines.

4.9.3.1 Project Level Mitigation Measures

Borrow Area

MM CUL 1.1: In the event cultural materials are found during site grading or excavation in the borrow area, the following measures will be implemented:

All construction within 50-feet of the find would be halted, the Director of Community Development would be notified, and a qualified archaeologist would examine the find and make recommendations regarding the significance of the find and the appropriate mitigation. Recommendations could include collection, recordation, and analysis of any significant cultural materials.

- If human remains are discovered, the Alameda County Coroner shall be notified. If the remains are determined to be Native American, the coroner shall notify the Native American Heritage Commission, who shall identify the Most Likely Descendant (MLD) of the deceased Native American.
- If the Planning Director finds that the cultural resource find is not a significant resource, work shall resume only after the submittal of a preliminary report and after provisions for reburial and ongoing monitoring are accepted. Provisions for identifying descendants of a deceased Native American and for reburial shall follow the protocol set forth in the CEQA Guidelines. If the site is found to be a significant archaeological site, a mitigation program shall be prepared and submitted to the Director of the Community Development Department for consideration and approval, in conformance with the protocol set forth in Section 15064.5 of the CEQA Guidelines.

4.9.4 Conclusions Regarding Cultural Resources

The proposed closure of the landfill and a General Plan amendment to allow continued use of the Corporation Yard and concrete recycling facilities on a portion of the TCRDF site, with the inclusion of mitigation measures included in the project, would not result in substantial impacts to cultural resources. **(Less Than Significant Impact with Mitigation)**

4.10 VISUAL RESOURCES AND AESTHETICS

4.10.1 Existing Setting

The TCRDF project site and surrounding area of Fremont is located at the southerly end of San Francisco Bay. The baylands area of Fremont has a unique visual setting. The marshes, sloughs, and salt evaporation ponds adjacent to San Francisco Bay meet open fields and the elevated, grassy mound of the existing landfill (Photo 1 and Photo 2). The area is also crossed by large electric transmission towers and the main line of the Union Pacific Railroad, which runs roughly parallel to the eastern boundary of the site. (Photos 3-4).

Open fields and marshes border the TCRDF landfill and Resource Recovery Areas (Photos 1, 3 and 5). Vegetation within these areas consists of low growing salt marsh and grassland vegetation, with no woody vegetation. Some channels and wetland areas support taller cattails and bulrush. Surrounding fields and marshes to the north, south and west are part of the San Francisco Bay National Wildlife Refuge. The San Francisco Bay National Wildlife Refuge is within the viewshed of the project site in the vicinity of Mowry and Albrae Sloughs.

Within the TCRDF, the central area of site is industrial in character. There are large piles of concrete rubble from concrete recycling and containers are used and stored in the Resource Recovery Area (Photos 6 and 7). Heavy equipment is also used on the site to move soil and other materials (Photo 8). Some landscape trees are planted near the site entrance and along the access road (Photo 6). Due to the relatively flat topography of the area, planted trees, and the bed of the UPRR line, the Corporation Yard, concrete recycling area, and Resource Recovery Area are not highly visible from public roadways or the adjacent San Francisco Bay National Wildlife Refuge.

The man-made environment in the vicinity includes industrial and commercial development. Industrial buildings and structures are generally low lying and large trucks traveling to the landfill and industrial uses in the area make up a relatively high proportion of traffic on local roadways. New commercial development, characterized by one and two story buildings surrounding surface parking lots, borders Auto Mall Parkway and Interstate 880 to the east. Further east are residential, commercial and industrial areas of Fremont and the foothills which border the lowlands near the bay (refer to background area in Photo 5).

4.10.2 Visual Resources and Aesthetics Impacts

4.10.2.1 *Thresholds of Significance*

For the purposes of this EIR, a visual and aesthetics impact is considered significant if the project will:

- substantially alter existing views of scenic vistas or resources; or
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; or
- substantially degrade the existing visual character or quality of the site and its surroundings; or
- create a new source of substantial light or glare which will adversely affect day or nighttime views in the area.



PHOTO 1. View of baylands and foothills, looking southeast from the southern end of the landfill.



PHOTO 2. View of grassland, Resource Recovery Area, and landfill from southeast corner of TCRDF site.



PHOTO 3. View of on-site marsh and landfill mound, northwest of Auto Mall Parkway along UPRR line.



PHOTO 4. View of landfill from Stevenson Boulevard, looking south (near San Francisco Bay Wildlife Refuge).



PHOTO 5. View of adjacent open field, south of Auto Mall Parkway and east of the UPRR line, looking southeast towards foothills.



PHOTO 6. View of concrete recycling facility, looking southeast from Auto Mall Parkway near project entrance.



PHOTO 7. View of Resource Recovery Area looking north.



PHOTO 8. View of landfill from Resource Recovery Area, looking northwest.

4.10.2.1 *Changes to the Visual Character of the Site*

The project site is visible from nearby roadways, including Auto Mall Parkway and Boyce Road, and the UPRR main line. The side slopes and top of the landfill are visible intermittently from I-880, which is over one mile from the site. Views of the landfill from I-880 and portions of Auto Mall Parkway are partially blocked by commercial and industrial development in the vicinity. Due to the relatively flat topography of the area and the screening provided by planted trees and the bed of the UPRR line, the Corporation Yard, concrete recycling area, and Resource Recovery Area are not highly visible from public roadways or the San Francisco Bay National Wildlife Refuge.

Under the proposed project, the landfill mound would be modified by placement of the final cover. The elevation of the mound would reach up to 150 feet msl, approximately three to five feet higher than under existing conditions. The slopes of the landfill would support low growing vegetation, similar in appearance to the grassland vegetation currently on the landfill slopes (refer to Photos 2, 3 and 4).

The proposed General Plan amendment and Use Permit modifications would allow continued use of the existing Corporation Yard and concrete recycling facility. The appearance of these uses would not substantially change. No new sources of nighttime lighting or daytime glare are proposed on the site under the proposed project.

Impact AES-1: Closure of the landfill and continued operation of the Corporation Yard and concrete recycling facility under the proposed project would not substantially alter views or scenic vistas or substantially degrade the existing visual character of the site or its surroundings. **(Less Than Significant Impact)**

4.10.2.2 *Other Impacts of General Plan Amendment and Zoning*

New development that includes buildings, parking lots, outdoor activities similar to development on Auto Mall Parkway and Boyce Road could occur after approval of the General Plan designation and zoning. Some of that development could be visible from public roadways and from the Don Edwards San Francisco Bay National Wildlife Refuge. Without a specific plan for the type and amount of such development, and its proximity to the Refuge, evaluation of its visibility, including nighttime lighting, from the Refuge is too speculative. Future development would require CEQA review.

4.10.3 Mitigation and Avoidance Measures

No mitigation or avoidance measures are required.

4.10.4 Conclusions Regarding Visual and Aesthetics Impacts

The proposed closure of the Tri-Cities landfill and continued operation of a Corporation Yard and concrete recycling facility would not result in substantial visual and aesthetics impacts. **(Less Than Significant Impact)**

4.11 UTILITIES AND SERVICE SYSTEMS

4.11.1 Existing Setting

4.11.1.1 *Water Supply*

Water used on the TCRDF site is stored in several storage tanks. Potable water is trucked in and stored in a 13,000 gallon storage tank. Potable water is provided in the permanent restrooms located in the site's administrative building. Bottled drinking water is also supplied in the administrative building.

Non-potable water is obtained from a well located near the site entrance. There are four on-site tanks, ranging in size from 5,000 gallon to 11,000 gallons, that store water for non-potable uses, including fire fighting.

4.11.1.2 *Wastewater*

Wastewater collection and treatment services in the City of Fremont are provided by Union Sanitary District. The project site is served by a four-inch sewer line in Auto Mall Parkway. The project site discharges four types of wastewater: leachate, equipment wash water, liquid condensate from the landfill gas collection system, and domestic waste. Leachate is produced as liquids percolate through the landfill and collect contaminants. Leachate is collected in a series of pipelines buried in the landfill and conveyed to the sanitary sewer in a force main. Equipment wash water is generated from the daily cleaning of industrial vehicles on the site at the wash rack facility. The wash rack facility is equipped with a concrete paved containment area and collection drain to collect the wash water. Condensate is from the gas generated by the landfill. As the gas is extracted and collected, there is some condensation into a liquid within the landfill gas collection system. This condensate is collected from the gas collection line just before the lines reach the flare, and is conveyed to the wastewater collection system. Domestic waste is generated from the sanitary service for the administrative building. Wastewater and sewage are collected in on-site sanitary sewer lines that connect to the sewer line in Auto Mall Parkway and are transported to the Alvarado Treatment Plant in Union City.

The contents of discharges to the Union Sanitary District system are regulated under District Ordinance No. 36. This ordinance lists uniform requirements for users of the Publicly Owned Treatment Works of Union Sanitary District and enables the District to comply with all applicable State and Federal laws, including the Clean Water Act (33 United States Code § 1251 et seq.) and the General Pretreatment Regulations (40 Code of Federal Regulations Part 403) the water quality requirements set by the Regional Water Quality Control Board and/or the State of California Water Resource Control Board. Samples of leachate and condensate discharged from TCRDF are routinely sampled prior to discharge.

4.11.1.3 *Storm Drainage*

Undeveloped portions of the site are generally flat and drain into Albrae Slough to the southwest. In the southern developed portion of the site, water drains to the southwest corner where it is pumped into a perimeter ditch that drains northward until it joins an Alameda County Flood Control District channel (Line N). Drainage from the northern developed portion of the site flows to a pump located at the northeastern corner of Fill Area 1. The pump directs water into the north perimeter ditch which also discharges into the Alameda County Flood Control District channel. The Alameda

County Flood Control channel discharges into Mowry Slough, which ultimately discharges into the San Francisco Bay.

4.11.1.4 *Solid Waste*

The TCRDF currently receives residential, commercial, and industrial wastes collected in the Cities of Fremont, Newark, and Union City. Material is both landfilled and transferred off-site for recycling and is accepted from licensed waste haulers, contractors, landscapers and private individuals. Solid waste collection services for residential and non-residential (i.e., commercial and industrial) customers in the City of Fremont are provided by Allied Waste Services.

The facility includes a permitted waste disposal site on 115 acres of the 379-acre site. The landfill is a permitted facility regulated by the Regional Water Quality Control Board, California Integrated Waste Management Board, and the Local Enforcement Agency (County of Alameda) under Title 27 of the California Code of Regulations.

In addition to landfilling activities, construction and demolition debris, wood waste, yard waste, soil, and large appliances are currently handled and sorted as part of resource recovery operations in an area south of the existing Corporation Yard and east of the landfill. An on-site drop-off center for recyclable materials, such as cardboard, newspaper, metal cans and bottle glass is operated on the site, south of the truck scales. The TCRDF accepts whole tires for recycling. An outside recycler removes tires from the site for off-site recycling.⁶¹ E-waste, such as televisions and computer monitors, is also collected and shipped off-site for processing. Concrete recycling is carried out on-site by a lessee, Raisch Corporation.

Co-mingled recyclable materials are also unloaded and consolidated into larger loads at the TCRDF and hauled to a materials recovery facility (MRF) on Davis Street in the City of San Leandro for processing.

As of July 2006, there was approximately 1.1 million cubic yards of remaining landfill space available for refuse disposal at the Tri-Cities Recycling and Disposal Facility.⁶² The operator of TCRDF proposes to stop accepting direct haul waste for landfilling at the site on June 30, 2007. After June 30, 2007, waste taken to Fremont Transfer Station will be delivered to the landfill until TCRDF reaches the permitted capacity. After that time, solid waste from the cities of Fremont, Newark, and Union City will be disposed of at the Altamont Landfill, near Livermore.

Other than off-haul of recyclable materials, the TCRDF does not generally generate solid waste that is transported off-site for disposal. Equipment maintenance activities at the Corporation Yard may generate waste that requires disposal by licensed commercial waste collection services.

Electricity and Gas

Electrical and natural gas services to the City of Fremont are provided by Pacific Gas & Electric (PG&E). Electric lines are present in the project area to serve the site.

⁶¹ *Joint Technical Document Tri-Cities Recycling and Disposal Facility, Alameda County, California, July 2003 (Revised December 2004), Volume I (Prepared for Waste Management of Alameda County, Inc. by Shaw EMCON/OWT, Inc.)*

⁶² Source: Guy Petraborg, Waste Management, written communications, August 28, 2006.

4.11.2 Utilities and Service Systems Impacts

4.11.2.1 Thresholds of Significance

For the purpose of this project, a utility impact is considered significant if the project will:

- require or result in the construction of a new water supply, storm water drainage, or wastewater treatment facility or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- results in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments; or
- need new or expanded entitlements for water supplies; or
- be served by a landfill with insufficient permitted capacity.
- comply with federal, state, and local statutes and regulations related to solid waste.

4.11.2.2 Water Supply Impacts

Under existing conditions, potable water is trucked to the project site and non-potable water is obtained from an on-site well. The currently proposed uses would not construct any new structures requiring water service or substantially increase demand for potable water. The project proposes that potable water would continue to be trucked to the site. Non-potable water would continue to be used for dust control and other purposes. No new water supply lines or other water supply infrastructure would be necessary to serve the project site as it is proposed.

Future development or redevelopment under the proposed General Plan designation and zoning at a higher intensity or with different uses could require an extension of potable water supply pipelines to the site. This would likely be from Auto Mall Parkway. Additional development that would require extension of a water supply pipeline will require a project specific CEQA review that addresses water supply and growth inducement.

Impact UTIL-1: Landfill closure activities and continued operation of a Corporation Yard and concrete recycling facility would not result in an increased water demand or require the construction of new water supply infrastructure. **(Less Than Significant Impact)**

4.11.2.3 Wastewater Impacts

The project site discharges four types of wastewater: leachate, equipment wash water, condensate from the landfill gas collection system, and domestic waste. In the long-term, closure of the landfill portion of the site would incrementally reduce waste water generation from two or more of these four sources. Leachate and landfill gas (and landfill gas condensate) are produced during decomposition of landfill materials. Over time, leachate and condensate from the landfill would be reduced as the municipal solid waste in the landfill decomposes. The production of leachate also could be reduced with the placement of the final cover over the landfill. The final cover would reduce infiltration of rainwater into landfill materials.

The number of employees at the site would remain roughly the same or decreased. The amount of equipment for landfilling activities on the site would be reduced and wash water for this equipment would decrease. There could be additional wash water to clean trucks stored and maintained at the Corporation Yard, however, it is not anticipated that the wash water generated would exceed

permitted quantities under the facilities existing waste water discharge permit. The proposed project, therefore, would not adversely impact the capacity of the Union Sanitary District wastewater collection and treatment system.

Constituents in the landfill leachate and condensate will continue to be monitored during the 30 year post-closure period to assure waste water discharges conform to the requirements of the Union Sanitary District.

Impact UTIL-2: Landfill closure activities and continued operation of a Corporation Yard and concrete recycling facility would not result in substantial increases in waste water discharges or require the construction of new waste water infrastructure. **(Less Than Significant Impact)**

4.11.2.4 Storm Drainage Impacts

Drainage channels will be constructed on the top deck, side slopes and around the perimeter of the closed landfill as a part of the proposed landfill closure project. The final drainage system will be designed to accommodate a 24-hour, 100-year storm event. Drainage from the top of the landfill will be conveyed to the Alameda County Flood Control District channel (Line N) to the northwest of the landfill through an existing 36-inch pipe and flapgate. Drainage systems in the remainder of the site will remain the same as existing conditions.

Under the proposed General Plan amendment and use permits, continued operation of a Corporation Yard and concrete recycling facility would be allowed. No physical modifications to these facilities are currently proposed. In the event new impervious surfaces, such as additional areas of pavement or building rooftops, are proposed in the Corporation Yard, additional environmental review will be required to assess possible impacts to the storm drainage system.

Impact UTIL-3: The proposed project includes construction of new drainage facilities on the landfill as part of placement of the final cover. No off-site improvements to existing storm water facilities are proposed or required. **(Less Than Significant Impact)**

Solid Waste Impacts

Under the proposed project, wastes would be generated at the Corporation Yard and concrete recycling facility from office uses and at vehicle maintenance facilities. Waste generated at the site, including paper, cardboard, and waste oils and grease, would be disposed of in conformance with federal, state, and local statutes and regulations by commercial waste haulers.

Once the TCRDF stops accepting waste, solid waste from the TCRDF, Corporation Yard and concrete recycling facility would be transported to the Altamont Landfill, east of Livermore. There is an estimated remaining capacity at the Altamont Landfill of 40 million tons, or until approximately 2025.⁶³ The proposed project, landfill closure and continued operation of a Corporation Yard and concrete recycling facility, is not anticipated to result in a substantial increase in solid waste generation from the TCRDF site.

⁶³ Source: Karen Moroz, County of Alameda Local Enforcement Agency, telephone communications, March 6, 2007.

Impact UTIL-4: Waste generated at the site would be disposed of in conformance with federal, state, and local statutes and regulations. The Fremont area is served by a landfill with sufficient permitted capacity. **(Less Than Significant Impact)**

4.11.3 Mitigation and Avoidance Measures

No mitigation or avoidance measures required.

4.11.4 Conclusions Regarding Utilities and Service Systems

The proposed closure of the landfill and continued use of the Corporation Yard and concrete facilities on a portion of the TCRDF site would not have a significant impact on utilities and service systems. **(Less Than Significant Impact)**

4.12 PUBLIC FACILITIES AND SERVICES

Unlike utilities and service systems, public facilities and services are provided to the community as a whole, usually from a central location or from a defined set of nodes. The resource base for delivery of these services, including the physical service delivery mechanisms, is financed on a community-wide basis, usually from a unified or integrated financial system. The service delivery agency can be a city, county, service or other special district. Usually, new development will create an incremental increase in the demand for these services; the amount of demand will vary widely, depending on both the nature of the development (residential vs. commercial, for instance) and the type of services, as well as on the specific characteristics of the development (such as senior housing vs. family housing).

The impact of a particular project on public facility services is generally a fiscal impact. By increasing the demand for a type of service, a project could cause an eventual increase in the cost of providing the service (more personnel hours to patrol an area, additional fire equipment needed to service a tall building, etc.). That is a fiscal impact, not an environmental one. CEQA does not require an analysis of fiscal impacts.

CEQA analysis is required if the increased demand is of sufficient size to trigger the need for a new facility (such as a school or fire station), since the new facility would have a physical impact on the environment. CEQA requires that an EIR then identify and evaluate the physical impacts on the environment that such a facility would have. To reiterate, the impact that must be analyzed in an EIR is the impact that would result from constructing a new public facility (should one be required), not the fiscal impact of a development on the capacity of a public service system.

4.12.1 Existing Setting

4.12.1.1 *Fire Protection Services*

Fire protection services for the project site are provided by the Fremont Fire Department. Of the ten fire stations maintained by the Department, Station #7 would be the first responding station for the site. This station is located at 43600 South Grimmer Boulevard, approximately 1.8 miles northeast of the project area. The station is within the required response radius. It is currently equipped with one fire engine and one truck with six personnel and one battalion chief. Station #4, located at 1000 Pine Street, roughly 4.5 miles northeast of the project site, would be the second-responding station.

The Fremont Fire Department is comprised of 157 employees, 10 engines, two ladder trucks, two canine search and rescue teams, and a hazardous materials response team. The Department maintains a service ratio of approximately 0.75 employees/1,000 residents.⁶⁴ In 2004, the Department received 13,352 total calls, 60% of which were medical/rescue calls. Only 3% of calls were related to fires. The Department maintains a response time goal of six minutes and 30 seconds or less 90% of the time. Fremont Fire currently utilizes the 2001 California Fire and Building Codes, and hydrants are spaced at 300 foot intervals in industrial areas.⁶⁵

⁶⁴ Population for Fremont in 2006 taken from City of Fremont Website, <http://www.ci.fremont.ca.us/Business/Demographics/Population.htm>

⁶⁵ Geoff LaTendresse, Division Chief of Operations, Fremont Fire Department, written communication, July 14, 2006

4.12.1.2 *Police Protection Services*

Police protection services for the project site are provided by the Fremont Police Department. The Department headquarters is located at 2000 Stevenson Boulevard between Guardino Drive and Civic Center Drive. The City is divided into three policing “Zones”, which are each comprised of several “Reporting Areas”. The project site is located within Reporting Area 92A within Zone 3. Because of the remote and industrial nature of the project area, the Police Department does not regularly patrol near the site. When fully staffed, Zone 3 will have one sergeant, and, depending on the time of day, between three and nine officers. Zone 3 is generally the zone with the fewest calls for service; however, business parks in the area are generating more calls for burglary and theft.

The Department maintains a response time goal of seven minutes for emergency calls. The project site is within the seven minute response time radius. For non-emergency calls, the response time to the site would be roughly 45 minutes. The Department currently has a service ratio of .89 officers/1000 residents. This is the lowest staffing ratio for any city in the U.S. with a population over 200,000.⁶⁶

4.12.1.3 *Parks*

The project site borders the Don Edwards San Francisco Bay National Wildlife Refuge. The 30,000-acre refuge provides critical habitat to resident species and hosts over 280 species of birds as part of the Pacific Flyway. The Don Edwards San Francisco Bay National Wildlife Refuge is visited by hundreds of thousands of people each year. The main visitor’s center and hiking areas are located seven miles northwest of the project site on Marshlands Road near Thornton Avenue in Newark. The Refuge also operates an Environmental Education Center located on Zanker Road in Alviso, approximately 11 miles south of the project site.

The closest city park to the project site is Rix Park, located on Seneca Park Loop, approximately 2.3 miles east of the project site.

4.12.2 Public Facilities and Services Impacts

4.12.2.1 *Thresholds of Significance*

For the purposes of this EIR, a public facilities and services impact is considered significant if the project will result in:

- substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services.

Fire and Police Services Impacts

The proposed project would not generate population or employment growth or construct new buildings on the project site. Therefore, the proposed project would not result in an increased need for fire and police services. No new government facilities would be needed as a result of the project.

⁶⁶ Craig Steckler, Chief of Police, Fremont Police Department, written communication, July 19, 2006.

Impact PUB-1: Landfill closure activities and continued operation of a Corporation Yard and concrete recycling facility would not result in an increased demand for fire or police services or require the construction of new fire or police facilities. **(No Impact)**

Parks and Recreation Facilities Impacts

The proposed project would not generate population growth in the project area or result in use of public park facilities in the City by new residents. The proposed project, therefore, would not require the construction of new public parks or result in substantial physical impacts to existing facilities.

Impact PUB-2: Landfill closure activities and continued operation of a Corporation Yard and concrete recycling facility would not result in an increased demand for park or recreation facilities. **(No Impact)**

4.12.3 Mitigation and Avoidance Measures

No mitigation or avoidance measures are required.

4.12.4 Conclusions Regarding Public Services Impacts

The proposed closure of the landfill and a General Plan amendment to allow industrial development, plus approval of a conditional use permit to allow continued use of the Corporation Yard and concrete recycling facilities on a portion of the TCRDF site would not result in an increased demand or substantial impacts to public facilities or services. **(No Impact)**

4.13 RECREATION

4.13.1 Existing Setting

The project site borders the Don Edwards San Francisco Bay National Wildlife Refuge. The 30,000-acre refuge provides critical habitat to resident species and hosts over 280 species of birds as part of the Pacific Flyway. The main visitor's center and hiking areas are located seven miles northwest of the project site on Marshlands Road near Thornton Avenue in Newark. The Refuge also operates an Environmental Education Center located on Zanker Road in Alviso, approximately 11 miles south of the project site.

In the vicinity of the project site, the only public access allowed in the Refuge is for waterfowl hunting. The hunting season generally takes place from mid- to late-October to mid- to late-January. Access to adjacent Salt Evaporation Ponds M5 and M6 is only allowed by boat.⁶⁷ Hunters can enter these ponds from the bay, drag their boat over the levees, and into the pond. Once in the pond, hunters are only allowed to shoot from their boat. The levees are not open for walking or hiking and no hunting is allowed within 300 feet of the Union Pacific Railroad line.

The closest city park to the project site is Rix Park, located on Seneca Park Loop, approximately 2.3 miles east of the project site.

4.13.2 Recreation Impacts

For the purposes of this EIR, a recreation impact is considered significant if the project will result in:

- an increase in the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

The proposed project would not generate population growth in the project area, either directly through the construction of housing, or indirectly through the creation of a substantial number of new jobs. The proposed project, therefore, would not result in an increased need for recreation facilities or an increase in the use of existing parks.

The public does not currently have access to the Don Edwards San Francisco Bay National Wildlife Refuge from the project site or adjacent properties and the closest hiking trails are located near the Refuge Visitor Center in Newark, over five miles to the northwest. Public access is only allowed by boat during the waterfowl hunting season. The proposed landfill closure and continued use of the Corporation Yard and concrete recycling facility would not interfere with seasonal use of Salt Evaporation Ponds M5 and M6 for waterfowl hunting or otherwise impact recreational access to the Don Edwards San Francisco Bay Wildlife Refuge.

Impact REC-1: Landfill closure activities and continued operation of a Corporation Yard and concrete recycling facility would not result in substantial impacts to neighborhood or regional parks or recreational access to the Don Edwards San Francisco Bay National Wildlife Refuge (**Less Than Significant Impact**)

⁶⁷ Carmen Minch, Outdoor Recreation Planner, San Francisco Bay NWR Complex written communications, December 13, 2006.

4.13.3 Mitigation and Avoidance Measures

No mitigation or avoidance measures are required.

4.13.4 Conclusions Regarding Recreation Impacts

The proposed closure of the landfill and a General Plan amendment and zoning to allow industrial development, plus approval of a conditional use permit to allow continued use of the Corporation Yard and concrete recycling facilities on a portion of the TCRDF site would not result in recreation impacts. **(No Impact)**

4.14 ENERGY

4.14.1 Existing Setting

In the City of Fremont, electricity and natural gas are supplied by Pacific Gas & Electric Company (PG&E). The project site currently contains a 115-acre landfill, resource recovery operations, on-site storage, and an approximately 14 acre Corporation Yard. High voltage electrical transmission towers are located in the northeastern diked area and there is an easement for the electrical transmission lines that crosses this area. Existing energy use primarily consists of energy for landfill and resource recovery operations, electricity for the administrative building, and gasoline and diesel used by on-site operation vehicles and trucks traveling to and from the site.

4.14.2 Energy Impacts

4.14.2.1 *Thresholds of Significance*

For the purposes of this EIR, an energy impact is considered significant if the project will:

- use fuel or energy in a wasteful manner; or
- result in a substantial increase in demand upon energy resources in relation to projected supplies.

4.14.2.2 *Projected Energy Use*

The proposed project includes the closure of a solid waste landfill and construction of a landfill cover.⁶⁸ The closure of the landfill portion of the site will initially result in increased energy usage for construction activities related to the landfill cover. This will consist of fuel for vehicles and construction equipment. Landfill closure activities over four construction seasons will use several bulldozers, graders, scrapers, a fuel truck, a utility truck, and a water truck to place soil and install landfill gas, leachate, and drainage systems. After final closure of the landfill, semi-annual monitoring activities proposed to take place will require small amounts of additional energy and maintenance equipment.

The administration facilities in the Corporation Yard will continue to operate and will require energy in comparable amounts to existing conditions. Energy will also continue to be used at the Corporation Yard and concrete recycling facility for equipment maintenance and by vehicles traveling to and from the site.

The project proposes to use on-site soils for a portion of the landfill cover. This would use less energy than transportation of loads of soil to the site from other locations. Of the 500,000 to 600,000 cubic yards of soil needed for the landfill cover, 215,000 to 375,000 cubic yards are proposed to consist of on-site soils.

As of 2003, there were approximately 867,000 heavy-duty vehicles, such as medium and heavy-duty trucks and buses, in California.⁶⁹ These vehicles use approximately 2.6 billion gallons of diesel and

⁶⁸ Once the landfill stops accepting municipal solid waste from the cities of Fremont, Newark, and Union City, that waste will be directed to a transfer station and the Altamont Landfill in Livermore. The energy impacts of the transfer of municipal solid waste to the Altamont Landfill was previously addressed in the *Revisions to the City of Fremont Waste Management System Final EIR* certified in 2003.

⁶⁹ Source: California Energy Commission. 2003. *Forecasts of California Transportation Energy Demand, 2003-2023* (October 2003).

0.7 billion gallons of gasoline per year. The daily use rate of diesel (and other distillate fuels) in California was 10.8 million gallons per day in 2004.⁷⁰ The diesel fuel consumed by trucks and equipment hauling and placing soil over the landfill as part of the final cover would represent an incremental increase in fuel use, however, it would be well below one-tenth of one percent of the statewide demand and the use would be relatively short-term.

Closing the landfill and placing a final cover over the waste is required by the site's permits, and by state and federal law. The landfill design, by using an alternative cover instead of more soil, will require less fuel than would otherwise be required, as will use of on-site soil. The project is not, therefore, wasting energy or using it unnecessarily. The proposed project would not substantially increase demand for electricity or fuel in the Fremont area or use fuel or energy in a wasteful manner. The proposed project, therefore, would not result in significant energy impacts.

IMPACT EN-1: The proposed landfill closure will require increased use of fuel during landfill closure, but will not substantially increase long-term fuel use and will not waste fuel or other energy. **(Less Than Significant Impact)**

4.14.2.3 *Other Impacts of General Plan Amendment and Zoning*

Any future development or redevelopment under the proposed General Plan designation and zoning could increase energy use. Since no specific proposal is currently available and the unusual nature of the site makes it difficult to predict either the amount or type of such development, estimates of the efficiency of energy use at this time would be speculative. Any additional development will require a project specific CEQA review.

4.14.3 Mitigation and Avoidance Measures

No mitigation or avoidance measures are required.

4.14.4 Conclusions Regarding Energy Impacts

The proposed closure of the landfill and a General Plan amendment and zoning to allow industrial development, plus approval of a conditional use permit to allow continued use of the Corporation Yard and concrete recycling facilities on a portion of the TCRDF site would not result in a substantial increase in energy consumption or the wasteful use of energy. **(Less Than Significant Impact)**

⁷⁰ Source: Energy Information Administration (EIA)-Department of Energy Petroleum Profile for California (October 2006) [<http://tonto.eia.doe.gov/oog/info/state/ca/html>]

5.0 CUMULATIVE IMPACTS

Cumulative impacts, as defined by CEQA, refer to two or more individual effects, which when combined, are considerable or which compound or increase other environmental impacts. Cumulative impacts may result from individually minor, but collectively significant projects taking place over a period of time. The CEQA Guidelines state (§15130) that an EIR should discuss cumulative impacts “when the project’s incremental effect is cumulatively considerable.” The discussion does not need to be in as great detail as is necessary for project impacts, but is to be “guided by the standards of practicality and reasonableness.” The purpose of the cumulative analysis is to allow decision makers to better understand the impacts that might result from approval of past, present and reasonably foreseeable future projects, in conjunction with the proposed project addressed in this EIR.

The Guidelines advise that a discussion of cumulative impacts should reflect both their severity and the likelihood of their occurrence. To accomplish these two objectives, the analysis should include either a list of past, present and probable future projects or a summary of projections from an adopted general plan or similar document. The analysis must then determine what the project’s contribution to any cumulatively significant impacts is cumulatively considerable, as defined by Section 15065(a)(3) of the CEQA Guidelines.

The analysis in this section is based upon consideration of a list of approved and pending projects within the Cities of Fremont and Newark, west of Interstate 880. The list of these projects is provided in Table 5-1.

Table 5-1 List of Approved and Pending Projects		
Project Location	Land Use	Size
Approved Projects		
Globe 6000 Stevenson Boulevard, Fremont	Retail	450,000 s.f.
Ohlone College, Newark Campus 39399 Cherry Street, Newark	Institutional/Education	160,000 s.f. (31 acres)
NewPark Mall Expansion 2086 NewPark Mall	Retail	22,500 s.f. (free-standing restaurants) 2,700 s.f. (mall) theater complex with 3,800 seats
Pending Projects		
Area 4 Specific Plan North of Stevenson Boulevard, west of the UPRR tracks	Single Family Residential Recreation Public Facility	1,000 residential units 18-hole golf course elementary school

The Globe retail development was approved by the Fremont City Council in January 2007. It consists of phased development of a retail shopping area near Interstate 880. The Ohlone College Newark Center for Technology and Health Sciences is currently under construction and is scheduled to open in 2008. Academic programs proposed at the new campus include Business and Technology; Exercise Science and Wellness; Health Sciences; Environmental Sciences; and General Education.

The number of students at this campus is planned to be approximately 2,450 persons.⁷¹ In the City of Newark, environmental review is currently being conducted to allow for preparation of a specific plan in Area 4, north of Stevenson Boulevard and west of the UPRR tracks.⁷²

The *Oakland A's* professional baseball team has publicly indicated they are interested in pursuing a “baseball village” development in the City of Fremont at a site that is situated southeast of the landfill site. The project site may include 100-150 acres of land and include a new professional baseball stadium, retail and entertainment complex and housing. Specific intensity of uses and distributions are unknown as no land use development application has been filed with the City. The proposed schedule of landfill closure at the Tri-Cities Landfill is not anticipated to conflict or substantially overlap with completion of a possible new stadium and retail development. This project, therefore, is not addressed further in this cumulative impacts discussion.

5.1 CUMULATIVE IMPACTS

Several cumulative effects from the developments listed in Table 5-1 will be substantial. The impacts from the Global retail and the Ohlone College Newark campus projects will include increased traffic on Stevenson Boulevard and Mowry Avenue and possible impacts to special status species, primarily during construction.

Cumulatively significant impacts from these developments will include traffic, air quality, loss of open space and visual and aesthetic changes. The proposed project, however, would not result in increased traffic or substantial increases in noise or air quality emissions. Activity areas would remain near the center of the site and the project, therefore, would not contribute to cumulative impacts on sensitive wildlife habitats on or adjacent to the San Francisco Bay National Wildlife Refuge or cumulative impacts on open space or visual and aesthetic changes. The projects contributions to cumulative impacts are discussed below.

5.1.1 Cumulative Land Use Impacts

The cumulative projects would be within the boundaries of the adjacent cities of Fremont and Newark. Development on some of these sites would result in a change of uses and a significant intensification of development. Each of the two cumulative projects (Global and Ohlone College Newark) is far enough from the landfill site to be visually separate and distinct.

The compatibility of new development with adjacent land uses and the general character of surrounding areas are considered as a part of the local (City of Fremont and City of Newark) architectural and environmental review processes. Through appropriate site design and review of these urban projects, land use compatibility impacts such as visual intrusion, noise, and shade and shadow impacts from tall buildings would be avoided.

The project is not located adjacent to residential or commercial development. It is near the baylands and sensitive habitats; however, the proposed project does not include a substantial intensification of human activities that would directly or indirectly result in land use compatibility impacts.

The project would not contribute to significant cumulative land use compatibility impacts.

⁷¹ Source: Ohlone Community College District. 2004. *Newark Center for Health Sciences & Technology Draft EIR*. September 2004.

⁷² Richard Fujikawa, Planner, City of Newark, March 19, 2007, email communications.

5.1.2 Cumulative Geology and Soils Impacts

Construction of the pending residential, commercial and industrial projects would result in exposure of additional residents, employees, and customers to the earthquake hazards of the region. Other geologic conditions in Fremont and Newark that could damage buildings and pavement include the presence of expansive and liquefiable soils.

The proposed project does not propose specific improvements, such as new paving or additional maintenance buildings. Future individual developments will be subject to project review. The design and construction of the projects in conformance with Seismic Zone 4 criteria in the California Building Code and standard engineering practice would reduce geology, soils, and seismicity impacts to a less than significant level. Project-specific geologic analysis will be conducted as a part of the individual permit processes to determine the design and construction features needed to reduce geologic and seismic impacts for specific developments. Through these standard measures, the proposed project and cumulative development will not result in cumulative geologic impacts.

5.1.3 Cumulative Biological Resources Impacts

The proposed project is near the San Francisco Bay baylands and sensitive habitats, however, the proposed project does not include a substantial intensification of human activities that would directly or indirectly impact these habitats. Modifications on the site would occur in previously disturbed areas and the project would not result in impacts to sensitive habitats, including those of special status plants. The open areas of the site could be used by Burrowing Owls in the future; however, the site does not provide habitat generally suitable for other special status animal species.

In combination with other forecasted development in Fremont and Newark, the project would have little cumulative effect on sensitive biological resources and therefore, would not be expected to significantly impact biological resources above what has already occurred as a result of existing conditions. The project, therefore, would not contribute substantially to regional or local cumulative impacts to sensitive habitats or habitats of special status plants or wildlife.

Like the proposed project, the Ohlone College project could result in impacts to individual burrowing owls or California tiger salamanders during construction. Both projects include measures to avoid impacts to individual California tiger salamanders and burrowing owls.

5.1.3 Cumulative Hydrology and Water Quality Impacts

Construction of the pending development listed in Table 5-1, along with the proposed project, could result in cumulative short-term erosion and sedimentation. Development and redevelopment of sites could also increase long-term non-point source pollution in stormwater runoff from the sites. The implementation of Best Management Practices (BMPs), such as stormwater inlet protection and use of straw wattles in construction areas, would minimize sedimentation of surface water during construction. Each of the pending projects will be subject to individual review and permit requirements of the NPDES and Alameda Countywide Clean Water Programs that will include requirements to implement BMPs to control pollutants discharged to surface waters and the storm drainage system. Through these standard individual actions, cumulative impacts to stormwater quality would be reduced to a less than significant level.

5.1.4 Cumulative Transportation Impacts

The proposed project would not result in an increase in traffic on the local roadway network and, therefore, would not contribute to adverse cumulatively transportation impacts in the area.

5.1.5 Cumulative Air Quality Impacts

For a project that does not individually have significant operational air quality impacts, the determination of a significant cumulative air quality impact is based upon an evaluation of the consistency of the project with the local general plan and of the general plan with the most current Clean Air Plan (CAP). If a project requires a general plan amendment, a project would result in a significant cumulative impact if vehicle miles traveled (VMT) would be greater than the VMT that would be anticipated under the original land use designation or the project would result in sensitive receptors in close proximity being exposed to sources of objectionable odors, toxics or accidental releases of hazardous materials.

The proposed project includes two main components: closure of the Tri-Cities landfill and adoption of a General Plan amendment, rezoning and Use Permit to allow operation of a Corporation Yard and concrete recycling facility on 46 acres of the site. Closure of the landfill is addressed and anticipated in the City of Fremont General Plan and does not require a General Plan amendment. Closure of the landfill, which is consistent with the General Plan, would not result in a significant cumulative air quality impact.

The second component of the proposed project includes a General Plan change on a 46 acre area of the TCRDF site. Under the existing General Plan designation, landfilling and resource recovery operations on the site involve approximately 446-600 haul truck trips per day from the Newark, Union City, and Fremont area plus employee vehicle trips (an estimated 136 vehicle trips per day) and a maximum of 128 trips for the concrete recycling facility. If landfilling were to continue on other areas of the site, a similar number of daily trips could occur. The proposed uses would result in approximately 370 vehicle trips per day (100 haul truck trips per day within the City of Fremont plus 136 vehicle trips per day by Corporation Yard employees and up to 128 truck trips to and from the concrete recycling facility). Assuming that the vehicle miles traveled per trip in the Fremont area would be the same or less as under existing conditions, the proposed General Plan amendment and Use Permit would not result in an increase in VMT.

The primary source of toxic air contaminants from the project are diesel fueled trucks and equipment and the project would not be a source of substantial odors or use types of hazardous materials that would have substantial air borne hazards if accidentally released. The closest sensitive receptors are more than one mile from the site and truck traffic from the TCRDF would not increase under the proposed project. A pending project, the Area 4 Specific Plan, is located immediately north of the TCRDF within the City of Newark. This area is designated for low density residential use, a possible golf course, and open space in the Newark General Plan. The closest area designated for these uses is approximately 1,800 feet (0.3 mile) from the Corporation Yard. Based upon this separation between the Corporation Yard and possible uses in the Area 4 and the number of haul trucks proposed to use the Corporation Yard, the proposed project would not result in substantial toxic air contaminant impacts to sensitive receptors from diesel fueled trucks.

The proposed General Plan amendment and Use Permit, as proposed, would not increase VMT or result in land use conflicts with existing uses or cumulative projects in the vicinity. The project, therefore, would not result in a significant cumulative air quality impact.

5.1.6 Cumulative Noise Impacts

During installation of the final cover, noise from heavy equipment could increase ambient noise levels in the immediate vicinity by 1 dB. There are no sensitive receptors in the immediate vicinity of the project and pending projects in the vicinity may or may not be constructed at the same time as the proposed landfill closure when the greatest amount of activity at the landfill would occur. Since land use entitlements have not yet been approved for nearby sites, overlap is unlikely. The proposed project and other pending development, therefore, would not result in a foreseeable cumulative noise impact in the area during construction of the final cover on the landfill.

Under the proposed General Plan amendment and rezoning, the Corporation Yard and concrete facility would continue to be used. As discussed in section 4.1.2.1 *Land Use Conflicts*, future residential development in the City of Newark could be located north of the Alameda County Flood Control Channel in the City of Newark. The closest area in the City of Newark to the Corporation Yard would be 1,800 feet (0.3 mile) away. Haul trucks have audible beepers that sound when the trucks are backing up, which would be a source of short-term, periodic noise. At this distance, noise from backup beepers would be approximately 44 dBA L_{max} . These noise levels would be below maximum ambient noise levels and, while audible, are not loud enough to result in sleep disturbance.⁷³

Net traffic to and from the site would decrease compared to existing conditions and, therefore, the project would not make a cumulative considerable contribution to increased traffic noise on local roadways under cumulative conditions.

5.1.7 Cumulative Visual Resources and Aesthetics Impacts

Construction of the pending and approved projects listed in Table 5-1, along with redevelopment allowed under the proposed General Plan amendment and zoning on 46-acres of the site, could result in changes in the visual character of areas within the Cities of Fremont and Newark. Previously approved projects and pending projects are subject to the cities design standards. Cumulative development would not substantially degrade the existing visual character or quality of the City and surrounding neighborhoods if future development is determined to be consistent with the City's design standards during the Architectural Review process.

Implementation of the design standards, as determined during the City's Architectural Review process, will avoid substantial cumulative impacts to visual resources in developed areas of southern Alameda County.

5.1.8 Cumulative Utilities and Service Systems Impacts

As discussed in *Section 4.11 Utilities and Service Systems*, potable water is trucked to the site and connection to the City's water supply system is not proposed. Wastewater generation is not projected to increase beyond currently permitted levels and, therefore, the project would not contribute to any adverse cumulative impacts to wastewater treatment facilities of the Union Sanitary District.

The project site is located near San Francisco Bay and an Alameda County Flood Control District channel. No physical modifications to the Corporation Yard or concrete recycling facility are currently proposed and the project is not anticipated to require physical modifications to drainage

⁷³ Michael Thill, Illingworth & Rodkin, Inc., personal communications, March 12, 2007.

facilities in the City of Fremont. For these reasons, the project would not make a cumulatively considerable contribution to utilities or services impacts in the cities of Fremont or Newark.

5.2 CONCLUSION

The proposed project would not make a cumulatively considerable contribution to cumulative impacts in the cities of Fremont and Newark.

6.0 GROWTH INDUCING IMPACTS

The CEQA Guidelines require that an EIR discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in a surrounding area. Projects which could remove obstacles to population growth (such as a major public service expansion) must also be considered in this discussion.

That portion of the proposed project which is the closure of the active Class III Tri-Cities Recycling and Disposal Facility solid waste landfill would not result in the construction of additional housing or foster economic or population growth.

The General Plan designation and zoning for light industrial purposes of 46 acres of land on the edge of the urban envelope does, however, encourage growth where it has not been planned before. New industrial development at this location-between a closed landfill and a wildlife refuge, could result in unknown impacts to both future inhabitants of the site and to the Don Edwards San Francisco Bay National Wildlife Refuge.

Urban services sufficient to serve a full range of light industrial development, including adequate street capacity and access and water service, would probably be necessary, and the impacts of providing those services are unknown. Once those services were provided, light industrial uses other than those proposed by the project (operation of a Corporation Yard and concrete recycling facility) could generate new employment. They also could induce conversion of a greater area of the TCRDF to higher intensity uses. The General Plan amendment and rezoning of 46 acres of the TCRDF facility, therefore, could indirectly induce growth. The nature and extent of environmental impacts from possible induced growth are not known at this time.

7.0 SIGNIFICANT UNAVOIDABLE IMPACTS

Significant impacts resulting from implementation of the proposed project would be reduced to a less than significant level with the proposed mitigation and avoidance measures included in the proposed project.

8.0 ALTERNATIVES TO THE PROPOSED PROJECT

CEQA requires that an EIR identify alternatives to a project as it is proposed. The CEQA Guidelines specify that the EIR should identify alternatives that “will feasibly attain most of the basic objectives of the project but will avoid or substantially lessen any of the significant effects of the project.” The purpose of this section is to determine whether there are alternatives of design, scope or location that will substantially lessen the significant impacts, even if those alternatives “impede to some degree the attainment of the project objectives,” or are more expensive. [Section 15126.6]

In order to comply with the purposes of CEQA, it is important to identify alternatives that reduce the significant impacts that are anticipated to occur if the project is implemented and to try to meet as many of the project’s objectives as possible. The Guidelines emphasize a common sense approach -- the alternatives should be reasonable, should “foster informed decision making and public participation,” and should focus on alternatives that avoid or substantially lessen the significant impacts.

All impacts that might have been significant will be reduced to a less than significant level by mitigation or avoidance measures included in the proposed project. The significant impacts for which mitigation or avoidance is proposed include:

- Impacts to Biological Resources During Construction (Borrow Area)
- Air Quality Impacts During Construction (Borrow Area and Landfill)
- Hydrology and Water Quality Impacts During Construction (Borrow Area to Landfill)
- Cultural Resources (Possible Impacts During Excavation in Native Soils)

All of the significant impacts of the project would be reduced or avoided by implementation of program (standard) mitigation measures and mitigation measures included in the project. Alternatives required by CEQA to be considered should be capable of avoiding or reducing some or all of the significant impacts listed above.

8.1 SELECTION OF ALTERNATIVES

Consideration of a “No Project” alternative is mandatory. In addition, a logical alternative which might reduce the significant impacts identified for the proposed project includes a different location for landfill borrow or the Corporation Yard and concrete recycling facility. A different location should be considered only if it is capable of avoiding or reducing some or all of the significant impacts identified.

8.2 NO PROJECT ALTERNATIVES

The CEQA Guidelines stipulate that an EIR specifically include a “No Project” Alternative, which should discuss both “the existing conditions, as well as what will be reasonably expected to occur in the foreseeable future if the project is not approved, based on current plans and consistent with available infrastructure and community services.”

The proposed project includes two components; closure of the active landfill and a General Plan amendment and rezoning to allow on-going industrial uses. The discussion below addresses both a no landfill closure scenario and a no project scenario upon the current land use designation for the site.

8.2.1 No Project/No Landfill Closure Scenario

Under this scenario, the landfill would continue receiving waste, which would be covered with daily and intermediate cover. The final cover and extension of the landfill gas and leachate collection systems would not be installed. Existing improvements (maintenance buildings) and the concrete recycling facility could remain.

This No Project alternative scenario would not conform to regulatory requirements, including the Solid Waste Facility Permit for the TCRDF. It would avoid construction impacts (air quality and biological resources) associated with removal of borrow materials, but would increase impacts to underlying groundwater and could result in accelerated erosion. The No Project/No Landfill Closure is not a feasible alternative from a regulatory standpoint and will not be discussed further in this EIR.

8.2.1 No General Plan Amendment or Rezoning Scenario

Under this alternative, the existing General Plan designation and zoning would remain in place. The final cover would be placed over the active landfill, in conformance with regulatory requirements. Limited facilities for maintenance activities at the landfill would be allowed to remain for the 30-year postclosure maintenance period. The existing Corporation Yard would be limited to uses related to landfill maintenance and would not include operation of fleet services. The concrete recycling facility would not continue to operate on the site.

8.2.1.1 *Comparison of Environmental Impacts*

The extent to which the No General Plan Amendment or Rezoning scenario might reasonably be expected to result in lesser project impacts is discussed below for each of the areas of significant impact for the proposed project.

Impacts to Biological Resources During Construction (Borrow Area)

The final cover would be installed under this alternative and construction impacts from site grading in the borrow area would be the same as the proposed project.

Construction Air Quality Impacts

Construction emissions and identified air quality impacts during excavation of the borrow area and installation of the final cover would be the same as the proposed project.

Hydrology and Water Quality Impacts

Short-term water quality impacts associated with excavation in the proposed borrow area would be the same as the proposed project.

Under this alternative scenario, industrial uses (i.e., operation of the Corporation Yard) would be limited to maintenance activities for the landfill. This alternative scenario could incrementally reduce the amount of activity on the site, in terms of vehicle trips and vehicle maintenance in the

Corporation Yard and Resource Recovery areas on the site. This alternative would avoid increased activity (such as vehicle maintenance and repair) that could have water quality impacts if hazardous materials are improperly handled or there are accidental spills. Implementation of regulatory requirements for industrial facilities could substantially reduce impacts from allowed on-site uses, however.

Cultural Resources

Possible impacts to buried cultural resources associated with excavation in native soils in the borrow area would be the same as the proposed project. Possible impacts in the General Plan amendment area would be avoided.

8.2.1.2 Feasibility

The No General Plan Amendment or Rezoning Alternative is feasible from a land use and planning standpoint.

8.2.1.3 Relationship to Project Goals and Objectives

The No General Plan Amendment or Rezoning Alternative would be consistent with the basic objectives of the project that pertain to construction of the Final Closure Cover Liner at the landfill in compliance with state and federal regulations to protect public health, safety, and the environment.

The City of Fremont's objectives for the proposed General Plan and zoning changes include allowing for the continuation of existing uses on the site to the extent they are deemed compatible with future adjacent uses while encouraging resource recovery and diversion activities, ongoing maintenance and supervision of the landfill closure, maintaining the integrity of the site for future appropriate industrial uses within known access, utility, and natural environment constraints. This alternative would allow for ongoing maintenance and supervision of the landfill closure but would not wholly meet the objective of allowing continuation of existing uses that encourage resource recovery (i.e., concrete recycling).

8.3 NO ON-SITE BORROW ALTERNATIVE

Under this alternative, all of the materials would come from off-site and no excavation would not be undertaken in the proposed borrow area. The final cover would be placed over the active landfill, in conformance with regulatory requirements.

Like the proposed project, this alternative would include operation of the existing Corporation Yard and the Raisch Corporation concrete recycling facility. The focus of this alternative would be the reduction of possible biological resources impacts within the proposed borrow area.

8.3.1.1 Comparison of Environmental Impacts

The extent to which the No On-Site Borrow Alternative might reasonably be expected to result in lesser project impacts is discussed below for each of the areas of significant impact for the proposed project.

Impacts to Biological Resources During Construction (Borrow Area)

There would be no on-site excavation for soil borrow. This would avoid the possible impacts to nesting birds and individual California tiger salamanders and salt marsh harvest mice during construction.

Construction Air Quality Impacts

On-site generation of dust from the borrow area would be avoided. On a regional basis, dust and particulate matter could be generated at other sites where soil materials for the final cover are obtained. Air quality impacts during installation of the final cover would be the same as the proposed project.

Emissions of pollutants from mobile sources (i.e., haul trucks) would increase if all soil needed for the final cover was transported to the site from off-site sources. Bringing all soil to the site from off-site sources could either lengthen the time required to install the landfill cover or increase the number of truck trips to the site per day. If daily trucks were increased, emissions of NO_x and PM₁₀ could exceed 80 pounds per day on some days of the year. This alternative could result in a new, short-term significant impact to regional air quality. The total emissions would not exceed 15 tons per year during the construction phase, however.

Hydrology and Water Quality Impacts

This alternative would avoid short-term water quality impacts associated with excavation in the on-site borrow area during construction of the final cover.

Cultural Resources

Possible impacts in the General Plan amendment area to buried cultural resources associated with excavation in native soils would be the same as the proposed project. Possible impacts during in the borrow area would be avoided.

Other Impacts

This alternative would result in increased truck trips to and from the site over a four year period compared to the proposed project. This would incrementally increase air emissions and energy use.

8.3.1.2 Feasibility

Like the proposed project, the No On-Site Borrow Alternative would require a modification of the General Plan land use designation and zoning to *Light Industrial* on 46 acres of the TCRDF (and consideration of a conditional use permit for the proposed post-closure facility usage).

Use of soil materials from off-site locations is feasible from a land use and planning standpoint.

8.3.1.3 Relationship to Project Goals and Objectives

The No On-Site Borrow Alternative would be consistent with the basic objectives of the project that pertain to construction of the Final Closure Cover Liner at the landfill in compliance with state and federal regulations to protect public health, safety, and the environment. This alternative would not meet the applicant's goal of reducing the amount of earthen lining from off-site hauling.

The City of Fremont’s objectives for the proposed General Plan and zoning changes include allowing for the continuation of existing uses on the site to the extent they are deemed compatible with future adjacent uses while encouraging resource recovery and diversion activities, ongoing maintenance and supervision of the landfill closure, maintaining the integrity of the site for future appropriate industrial uses within known access, utility, and natural environment constraints. This alternative, like the proposed project, is consistent with the City of Fremont’s objectives for the proposed General Plan and zoning changes.

8.4 CORPORATION YARD/CONCRETE RECYCLING LOCATION ALTERNATIVE

Under this alternative, the existing General Plan designation and zoning would remain in place. The project applicant would locate a Corporation Yard in an industrial area within the East Bay and the concrete recycling uses would be moved to another facility or considered on a case by case basis for on-site operations at individual construction sites. Possible locations for a Corporation Yard for waste hauling trucks may be available in the industrially zoned area in the vicinity of Boyce Road and Christy Street, approximately one-half to one mile from the TCRDF facility (refer to Figure 4.1.3).

The final cover would be placed over the active landfill, in conformance with regulatory requirements. Limited facilities for maintenance activities at the landfill would be allowed to remain for the 30-year postclosure maintenance period. The existing Corporation Yard would be limited to uses related to landfill maintenance. The concrete recycling facility would not continue to operate on the site.

This alternative would reduce activity within the Corporation Yard and concrete facility, but would not avoid or lessen one of the identified significant environmental effects of the project. It is presented to provide additional information to the decision-makers, responsible agencies, and the public.

8.4.1.1 *Comparison of Environmental Impacts*

The extent to which the Corporation Yard/Concrete Recycling Location Alternative might reasonably be expected to result in lesser project impacts is discussed below for each of the areas of significant impact for the proposed project.

Impacts to Biological Resources During Construction (Borrow Area)

The final cover would be installed under this alternative and construction impacts from site grading in the borrow area would be the same as the proposed project.

Construction Air Quality Impacts

Construction emissions and identified air quality impacts during excavation of the borrow area and installation of the final cover would be the same as the proposed project.

Hydrology and Water Quality Impacts

Short-term water quality impacts associated with excavation in the proposed borrow area would be the same as the proposed project.

Under this alternative scenario, industrial uses (i.e., operation of the Corporation Yard and concrete recycling facility) would be limited to maintenance activities for the landfill. This alternative scenario could incrementally reduce the amount of activity on the site, in terms of vehicle trips and vehicle maintenance in the Corporation Yard and Resource Recovery areas on the site. This alternative would avoid increased activity (such as vehicle maintenance and repair) that could have water quality impacts if hazardous materials are improperly handled or there are accidental spills. Implementation of regulatory requirements for industrial facilities could substantially reduce impacts from allowed on-site uses, however.

Cultural Resources

Possible impacts to buried cultural resources associated with excavation in native soils in the borrow area would be the same as the proposed project. Possible impacts in the General Plan amendment area would be avoided.

Other Impacts

If located near residential uses on Stevenson Boulevard, there could be noise and land use compatibility impacts along truck routes. Impacts to sensitive uses would generally be limited if a Corporation Yard was located within an existing industrial area.

8.4.1.2 Feasibility

Within areas designated for General Industrial uses, the Corporation Yard/Concrete Recycling Location Alternative is feasible from a land use and planning standpoint.

The feasibility of individual sites for use as a Corporation Yard in nearby industrial areas of Fremont would depend on site size, existing buildings and other improvements, and surrounding land uses. Possible truck routes to and from the site and the proximity of sensitive receptors to those routes and the facility itself would affect the feasibility of a Corporation Yard for an approximately 50-truck fleet.

On-site concrete recycling at construction sites in Central Fremont, especially near residential and commercial areas, may not be considered feasible due to possible noise and dust impacts.

8.4.1.3 Relationship to Project Goals and Objectives

The Corporation Yard/Concrete Recycling Location Alternative would be consistent with the basic objectives of the project that pertain to construction of the Final Closure Cover Liner at the landfill in compliance with state and federal regulations to protect public health, safety, and the environment.

Parking and maintenance of waste haul trucks that serve Fremont residences and businesses would be at another location within the City. This alternative would allow for ongoing maintenance and supervision of the landfill closure but would not wholly meet the City's objective of allowing continuation of existing uses that encourage resource recovery (i.e., concrete recycling).

8.5 FINAL COVER DESIGN ALTERNATIVE

The alternative described in the following section is a modification of the final cover design on the top deck of the landfill. Unlike the first three alternatives, it would not avoid or lessen one of the

identified significant environmental effects of the project. It is presented to provide information to the decision-makers, responsible agencies, and the public on a modified design that could improve performance of the final cover.

A review of the proposed GCL alternative cover on the top of the landfill found that the proposed final cover would meet or exceed the performance of the prescriptive cover design (one foot of low permeability material) in state regulations for landfill closure.⁷⁴ There are several measures, however, that could improve the performance of the final cover and avoid desiccation and drying of the GCL alternative cover.

The project proposes one foot of soil over the GCL. A thicker layer of soil above the geosynthetic clay liner may be advisable in semi-arid areas,⁷⁵ such as Central California, to prevent moisture reaching the underlying waste materials through cracks in the overlying vegetative soil layer or the geosynthetic clay liner if they dry and crack and to protect the GCL from damage by construction equipment operating on the top of the landfill. Without a thicker vegetative layer above the geosynthetic layer, more maintenance could be required over time or there could be an increase in leachate.

Under the Final Cover Design Alternative, the thickness of the vegetative soil cover would be increased from 12-inches to 18- to 24-inches. This would require an additional 45,000-90,000 cubic yards of soil materials.⁷⁶ A conservative overlap of GCL panels, as much as 12-inches, would also be used to avoid separation of the GCL panels due to differential settlement of the top deck.

Like the proposed project, this alternative would include operation of the existing Corporation Yard and the Raisch Corporation concrete recycling facility.

8.5.1.1 Comparison of Environmental Impacts

The extent to which the Final Cover Design Alternative might reasonably be expected to result in lesser project impacts is discussed below for each of the areas of significant impact for the proposed project.

Impacts to Biological Resources During Construction (Borrow Area)

Additional soil material (45,000-90,000 cubic feet) would be required for the vegetative layer, which would incrementally increase the area within the borrow area that is disturbed. Borrow would occur in previously disturbed areas (i.e., within the concrete recycling area; Phase 5 area on Figure 2-9). Construction impacts to biological resources from site grading in the borrow area would be similar to the proposed project.

Construction Air Quality Impacts

⁷⁴ Source: CDM. 2007. *Tri-Cities Landfill-Alternative Final Cover Assessment Memorandum*. March 29, 2007 (refer to Appendix C of this EIR).

⁷⁵ Semi-arid areas are characterized by relatively low annual rainfall of 25 to 50 centimeters (10 to 20 inches) and having scrubby vegetation with short, coarse grasses. The Joint-Technical Document and Closure and Postclosure Plan cite a mean annual rainfall of approximately 13 inches at the site based upon a map developed by the Alameda County Flood Control District.

⁷⁶ This alternative would increase the total amount of soil materials required to construct the final cover by 11 to 16 percent; from approximately 400,000 to 542,000 cubic yards to 445,000 to 632,000 cubic yards.

Daily construction emissions and identified air quality impacts during excavation of the borrow area and installation of the final cover would be the similar to the proposed project. Grading and construction activities could occur on more days in the borrow area and on top of the landfill during the final year of cover construction, however. Like the proposed project, the significant construction impacts of the project can be reduced by the mitigation measures included in the project.

Hydrology and Water Quality Impacts

Short-term water quality impacts associated with excavation in the proposed borrow area would be similar to the proposed project. Like the project, the significant construction impacts of the project can be reduced by the mitigation measures included in the project.

Cultural Resources

Possible impacts to buried cultural resources associated with excavation in native soils in the borrow area would be similar to the proposed project. During the final phase of construction of the final cover, the amount of material excavated from the borrow area would increase to provide additional soil for the top deck of the landfill. Possible impacts in the General Plan amendment area and mitigation measures to avoid significant impacts would be the same as the proposed project.

8.5.1.2 Feasibility

Like the proposed project, this alternative would require a modification of the General Plan land use designation and zoning to *Light Industrial* on 46 acres of the TCRDF (and consideration of a conditional use permit for the proposed post-closure facility usage).

Modifications to the final cover design would not require modification of the General Plan or zoning. The modifications would be feasible from a land use and planning standpoint.

8.5.1.3 Relationship to Project Goals and Objectives

The Final Cover Design Alternative would be consistent with the basic objectives of the project that pertain to construction of the Final Closure Cover Liner at the landfill in compliance with state and federal regulations to protect public health, safety, and the environment.

The City of Fremont’s objectives for the proposed General Plan and zoning changes include allowing for the continuation of existing uses on the site to the extent they are deemed compatible with future adjacent uses while encouraging resource recovery and diversion activities, ongoing maintenance and supervision of the landfill closure, maintaining the integrity of the site for future appropriate industrial uses within known access, utility, and natural environment constraints. Like the proposed project, this alternative meet the objective of allowing continuation of existing uses that encourage resource recovery (i.e., concrete recycling).

8.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The CEQA Guidelines specify that an EIR must identify the environmentally superior alternative among those alternatives discussed. If the environmentally superior alternative is the “No Project” alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives [Section 15126.6(e)(2)].

Based upon the previous discussion, the No Project Alternative would not be environmentally superior to the proposed project.

The No On-Site Borrow Alternative is environmentally superior to the proposed project during the four seasons of construction of the final cover in terms of possible impacts to individual animals that are listed as special status species. This alternative, however, could result in a new, short-term impact to regional air quality due to increased truck trips. Overall, this alternative is not clearly superior to the proposed project.

The Final Cover Design Alternative could reduce the possibility of the final cover being compromised by desiccation cracks (that do not heal when rewetted) or punctures or tears in the GCL. It is presented to provide information to the decision-makers, responsible agencies, and the public on a modified design that could improve performance of the final cover. It would require more excavation and grading during construction of the final cover on the top deck of the landfill. This alternative would not reduce any of the identified significant impacts of the project.

9.0 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Implementation of the proposed closure of the Tri-Cities Recycling and Disposal Facility would initially result in irreversible commitment of natural resources through direct consumption of fossil fuels and through use of non-renewable materials for landfill cover construction. Significant irreversible changes to the environment would result from the use of non-renewable resources in the installation of the final cover over the landfill. Non-renewable resources in project construction and the future use of the site include concrete and petroleum products. The project proposes to reuse some of the demolition products from the existing landfill in-lieu of transporting gravel and fill material to the site.

Energy consumption during construction will primarily be in the form of construction equipment fuels. Over the long-term, some resources and energy will be required for maintenance and operations of the proposed new uses. Operations associated with the future uses would consume electric energy and fuels.

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12.0

LIST OF SYMBOLS AND ABBREVIATIONS

ABAG	Association of Bay Area Governments
ACCWP	Alameda Countywide Clean Water Program
ACFCWCD	Alameda County Flood Control and Water Conservation District
AC Transit	Alameda-Contra Costa County Transit
ADC	Alternative Daily Cover
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
Basin Plan	San Francisco Bay Region Water Quality Control Plan
BMPs	Best Management Practices
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CIWMB	California Integrated Waste Management Board
cm	Centimeter
CNDDDB	California Natural Diversity Data Base (maintained by CDFG)
CNPS	California Native Plant Society
CoIWMP	Alameda County Integrated Waste Management Plan
CSSA	California Species of Special Concern
dBA	Decibels Adjusted
DNL	Day-night Average Sound Level
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
FCCL	Final Closure Cover Liner
FE	Federal Endangered Species
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FT	Federal Threatened Species
GCL	Geosynthetic Clay Liner
HMP	Hydrographic Modification Management Plan
HOV	High Occupancy Vehicle
LEA	Local Enforcement Agency
LFG	Landfill Gas
LCRS	Leachate Collection and Removal System
MPE	Maximum Probable Earthquake
MRF	Materials Recovery Facility
msl	Mean Sea Level
MTC	Metropolitan Transportation Commission
NOI	Notice of Intent
NOP	Notice of Preparation
NOx	Nitrogen Oxides
NPDES	National Pollution Discharge Elimination System
OBM	Older Bay Mud
PBA	Peak Bedrock Acceleration
PG&E	Pacific Gas & Electric
psf	Pounds per Square Foot

ROG	Reactive Organic Gases
RWQCB	San Francisco Regional Water Quality Control Board
SE	State of California Endangered Species
SWPPP	Storm Water Pollution Prevention Plan
TCRDF	Tri-Cities Recycling and Disposal Facility
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VMT	Vehicle Miles Traveled
YBM	Younger Bay Mud

APPENDIX A

Notice of Preparation (NOP) and Responses to the NOP

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TCRDF Landfill Closure Plan

SCH Number: 2006112013**Type:** NOP - Notice of Preparation**Project Description**

Final cover and closure plan for landfill with a general plan amendment/zone change/conditional use permit for an approximate 56 ac site to general industrial to allow the ongoing use of the property as maintenance and corporation yard and concrete recycling facility.

Project Lead Agency

Fremont, City of

Contact Information**Primary Contact:**

Kelly Diekmann
City of Fremont
(510) 494-4540
39550 Liberty Street
Fremont, CA 94537

Project Location

County: Alameda
City: Fremont
Region:
Cross Streets: West Terminus of Automall Parkway
Parcel No: 537-0801-003-04
Township:
Range:
Section:
Base:
Other Location Info:

Proximity To

Highways: I-880
Airports:
Railways: Southern Pacific
Waterways: SF Bay
Schools:
Land Use: Landfill and corporation yard/Agricultural with Flood Overlay/Agricultural

Development Type

Industrial, Other

Local Action

General Plan Amendment, Site Plan, Rezone, Use Permit, Other Action

Project Issues

Drainage/Absorption, Flood Plain/Flooding, Soil Erosion/Compaction/Grading, Wetland/Riparian, Landuse

Reviewing Agencies (Agencies in **Bold Type** submitted comment letters to the State Clearinghouse)

Resources Agency; Department of Parks and Recreation; San Francisco Bay Conservation and Development Commission; Department of Fish and Game, Region 3; **Native American Heritage Commission**; **Public Utilities Commission**; California Department of Transportation, District 4; Air Resources Board, Major Industrial Projects; **Integrated Waste Management Board**; Department of Toxic Substances Control, Regional Water Quality Control Board, Region 2

Date Received: 11/2/2006 **Start of Review:** 11/2/2006 **End of Review:** 12/1/2006

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WILBERT LIGH
 Finance and Administration Manager

December 4, 2006

Kelly Diekmann
 City of Fremont, Planning Division
 39550 Liberty Street
 Fremont, CA 94537

Dear Mr. Diekmann:

Subject: Notice of Preparation of a Draft Environmental Impact Report for the Tri-Cities Recycling and Disposal Facility Landfill Closure and Land Use Plan

The Alameda County Water District (ACWD) wishes to thank you for the opportunity to comment on the "Notice of Preparation of a Draft Environmental Impact Report" for the Tri-Cities Recycling and Disposal Facility located at 7010 Automall Parkway, Fremont.

ACWD supplies water to a population of over 324,000 in the Cities of Fremont, Newark, and Union City. A major portion of this water supply is obtained from the Niles Cone Groundwater Basin that approximately coincides with ACWD's boundaries and extends west under the San Francisco Bay. Therefore, protecting the groundwater basin is a very high priority for ACWD.

ACWD has reviewed the Notice of Preparation of a Draft Environmental Impact Report (DEIR) and would appreciate your consideration of the following comments:


1. In order to protect the groundwater basin, all wells must be identified within the project area and each well must be either protected or properly destroyed prior to or during construction and excavation activities. If the well(s) are to remain, a letter so indicating must be sent to ACWD. In addition, any abandoned wells located within the project area must be brought into compliance or properly destroyed prior to the proposed activities. If the well(s) are: 1) no longer required by any regulatory agency; 2) no longer monitored on a regular basis; or 3) damaged, lost, or the surface seal is jeopardized in any way during construction and excavation activities, the wells must be destroyed in compliance with the City Well Ordinance.
2. Potential impacts to water quality (surface water and groundwater) should be evaluated in the DEIR.

Kelly Diekmann
 Page 2 of 3
 December 4, 2006

3. Historical groundwater elevations at the site have ranged from artesian conditions to approximately 7 feet below mean sea level. Elevated levels of contaminants such as benzene, ammonia, and tetrahydrofuran were detected from samples collected from leachate monitoring wells (*Winter 2005/Spring 2006 and Annual 2005 Groundwater Monitoring Report*, SCS Engineers, April 2006). The DEIR should address any potential impact of the landfill waste and associated leachate on the groundwater in the area during and after the closure of the landfill facility.
4. Since groundwater is relatively shallow beneath the project area, groundwater may be encountered during the excavation of the 88-acre borrow area. Groundwater must be protected during and after excavation activities. Any potential impact to groundwater caused by the proposed excavation must be addressed by the DEIR.
5. If any part of this project requires dewatering, the DEIR should address any potential impacts of dewatering activities on local groundwater. ACWD permits are required for the installation and destruction of dewatering wells.
6. The DEIR should specify that ACWD receive the results of groundwater sampling during the 30-year monitoring and maintenance period. A contingency plan is also needed if groundwater contamination is still confirmed at the end of the 30-year period.
7. As the administering agency for the Well Ordinance for the City of Fremont, ACWD requests that the EIR include the requirement of obtaining a drilling permit from ACWD prior to the start of any subsurface drilling activities. Application for a permit may be obtained from the ACWD, Engineering Department, at 43885 South Grimmer Boulevard, Fremont or online at http://www.acwd.org/engineering/drilling_permit.php. Before a permit is issued, the applicant is required to deposit with ACWD, cash, or check in a sufficient sum to cover the fee for issuance of the permit or charges for field investigation and inspection. All permitted work requires scheduling and inspection; therefore, all drilling activities must be coordinated with ACWD prior to the start of any field work.

Thank you for the opportunity to comment on the project at this time. If you have any questions, please contact Eileen Chen at (510) 668-4473.

Sincerely,


 Robert Sawyer
 Engineering Manager

cc/tf

By fax

cc: Steven Inn
 Michelle Myers

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3208



December 1, 2006

Kely Diekmann
City of Fremont
39550 Liberty Street
Fremont, CA 94537

Dear Ms. Diekmann:

Re: SCH #2006112013; TCRDF Landfill Closure Plan

As the state agency responsible for rail safety within California, we recommend that any development projects planned adjacent to or near the rail corridor in the County be planned with the safety of the rail corridor in mind. New developments may increase traffic volumes not only on streets and at intersections, but also at at-grade highway-rail crossings. This includes considering pedestrian circulation patterns/destinations with respect to railroad right-of-way.

Safety factors to consider include, but are not limited to, the planning for grade separations for major thoroughfares, improvements to existing at-grade highway-rail crossings due to increase in traffic volumes and appropriate fencing to limit the access of trespassers onto the railroad right-of-way.

Of particular concern:

- As land uses change, improvements to the crossing may be necessary.
- Should this roadway become publicly used, the crossing will require authorization from the Commission for use as a public railroad crossing.

The above-mentioned safety improvements should be considered when approval is sought for the new development. Working with Commission staff early in the conceptual design phase will help improve the safety to motorists and pedestrians in the County.

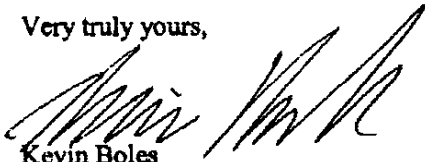
APPENDIX B

Final Closure/Post Closure Plan

(Appendix B of this document provided separately due to its size)

If you have any questions in this matter, please call me at (415) 703-2795.

Very truly yours,



Kevin Boles
Utilities Engineer
Rail Crossings Engineering Section
Consumer Protection and Safety Division

cc: Terrel Anderson, UP



APPENDIX C

Evaluation of Alternative Cover



Memorandum

To: Nora Monette, David J. Powers and Associates

From: Wayne Pickus, CDM

Date: March 29, 2007

Subject: Tri-Cities Landfill- Alternative Final Cover Assessment

The purpose of this memorandum is to document the review of the alternative final cover design proposed at the Tri-Cities Recycling and Disposal Facility (TCRDF) as documented in the *Fill Area 1 Final Closure and Postclosure Maintenance Plans (Closure Plans)* prepared by Golder Associates dated December 2004. Title 27 of the California Code of Regulations, Subchapter 5 (Article 2 Closure and Post-Closure Maintenance Standards for Disposal Sites and Landfills) states, "The RWQCB can allow any alternative final cover design that it finds will continue to isolate the waste in the Unit from precipitation and irrigation waters at least as well as would a final cover built in accordance with applicable prescriptive standards under paragraph (a) (1-3)."

The objective of the review was to qualitatively assess the potential effectiveness of the alternative cover design at the TCRDF. This was accomplished through the identification of the design and construction issues associated with the alternative design proposed. In addition, the performance of the prescriptive cover design was compared with that of the proposed alternative. The following activities were conducted as part of the review:

- Review of the technical information provided in the Closure Plans related to the performance of the alternative cover.
- Discussions with staff from the San Francisco and Central Coast regions of the Water Quality Control Boards on their experience with the proposed alternative cover design at other landfills.
- Survey of CDM's experience throughout the country with the alternative design using a geosynthetic clay liner (GCL).
- Review of the findings of the Alternative Landfill Cover Demonstration project conducted by Sandia National laboratories.

- Meeting with representatives of the San Francisco Regional Water Quality Control Board (RWQCB) on March 21, 2007, to discuss issues associated with the alternative cover design.

It should be noted that CDM did not evaluate, or consider, cover system alternatives other than the two design concepts presented in the Closure Plans. There are other alternatives to the prescriptive cover, in addition to the use of GCL, that have been implemented on landfills in California.

Alternative Final Cover Design

The proposed alternative cover design, and a discussion of how the design exceeds the performance standards of the prescriptive requirements, is presented in Section 3.4.2 of the Closure Plans. The alternative cover design consists of the use of a geosynthetic clay liner (GCL) as a substitute for the one-foot deep compacted soil liner established under the prescriptive standards for the low-hydraulic conductivity layer on the top deck of the landfill. The attached Figure 9 from the Closure Plans depicts the cover system proposed. The GCL consists of a layer of bentonite sandwiched between a geotextile backing on the top and both sides. The purpose of the low-hydraulic conductivity layer is to prevent landfill stormwater runoff or irrigation water from infiltrating into the waste prism and potentially exposing the environment surrounding the landfill to contaminants leached from the refuse.

Cover Design Performance Standards

Information was provided in the Closure Plans demonstrating that the GCL cover exceeded the performance standards of the prescriptive cover design. The primary measure of the low-hydraulic conductivity layer's performance is the rate at which water infiltrates through the layer. Infiltration rate is expressed as the distance over which the water will infiltrate through the layer over a specified period of time. In general, the lower the rate of infiltration, the less distance the water will travel, the better the performance of the low-hydraulic conductivity layer.

The prescriptive standard establishes a compacted soil layer with a permeability of 1×10^{-6} cm/sec., which is equivalent to approximately 1 foot of infiltration over a year period, under specified testing conditions. The saturated hydraulic conductivity of the GCL as reported by the manufacturer is 5×10^{-9} cm/sec, which is significantly lower than the compacted soil layer.

The comparative performance of the two cover designs; the prescriptive standard and the alternative design utilizing a GCL, is evaluated by predicting the rate of infiltration under the topographic and weather conditions specific to the TCRDF. Computer modeling was performed by Golder Associates, and reported in the Closure Plans (Section 3.4.4 Infiltration), which predicted the amount of infiltration through the two covers systems based upon a range of annual precipitation amounts at the site. In general the calculated infiltration through the alternative cover design utilizing the GCL was four times less than the

prescriptive cover system. This indicates that the alternative design exceeds the performance requirements of the prescriptive standard.

It should be noted that CDM did not perform a detailed review of the technical information provided in the Closure Plans on which performance equivalency was based. The types of analyses performed, for example, the use of the HELP computer model and the input parameters applied, are appropriate for this equivalency evaluation. The RWQCB is responsible for conducting a comprehensive assessment of the technical information provided in the Closure Plans prior to plan approval.

RWQCB Observations of GCL Performance at Landfills

Staff at the San Francisco Bay and Central Coast regions of the Water Quality Control Boards was contacted to obtain information on experience with the use of GCLs at landfills. The observations of Martin Fletcher (805) 549-36944 of the Central Coast Region and Terry Seward of the San Francisco Bay Region (510) 622-2300 were obtained.

The regulators observed the following problems with landfill covers utilizing GCLs:

- Review Improper Installation: GCL panels may separate if the amount of overlap is inadequate. Specifications frequently call for 6-inches of overlap between panels but 12-inches are recommended by the Board.
- Stretching or distortion of the liner: If the GCL is exposed to high temperatures it may stretch or become distorted, leading to a tear. Stretching of the liner was observed mainly on the slopes as opposed to the top deck application as is being proposed at the TCRDF. Some stretching of the GCL panels on the top deck was observed due to the differential settlement of the waste.
- Punctures: Puncturing of the GCL was observed on both the top deck and slope areas of landfills. GCLs are designed to self-seal small punctures. If the vegetative soil cover is inadequate to protect the GCL layer, large punctures may result which are too great for the self-sealing properties of the GCL.
- Lack of a Repair Plan: The Title 27 regulations require the development of a cover repair plan to address the breach of the cover system. (Article 2, Section 21090, (C) Prompt Cover Repair.) The Board indicated the importance of this plan in assuring the integrity of the GCL cover system. The plan should specifically consist of a Construction Quality Assurance Plan for repairs to the low- hydraulic conductivity layer.

CDM Solid Waste Network Observations of GCL Performance at Landfills

CDM landfill engineers indicated that the use of GCLs as the low-hydraulic conductivity layer in landfill cover systems was an acceptable cover design in the states in which they

practiced. These include staff in Florida, Massachusetts, North Carolina, and New York. Feedback was received stating that the GCL material is superior to the prescriptive one-foot compacted soil layer for the following reasons:

- Placing and compacting the low-hydraulic conductivity soil layer on waste material is challenging due to the settlement caused by the compaction activities. The construction contractor would have difficulty in constructing the 5% top deck grade, and verifying that the 12-inch depth has been placed, because of the movement of the subgrade due to refuse settlement.
- The compacted soil layer is vulnerable to drying and cracking in arid or semi-arid conditions. Because of the semi-arid conditions in the City of Fremont, this situation could apply, especially with only one foot of a vegetative soil cover. Concern was expressed that once the cracks formed in the compacted soil layer they would not self-heal with saturation with the potential for extending through the entire one foot depth of the low hydraulic conductivity layer. This would result in an open conduit for stormwater runoff or irrigation water to enter the waste prism.

Additional comments received from the CDM solid waste network addressed the specifics of the proposed design at the TCRDF depicted in the attached Figure 9. Recommendations were provided to increase the depth of the vegetative soil cover to 24 inches (currently 12-inches) to protect the GCL layer from damage due to construction equipment operating on the top deck of the landfill. Also, consideration should be given to the installation of a drainage layer (consisting of sand or a geotextile) above the GCL to promote the flow of water off of the GCL layer after it has percolated through the vegetative layer.

Alternative Landfill Cover Demonstration Project

A large-scale field demonstration project comparing final cover designs was constructed and monitored at the Sandia National Laboratories in Albuquerque, New Mexico. A total of six design concepts were investigated including one with a 12-inch compacted soil layer similar to the California prescriptive standard and one utilizing a GCL as the low-hydraulic conductivity layer. Performance of the covers was assessed based upon their ability to minimize the movement of water through the cover profiles. It should be noted that the weather conditions in New Mexico are somewhat more arid than found in the San Francisco Bay Area. However, the researchers stated that although the field data obtained was site specific, the results could be "judiciously extrapolated to other locations".

Continuous data were obtained from the test cells for a period of five years. The data collected included soil moisture, percolation, lateral drainage, runoff and erosion, precipitation and other meteorological information. In addition, active testing included providing supplemental irrigation water to hydrologically stress the cover systems. Computer models were utilized to predict the water balance performance of the test cells

including the HELP model utilized by Golder Associates in the assessment of the performance of the cover systems at the TCRDF.

A summary of the demonstration project and the results is attached to this memo. One finding of the project was that the annual infiltration rate through the test cell with the GCL cover was approximately three times less than the rate through the cell with the compacted soil layer. These results compare favorably to those presented in the Closure Plans, and suggest that the GCL alternative cover design exceeds the performance of the California prescriptive standard.

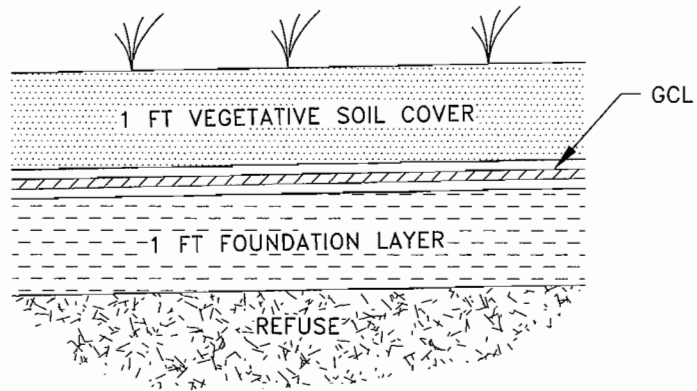
In addition, the project summary observed that the GCL covers were susceptible to potential degradation caused by desiccation and ion exchange. Desiccation, the formation of cracks in the GCL from the drying of the bentonite material, is a potential problem at the TCRDF considering that only 12-inches of vegetative soil cover is proposed to protect the GCL.

Summary and Conclusions

The findings and conclusions of the alternative cover design assessment are listed below:

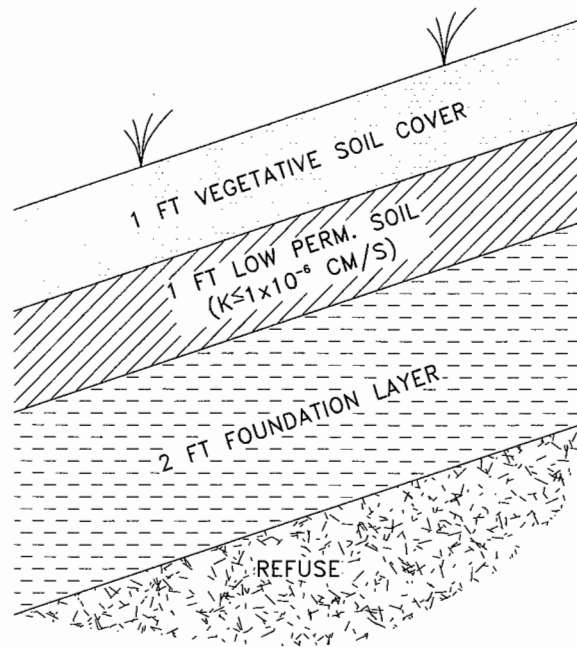
- The appropriate type of analysis was performed, and documented in the Closure Plans, to establish that the performance of the alternative cover design at the TCRDF meets or exceeds the performance of the prescriptive cover design. However, the determination of equivalency is the responsibility of the San Francisco Bay RWCQB; a detailed analysis of the information was not conducted by CDM as part of this task.
- The San Francisco Bay and Central Coast Regional Water Quality Control Boards have approved landfill cover designs using a GCL as the low hydraulic conductivity layer.
- The performance of the proposed alternative cover is superior to the prescriptive cover in terms of constructability and maintainability for the conditions at the TCRDF.
- The effectiveness of the final cover utilizing a GCL material is largely attributed to the quality control procedures performed during construction. Avoiding stretching and puncturing of the GCL during construction is critical to assure the integrity of the cover system.
- A conservative GCL panel overlap is recommended, as much as 12-inches, to avoid separation of the GCL panels due to differential settlement of the top deck.
- A comprehensive cover repair plan must be developed and implemented as required by the Title 27 regulations.

- It is recommended that the current design presented in the Closure Plans be modified with an increase in the thickness of the vegetative soil cover from the proposed 12 inches to 18 to 24 inches. This will help minimize the potential for desiccation cracking to occur in the GCL beyond the capacity to self-heal upon saturation. In addition, the thicker vegetative soil cover depth would provide greater protection against damage to the liner from earth moving equipment performing routine grading operations on the top deck of the landfill.



TOP DECK

NTS



SIDE SLOPE

NTS

FIGURE 9
**PROPOSED
 COVER SYSTEM**
 WMI/TRI CITIES FCPCP/CA



Alternative Landfill Cover Demonstration (ALCD)

[Introduction](#) | [Objectives](#) | [Field Demonstration](#) | [Performance Monitoring and Instrumentation](#) | [Computer Models](#) | [Results and Discussion](#)

Introduction

A large-scale field demonstration comparing final landfill cover designs was constructed and monitored at [Sandia National Laboratories](#) in Albuquerque, New Mexico. Two conventional cover designs (a RCRA Subtitle 'D' Soil Cover and a RCRA Subtitle 'C' Compacted Clay Cover) were constructed side-by-side with four alternative landfill test covers designed for dry environments. Performance of the covers was based on their ability to minimize the movement of water through each profile. In other words, the cover with the lowest flux was deemed the best performer while the cover that yields the highest flux was the worst performer. Flux is the value used by regulators and consequently design engineers to determine the adequacy of a cover.



Aerial View of ALternative Landfill Cover Demonstration

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Objectives

The overall objective of the research was to provide data and analyses of the performance of six landfill cover designs to aid designers, owners and regulators in selecting appropriate cover designs. Although the field data were site-specific, the results can be judiciously extrapolated to other locations. Specific objectives of this research were:

- **Obtain and compare water balance field data.** Obtain large-scale water balance field data from six landfill covers subjected to identical field and climatic conditions.
- **Design tool accuracy.** Numerically predict the water balance performance of the landfill test covers with the two most common computer programs (i.e., UNSAT-H 22 and HELP) used for design of landfill cover systems. These simulations utilized input parameters intended to represent a typical design process. Compare the predicted flux rates from forward simulations with the field data to assess the usefulness of the design tools.
- **Simulations using field data.** Refine the input parameters used for the water balance simulations of the landfill covers with data collected during the field test (i.e., actual climate, as-built soil property, and vegetation data). Determine the degree to which these simulations predicted observed behavior.
- **Modeling study using soil hydraulic properties measured in the field.** Measure the final soil conditions (i.e., soil hydraulic properties) of the test covers using a tension infiltrometer seven years after construction was completed. Perform water balance simulations based on these soil data measured at the end of the monitoring

period with actual climate and vegetation data. Determine the degree to which these simulations predict the observed data.

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Field Demonstration

The ALCD landfill covers were divided into two separate bid packages known as Phase I and Phase II. The Phase I covers, constructed in the summer of 1995, include a prescriptive [RCRA Subtitle 'D' Soil Cover](#), a prescriptive [RCRA Subtitle 'C' Compacted Clay Cover](#), and the first of four alternative covers - a [Geosynthetic Clay Liner \(GCL\) Cover](#). The RCRA Soil and Compacted Clay Covers were constructed to serve as baselines for comparison against the alternative cover designs. The Phase II covers, built in the summer of 1996, include the [Capillary Barrier](#), [Anisotropic Barrier](#), and [Evapotranspiration \(ET\) Cover](#). The layout of the landfills is shown in the photograph below. Click on the landfill of interest for more information.



Test Cover Layout

The test covers were each 13 m wide by 100 m long. All covers were constructed with a 5% slope in all layers. The test covers crowned in the middle with half the cover (50 m) sloping toward the east and the other half of the cover sloping toward the west. The western slope of each cover was passively monitored. The eastern slope of each cover was actively monitored by installing a sprinkler system to facilitate stress testing.

All soil used in the construction of the alternative test landfill covers came from on-site cut

excavations. Other materials purchased off-site, such as sand and gravel, were common construction materials and readily available (i.e., no exotic grain-size distributions, etc.). Any and all compaction of soil required by design in the alternative covers was compacted 'dry of optimum' rather than 'wet of optimum' as currently recommended by the EPA for the baseline covers (EPA 1991). Dry-side compaction should result in a compacted barrier soil that is less susceptible to desiccation cracking. Dry-side compaction also made construction easier and therefore less expensive and should provide more soil water storage capability than wet-side storage due to the lower initial degree of saturation.

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Performance Monitoring and Instrumentation

Continuous water balance data for each test cover and meteorological data were obtained at the project site from May 1997 through June 2002. Passive testing consisted of daily on-site observations to validate system performance and to correct problems as they potentially developed. Continuous data was obtained on soil moisture, percolation, lateral drainage, runoff and erosion, precipitation, wind speed and direction, relative humidity, solar radiation, air and soil temperatures. Periodic measurements of vegetation cover, biomass, leaf area index, and species composition were obtained (Dwyer et al., in press, b).



One-site weather station

Active testing included the addition of supplemental irrigation to hydrologically stress the cover systems. Water applied using a sprinkler system was tested for rate and uniformity of application. All water was distributed through electronically controlled flow meters where quantities discharged were controlled and measured.

All water balance measurements were made with automated monitoring systems to provide continuous data. Manual backup systems were available in case of failure in one or more of the automated measurements systems and/or to verify accuracy of the automated systems.

For information on each of the measurement systems used, refer to section 3.2 of [Water Balance Measurements and Computer Simulations of Landfill Covers](#) (Full reference).

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Computer Models

The principal tool available to assist in the design of landfill cover profiles is computer programs used to predict water balance. The two programs utilized in the forward simulations were the Hydrologic Evaluation of Landfill Performance (HELP) program (Schroeder et al. 1994) and the UNSAT-H program (Fayer and Jones 1990). HELP was

selected because it is the most popular software used by landfill cover designers and is endorsed by the EPA. It is routinely used for prescriptive cover designs as well as alternative cover designs. All six landfill covers installed and tested were modeled using HELP. UNSAT-H was selected because it appeared to be the most popular water balance program presently used for alternative cover designs. Unlike most unsaturated flow programs, UNSAT-H was specifically developed for the evaluation of landfill covers. UNSAT-H was used to model the Subtitle D Cover, Capillary Barrier, Anisotropic Barrier, and ET Cover. UNSAT-H was not used to model the Subtitle C or GCL Covers because they have geomembranes that could not be readily accommodated by the software. For more information on the use of these programs for this study, refer to section 4.1 of [Water Balance Measurements and Computer Simulations of Landfill Covers \(Full reference\)](#).

The input parameters used for the forward modeling simulations were determined from laboratory and field testing as well as expert opinion obtained prior to the construction of the test covers. The weather data for the simulation period was conservative in that the annual precipitation volume used was above the historical average for the test site. The use of relatively high precipitation is a common design approach. Details for input parameters are found in section 4.2 of [Water Balance Measurements and Computer Simulations of Landfill Covers \(Full reference\)](#).

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Results and Discussion

The ET Cover, Anisotropic Barrier and Subtitle C Covers were the best performing designs having the lowest measured flux rates. The ET Cover and Anisotropic Barriers cost less than half that of the Subtitle C Cover to install ([Dwyer 1998](#)). The low flux rate measured through the Subtitle C Cover was shown to primarily be a function of the low effective hydraulic conductivity of the geomembrane. The geomembranes placed in the Subtitle C and GCL Covers have unknown serviceable lives with no field data to reflect the effect on a cover's flux rate after degradation of the geomembrane. [Koerner and Daniel \(1997\)](#) claim that these geomembranes can continue to function as designed for several hundred years. The lack of available data on a serviceable life for the geomembranes is perhaps a limiting factor in their use in covers on landfills with long-lived waste such as radioactive waste.

The following table presents the cumulative percolation measured on the test covers. This data suggests that Subtitle D Covers are inadequate, exceeding the suggested maximum 1-mm/year flux requirement ([Dwyer et al. in press a](#)). The Subtitle D Cover has an unprotected barrier layer that is subject to desiccation cracking ([Montgomery and Parsons, 1990](#), [Suter et al. 1993](#), [Benson et al. 1994](#)), biointrusion (roots, animals, ants, and earthworms) ([Vaugh et al. 1999](#)), and damage due to freeze/thaw cycles ([Benson et al 1995](#)). All of these inherent flaws were shown to exist and contribute to increased saturated hydraulic conductivity for the layer. They also led to preferential flow through the cover that led to the relatively high flux rates measured.

Landfill Cover	Average Annual Flux (mm/year)
Subtitle D	1.39
GCL Cover	0.48
Subtitle C	0.04
Capillary Barrier	0.16
Anisotropic Barrier	0.04
ET Cover	0.05

The field data also suggests that GCL covers are suspect due to potential degradation from desiccation and ion exchange ([James et al. 1997](#), [Melchoir 1997](#), [Lin and Benson 2000](#),). The GCL cover was the only cover that showed an increase in flux rate from 1997 through 1999. 1999 was the last year of significant precipitation before a drought began in late 1999 that lead to minimal flux rates through the covers beyond that time.

More detailed results can be found in [Water Balance Measurements and Computer Simulations of Landfill Covers](#). ([Full reference](#)).

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APPENDIX D

Biological Resources Report

DRAFT
BIOLOGICAL RESOURCES REPORT FOR
TRI-CITIES RECYCLING AND
DISPOSAL FACILITY CLOSURE EIR

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EXECUTIVE SUMMARY

The Tri-Cities Recycling and Disposal Facility (TCRDF) closure would entail the removal of fill material from a portion of the project site, capping the existing landfill, and the continued use of the existing Corporation Yard. The TCRDF is located in the City of Fremont in Alameda County, California.

The majority of the TCRDF project site has limited plant species diversity due to the disturbed nature of most of the property. Seven habitats occur on the project site: muted tidal salt marsh, disturbed seasonal depression, pickleweed/cattail wetland, aquatic (within the landfill drainage ditch), landfill/ruderal, ruderal, and developed. Extensive natural wetlands occur along the southern edge of the site (characterized as muted tidal salt marsh) and in the northeastern portion of the property (characterized as pickleweed/cattail wetland).

No special-status plant species were observed on the project site, and none are expected to occur there. Thus, the project is not expected to result in impacts to special-status plant species. The project site provides suitable foraging habitat for several special-status species of wildlife, including the American White Pelican, Double-crested Cormorant, White-faced Ibis, White-tailed Kite, Cooper's Hawk, Sharp-shinned Hawk, American Peregrine Falcon, Merlin, Prairie Falcon, Ferruginous Hawk, Golden Eagle, Western Snowy Plover, Long-billed Curlew, California Gull, Short-eared Owl, California Horned Lark, California Yellow Warbler, and Tricolored Blackbird. The site provides suitable nesting and foraging habitat for the Northern Harrier, Burrowing Owl, Loggerhead Shrike, Alameda Song Sparrow, Saltmarsh Common Yellowthroat, salt marsh harvest mouse, and salt marsh wandering shrew. However, impacts to habitat of these species will be less than significant. Project implementation will not substantially reduce the habitat that is regionally available to these species or substantially restrict their range.

Project implementation could result in significant direct impacts to individuals of the salt marsh harvest mouse, salt marsh wandering shrew, California tiger salamander, Burrowing Owl, Saltmarsh Common Yellowthroat, and Alameda Song Sparrow. Mitigation measures will reduce these potential impacts to less-than-significant levels.

The closure of the landfill will reduce anthropogenic food supplies for several "nuisance" species. Some of these species, including gulls, Common Ravens, American Crows, feral cats, and non-native rats, prey on native special-status wildlife species in the South San Francisco Bay area. In the long term, the reduction in food supply for these species following landfill closure is expected to result in at least local declines in these nuisance species, benefiting their more sensitive native prey species.

ENVIRONMENTAL SETTING

PROJECT DESCRIPTION

The 378-acre Tri-Cities Recycling and Disposal Facility (TCRDF) in Fremont, California in the western part of Alameda County (Figure 1) includes a 115-acre Class III landfill, resource recovery operations on 60-85 acres, and an approximately 22-acre Corporation yard. The remainder of the site (approximately 156 acres) consists of two diked wetland areas in the northern and southeastern portions of the property.

The TCRDF began accepting municipal solid waste in 1967. Waste received at the TCRDF includes residential, commercial, industrial, and demolition waste from the Cities of Fremont, Newark, and Union City, although it may dispose of waste from other sources.

The TCRDF closure includes several components. These include: 1) installation of a final cover over the active landfill and associated environmental monitoring and maintenance of the landfill for 30 years; 2) excavation and conditioning of soil materials from a borrow area within the 383-acre TCRDF; and 3) continued use of the approximately 22-acre Corporation Yard. The final closure cover will consist of a standard cover liner system for side-slope areas of the landfill and an alternative cover liner system for the top deck portion of the landfill. A 2-foot thick layer of soil is required for the side-slopes and a one-foot thick layer of soil is required for the top of the landfill. The existing 85-acre area south of the Corporation Yard will be used as a source of soils for this cover, for construction staging, and for testing and conditioning of soil materials. Soil will be excavated in five stages, if needed, beginning with the southeastern portion of the borrow area.

GENERAL PROJECT AREA DESCRIPTION

The TCRDF project site is located at the western end of Auto Mall Parkway, west of I-880, at 7010 Auto Mall Parkway in the City of Fremont, Alameda County, California (Milpitas 7.5 minute USGS Quadrangle). The 378-acre TRCDF is bounded by the Southern Pacific Railroad to the east, salt evaporators to the west and south, and an unnamed channel (which flows to Mowry Slough off-site) to the north (Figure 2). An approximately 115-acre portion of the property has been used for active waste disposal operations (i.e., the landfill). The project site is situated at an elevation of approximately 0-6 feet mean sea level (MSL) with the landfill reaching an artificial elevation of 103 feet. The average annual precipitation of the site is 16 inches, and the average annual temperature is 57 degrees Fahrenheit.

The National Wetland Inventory (NWI) depicts four wetland types on the project site: 1), palustrine emergent, seasonally flooded; 2), estuarine, subtidal, unconsolidated bottom; 3), Palustrine, unconsolidated shore, seasonally flooded, diked; and 4), palustrine emergent, temporarily flooded, diked (NWI 1985).

Historically, soils from six series underlay the project site. All of the soil series present within the project site were either previously drained, ponded, or currently contain water. The Willows clay occurs on basin rims formed in alluvium derived from sedimentary rock; the water table is

Figure 1. Site Vicinity Map

Figure 2. Biotic Habitats Map

between five and six feet and flooding occurs less than once every two years. Included in the Willows clay are areas of Omni silty clay loam, which is known to have excess salts at the soil surface. The Reyes clay occurs on tidal flats formed in alluvium derived from mixed sources; the water table is at four feet and flooding occurs more than once every two years, but for periods less than two days. The Pescadero clay occurs on basin rims formed in alluvium derived from sedimentary rock; the water table has been lowered to five feet and flooding does not occur. The Clear Lake clay occurs as alluvium filling basins; the water table is between four and five feet and flooding occurs less than once every two years for periods of two to seven days. A summary of the soil types historically present on the project site is provided in Table 1 below.

The majority of the site has been extensively manipulated and contains fill material from unknown sources. Material used to legally fill wetlands located in the southeastern portion of the project site has been removed to cap portions of the landfill as needed, and added repeatedly over time. This area, located within the current Resource Recovery Area, has undergone frequent and extensive disturbance due to the addition, translocation, and removal of fill and other materials. Most roads and developed areas contain compacted gravel. For these reasons, the majority of the project site is assumed to contain nonnative soils. The only areas of the project site that contain native soils are the pickleweed/cattail wetland in the northeastern part of the site (which consists primarily of Willows clay, drained series with a very small amount of Clear Lake clay), and the muted tidal salt marsh along the southern edge of the site (which consists primarily of Reyes clay, drained).

Table 1. Summary of Soil Types Present on the Tri-Cities Landfill Project Site.

Soil type	Acres Within the Project Site	Soil Coverage Percentage	Drainage Class	Permeability	Soil pH
Clear Lake clay, 0-2% slopes, drained	1.2	0.3%	Poorly drained	Slow	Neutral/moderately alkaline
PESCADERO CLAY, DRAINED	16.5	4.4%	Poorly drained	Very slow	Slightly acid
REYES CLAY, DRAINED	108.4	28.8%	Very poorly drained	Very slow	Strongly acid
WILLOWS CLAY, DRAINED	249.0	66.2%	Poorly drained	Very slow	Moderately alkaline
WATER	1.1	0.3%	NA	NA	NA
Totals	376.2	100%	NA	NA	NA

SCS Alameda County, Western Part 1975
 NA=Not applicable

BIOTIC SURVEYS

Field surveys of the TCRDF project site were conducted on 20 April, 1 and 18 May, and 13 and 20 June 2006 by H.T. Harvey & Associates wildlife ecologists Stephen C. Rottenborn, Ph.D. and David Johnston, Ph.D. and botanist Amanda Breen, Ph.D. The purpose of these surveys was to document biotic resources associated with the site that may be impacted by the proposed landfill closure. Specifically, surveys were conducted to: 1) describe existing biotic habitats and wildlife communities; 2) assess the site for the potential to support special-status species and their habitats; and 3) conduct focused surveys for special-status plants.

BIOTIC HABITATS

Surveys for botanically sensitive habitats were conducted concurrently with special-status plant surveys. Seven habitats occur on the project site: muted tidal salt marsh, disturbed seasonal depression, pickleweed/cattail wetland, aquatic (in the landfill drainage ditch), landfill/ruderal, ruderal, and developed (Table 2, Figure 2). These biotic habitats and associated vegetation and wildlife are described in further detail below. Plant communities were described in terms of dominant tree, shrub, and herbaceous vegetation composition and, when possible, classified according to the nomenclature of Holland (1986), and Sawyer and Keeler-Wolf (1995). Figure 2 shows the distribution of these habitats and land use types. Appendix A lists the plant species observed on the site.

Table 2. Summary of Biotic Habitats and Land Use Types Present on the TCRDF Project Site.

Habitat type	Acreage	Percent of total
Muted Tidal Salt Marsh	113.5	30.0 %
Landfill/Ruderal	112.3	29.7 %
Developed	62.6	16.6 %
Ruderal	35.4	9.4 %
Pickleweed/Cattail Wetland	32.9	8.7 %
Disturbed Seasonal Depression	19.6	5.2 %
Aquatic (in Landfill Drainage Ditch)	1.7	0.4 %
Totals	378.0	100%

Muted Tidal Salt Marsh

Vegetation. Salt marsh habitat (113.5 acres) is located in the southern portion of the project site. This area contained bare soil, water, and channels (in addition to vegetated areas) at the time of the survey. Pickleweed (*Salicornia virginica*) dominates this habitat, but patches of rabbitsfoot grass (*Polypogon monspeliensis*), saltgrass (*Distichlis spicata*), and spearscale (*Atriplex triangularis*) occur throughout this habitat.

Wildlife. The primary cover for this habitat is pickleweed, with many areas over 30 cm high with 100% cover. With variously distributed grasses and other upland plants for escape cover and food, this muted salt marsh provides high-quality habitat for the federally endangered salt marsh harvest mouse (*Reithrodontomys raviventris*). Other mammals also expected in this habitat include the California vole (*Microtus californicus*), western harvest mouse (*R. megalotis*), house mouse (*Mus musculus*), saltmarsh wandering shrew (*Sorex vagrans halicoetes*), and long-tailed weasel (*Mustela frenata*). A number of waterbird species forage within this habitat; such species include the Black-crowned Night-Heron (*Nycticorax nycticorax*), Great Egret (*Ardea alba*), and several gull and shorebird species, as well as raptors such as the White-tailed Kite (*Elanus caeruleus*), Red-tailed Hawk (*Buteo jamaicensis*), and Northern Harrier (*Circus cyaneus*). Others, including the Mallard (*Anas platyrhynchos*), Gadwall (*Anas strepera*), American Coot (*Fulica americana*), Alameda Song Sparrow (*Melospiza melodia pusillula*), American Avocet (*Recurvirostra americana*) and Black-necked Stilt (*Himantopus mexicanus*), breed in this habitat. The black-tailed hare (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*), and desert cottontail (*Sylvilagus audubonii*) occur along the upland edges of this habitat type.

Landfill/Ruderal

Vegetation. Landfill/ruderal habitat comprises approximately 112.3 acres of the project site. A landfill gas collection system and a landfill flare function to remove the methane and carbon dioxide resulting from putrescible waste to be eliminated from within the landfill. Ruderal communities are assemblages of plants that thrive in disturbed areas, and weedy, non-native annual forbs and grasses are typically the first species to colonize these sites following disturbance. Anthropogenic disturbance is constantly occurring on the landfill as new trash is buried, but the majority of the landfill is covered with ruderal vegetation that has been seeded to stabilize the landfill's surface in areas where trash is not being actively buried. Ruderal species observed on the project site included ripgut brome (*Bromus diandrus*), filaree (*Erodium* sp.), black mustard (*Brassica nigra*), wild radish (*Raphanus sativus*), shepherd's purse (*Capsella bursa-pastoris*), and yellow star-thistle (*Centaurea solstitialis*).

Wildlife. The slopes on the sides of the landfill are vegetated and are less disturbed than the active landfill area. As a result, several wildlife species associated with ruderal habitats occur on the landfill's slopes. These include the western fence lizard (*Sceloporus occidentalis*), California ground squirrel, house mouse (*Mus musculus*), nesting Western Meadowlarks (*Sturnella neglecta*), and foraging finches, sparrows, and blackbirds. In addition, Loggerhead Shrikes (*Lanius ludovicianus*) and raptors such as Red-tailed Hawks, White-tailed Kites, and Northern Harriers forage in these areas. The active landfill areas attract scavengers such as Common

Ravens (*Corvus corax*), American Crows (*Corvus brachyrhynchos*), Turkey Vultures (*Cathartes aura*), Black-crowned Night-Herons, Norway rats (*Rattus norvegicus*), black rats (*Rattus rattus*), Virginia opossums (*Didelphis virginiana*), raccoons (*Procyon lotor*), and striped skunks (*Mephitis mephitis*), which feed on discarded food and other waste within the landfill. During winter, tens of thousands of gulls, including California Gulls (*Larus californicus*), Herring Gulls (*Larus argentatus*), Thayer's Gulls (*Larus thayeri*), Ring-billed Gulls (*Larus delawarensis*), Western Gulls (*Larus occidentalis*), Glaucous-winged Gulls (*Larus glaucescens*), and other species, forage on the refuse at the active landfill area. Gull numbers are substantially lower in summer, but thousands of California Gulls, which breed in the South Bay, use the landfill throughout the summer. Flocks of European Starlings (*Sturnus vulgaris*), Brewer's Blackbirds (*Euphagus cyanocephalus*), Red-winged Blackbirds (*Agelaius phoeniceus*), and Brown-headed Cowbirds (*Molothrus ater*) also forage in and around the active area of the landfill.

Developed

Vegetation. A combination of developed areas, bare ground, hardscape, compacted gravel, stockpiled waste disposal and recycling equipment, and piles of recyclable materials occupy approximately 62.6 acres of the project site. The majority of the developed areas occur within the Corporation Yard and the portions of the Resource Recovery Area that are in active use. The landfill gas flare is also within the developed area of the site. The developed areas are landscaped with eucalyptus (*Eucalyptus* sp.) and alder (*Alnus* sp.) trees, which are the only trees on the project site; many of these trees appear to be of ordinance size (see *Regulated Habitats* section). A large area of compacted fill hardscape is being used to store and process a variety of raw fill material (not refuse) and recyclable building materials (i.e., asphalt, concrete, wood). This area is leveled and sprayed with water on a continual basis, and is devoid of vegetation.

Wildlife. Few wildlife species can tolerate the intensive disturbance that occurs within the developed areas on the project site. A few bird species nest in and around the structures on the site; these include, the native House Finch (*Carpodacus mexicanus*), Mourning Dove (*Zenaida macroura*), Barn Swallow (*Hirundo rustica*), Cliff Swallow (*Petrochelidon pyrrhonota*), and Black Phoebe (*Sayornis nigricans*) and non-native European Starling, Rock Pigeon (*Columba livia*), and House Sparrow (*Passer domesticus*). Western fence lizards occur in the developed portions of the site, as do mammals such as the black-tailed hare and introduced Norway rats. Other introduced species that commonly occur within developed habitats include house mice, and, where more cover exists, feral cats, Virginia opossums, and striped skunks. The high level of human activity associated with this site likely precludes nesting by raptors in the small ornamental trees present on the site, although Loggerhead Shrikes may nest in these trees.

Ruderal

Vegetation. This disturbed habitat occupies approximately 35.4 acres of the project site (excluding ruderal habitat within the landfill). The majority of the ruderal habitat occurs in the portion of the Resource Recovery Area that is currently (Spring 2006) dominated by vegetation, and thus, is not in active use for recovery operations (and thus considered "developed") or is not considered a "disturbed seasonal depression". The extent of this habitat type changes as areas of active disturbance within the Resource Recovery Area change. This habitat type also includes the edges of the road that encircles the landfill. Plant species present vary with topography,

disturbance, and flooding-tolerance. Grassland species present in the ruderal habitat include Italian ryegrass (*Lolium multiflorum*), wild oats (*Avena fatua*), Mediterranean barley (*Hordeum marianum* ssp. *gussoneanum*), riggut brome, saltgrass, and foxtail barley (*Hordeum jubatum*). Ruderal species dominating this habitat include black mustard, field mustard (*Brassica rapa*), purple vetch (*Vicia benghalensis*), curly dock (*Rumex crispus*), wild radish, bull thistle (*Cirsium vulgare*), and charlock (*Synapsis arvensis*).

Wildlife. The ruderal habitat on site provides limited wildlife habitat due to frequent disturbance (and thus changing location/configuration) and the low structural diversity of the ruderal vegetation present. The taller, denser ruderal vegetation provides nesting sites for Song Sparrows (possibly including the Alameda Song Sparrow), Saltmarsh Common Yellowthroats (*Geothlypis trichas sinuosa*), and Red-winged Blackbirds, and ducks may nest in small numbers in this habitat type as well. A variety of raptors, finches, and sparrows forage in this habitat. Mammals such as the black-tailed hare, California ground squirrel, California vole, and Botta's pocket gopher (*Thomomys bottae*) occur in the vegetated ruderal habitats on the site.

Pickleweed/Cattail Wetland

Vegetation. The pickleweed/cattail wetland (32.9 acres) in the northeastern part of the site, while similar to the muted tidal pickleweed wetlands described above, is different in that it contains a greater degree of microtopography, allowing for a more complex mosaic of vegetation associated with wetter and drier areas. This area may be transitioning to a freshwater wetland over time--cattail (*Typha latifolia*) appears to dominate in the southern portions of the habitat, while pickleweed dominates in northern areas. Within the pickleweed-dominated areas of this habitat, rabbitsfoot grass, bulrush (*Scirpus* sp.), sedge (*Cyperus* sp.), and spearscale also occur, although these other species occur only sporadically.

Wildlife. Although most of the northern portion of this habitat is saline with pickleweed, the southern portion with cattails may have areas of permanent fresh water that provide habitat for the Pacific treefrog (*Hyla regilla*). The salt marsh harvest mouse may occur in the northern areas where pickleweed is the dominant cover. Common birds of this habitat include the Red-winged Blackbird and Marsh Wren (*Cistothorus palustris*). Saltmarsh Common Yellowthroats and Alameda Song Sparrows are also expected to breed in this habitat.

Disturbed Seasonal Depression

Vegetation. The Resource Recovery Area, located in the southeastern portion of the TCRDF site, is separated from the muted tidal salt marsh by a narrow berm. The area within this berm has undergone extensive disturbance, with fill and other materials having been placed, moved around, and removed repeatedly as a part of the facility's resource recovery operations. During our site visits, seasonally wet depressions comprising 19.6 acres were located in portions of the resource recovery area where recent excavation of fill material had produced shallow depressions that allowed rain to pond. These pools were quickly drying at the time of the field survey. These areas were historically filled as part of the landfill's operations, but as fill has been removed, hydrophytes have encroached and some areas now pond for long durations. The wetland delineation prepared in 2002 defined this area as potentially non-jurisdictional, while all areas on the south side of the levee were considered to be jurisdictional (WRA 2002); this

delineation was apparently not submitted to, or confirmed by, the U.S. Army Corps of Engineers (USACE). Ruderal species such as black mustard invade these depressions (and the levees that allow access to them) in slightly elevated islands within the microtopography. Hydrophytes that appear in these depressions include brass buttons (*Cotula coronopifolia*), small patches of pickleweed, common tarplant (*Hemizonia pungens*), and rabbitsfoot grass. It is expected that the presence and locations of these depressions varies from year to year due to variation in the extent and location of disturbance associated with resource recovery efforts, and these depressions are not considered stable pools or wetlands. This habitat type also includes two small depressions along the southern edge of the landfill that were apparently excavated as detention basins.

Wildlife. Impounded waters that collect in this ruderal habitat during wet months occur adjacent to the larger muted tidal salt marsh, and therefore, this area provides seasonal foraging habitat to several wildlife species associated with the salt marshes. Shorebirds such as the Greater Yellowlegs (*Tringa melanoleuca*), Long-billed Curlew (*Numenius americanus*), Least Sandpiper (*Calidris minutilla*), Western Sandpiper (*C. mauri*), and Long-billed Dowitcher (*Limnodromus scolopaceus*) forage in these depressional areas during migration, while a few pairs of species such as the American Avocet, Black-necked Stilt, Mallard, Gadwall, Cinnamon Teal (*Anas cyanoptera*), and Canada Goose (*Branta canadensis*) nest in and around these depressions.

The western fence lizard may occur within the drier upland portions of this habitat. Additionally, the thick stands of black mustard provide nesting and foraging habitat for the Red-winged Blackbird, Saltmarsh Common Yellowthroat, and possibly the Alameda Song Sparrow. The Red-tailed Hawk and Northern Harrier often forage over this area for prey species, such as the California vole. No amphibians are expected to occur in these waters or within this habitat area because of the saline conditions. Additionally, these depressional areas do not provide habitat for the salt marsh harvest mouse because the pickleweed occurring here is very sparsely distributed.

Aquatic (Landfill Drainage Ditch)

Vegetation. The landfill drainage ditch (1.7 acres) extends from the middle of the northwestern boundary of the property westward along the unnamed channel before turning south and ending at the southwestern corner of the landfill. This ditch was created as part of a runoff collection system around the perimeter of the active landfill. Water that drains into this leachate trench is conveyed to the Alameda County Flood Control Channel through an existing 36-inch pipe and flapgate. The flood control channel discharges to Mowry Slough and ultimately San Francisco Bay. The ditch collects runoff from the landfill and the compacted gravel road that circumvents the landfill, and, as such, is probably generally of very low water quality. It begins as a dry ditch, containing ruderal species such as black mustard and riggut brome, but, as it begins to hold water, contains pickleweed and becomes large enough (approximately 6-10 feet wide, 3 feet deep) to contain water for long periods of time. Water cress (*Rorippa nasturtium-aquaticum*) occurs in some areas.

Wildlife. Due to the small size of this ditch, few waterbirds are expected to occur in this habitat. Nevertheless, shorebirds such as the Killdeer (*Charadrius vociferus*), Greater Yellowlegs, and Black-necked Stilt, and ducks such as the Mallard and Gadwall, are likely to forage in this ditch occasionally. Although a record for the salt marsh harvest mouse occurs in a pickleweed-

dominated ditch along the railroad tracks about one mile south of the project site, the on-site pickleweed habitat in ditches near impact areas are too isolated and degraded to support this species.

SPECIAL-STATUS SPECIES AND SENSITIVE HABITATS

Special-status Plant Species

Reconnaissance-level surveys were conducted on May 18 and June 20, 2006 for habitats capable of supporting special-status plant species. Prior to the site surveys, information concerning the known distribution of threatened, endangered, or other special-status plant species with potential to occur in the area was collected from several sources and reviewed. The sources included the CDFG's Natural Diversity Database (CNDDDB 2006) and information available through the USFWS, CDFG, and technical publications. The CNPS's *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2001) and *The Jepson Manual* (Hickman 1993) supplied information regarding the distribution and habitats of vascular plants in the vicinity.

A query of special-status plants in the CNDDDB was first performed for the USGS Milpitas topographical quadrangle in which the project site occurs, as well as the eight quadrangles surrounding the project site. The CNPS Inventory was then queried to produce a similar list for Alameda County. The specific habitats included in the query were valley and foothill grassland and marshes and swamps. These habitats were selected based on the similarity of their constituent species to those occurring on the project site. The habitat requirements of each special-status plant species were the principal criteria used for inclusion in the list of species potentially occurring on the site.

Many of the special-status plant species that occur in Alameda County are associated with habitat or soil types that did not occur on the project site historically, or no longer occur on the project site due to the extensive removal of soil and addition of fill material; such habitats and soil types that are absent from the project site include serpentine soils, strongly alkaline soils, clay soils, vernal pool habitat, and cismontane woodland habitat. Additionally, many of the species identified as potentially occurring in the area occur at much higher elevations than are present at the project site. This is particularly true considering that the only native habitat remaining on the site is at approximately sea level. Forty-nine species associated with valley and foothill grassland or marsh and swamp habitats were analyzed for rarity, none of which were identified as potentially occurring in the project vicinity. CNDDDB (2006) records list nine species as occurring within five miles (8 km) of the project site: San Joaquin spearscale (*Atriplex joaquiniana*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), Contra Costa goldfields (*Lasthenia conjugens*), alkali milk-vetch (*Astragalus tener* var. *tener*), prostrate navarretia (*Navarretia prostrata*), Hoover's button-celery (*Eryngium aristulatum* var. *hooveri*), California seablight (*Suaeda californica*), arcuate bush mallow (*Malacathamnus arcuatus*), and Point Reyes bird's-beak (*Cordylanthus maritimus* ssp. *palustris*) (Figure 3). Eight of these special-status species were rejected from consideration due to the degraded nature of habitat on the site, the lack of associated native species, and/or the absence of specific microhabitat variables such as soil type, elevation, or hydrology (Appendix B). It was determined that only two species, Contra Costa goldfields and Congdon's tarplant, could potentially occur on the site in its present

condition. Focused surveys for these species were conducted on 18 May and 20 June, 2006, but neither species was observed on the site. These two species are listed in Table 3 and are discussed in detail below.

Contra Costa Goldfields (*Lasthenia conjugens*). **Federal Listing Status: Endangered; State Listing Status: None; CNPS List 1B.** This annual herb occurs in mesic (moderate moisture regime) valley and foothill grasslands and vernal pools. The blooming period is from March to June. The range of this species includes Alameda and six other counties. The CDFG Rarefind Database reports a single large population 0.4 miles west of Interstate 880, about 0.4-0.8 miles west/northwest of the junction of Cushing Road and Landing Road, near the Sky Sailing airport in Fremont. Due to the proximity of this known population, and the presence of potentially suitable habitat on site, surveys were performed for this species on May 18, 2006. The flooded pickleweed wetlands were not surveyed (to avoid impacts to salt marsh harvest mouse habitat), except in areas near the levee. However, Contra Costa goldfields was not detected anywhere on the site, and the portions of the extensive wetlands that were unsurveyed will not be impacted by this project. This species is likely absent from the site, and is considered absent from the impact areas; further surveys are not warranted for purposes of impact assessment.

Congdon's Tarplant (*Hemizonia parryi* ssp. *congdonii*). **Federal Listing Status: None; State Listing Status: None; CNPS List 1B.** This annual herb occurs in valley and foothill grassland, particularly those with alkaline substrates, and in sumps or disturbed areas where water collects. The blooming period extends from June through November. The range of this species has been reduced to Monterey, San Luis Obispo, and possibly Santa Clara counties. The CDFG Rarefind Database provides only historic reports of populations in the Warm Springs district of Fremont. Suitable habitat is present on the project site, primarily within the pickleweed/cattail wetland and in the disturbed seasonal depression habitat, but focused surveys performed on June 20, 2006 throughout the impact areas detected only the common tarplant. This species is likely absent from the site, and is considered absent from the impact areas; further surveys are not warranted for purposes of impact assessment.

SPECIAL-STATUS WILDLIFE SPECIES

Surveys were conducted on the project site on 20 April, 1 May, and 13 June 2006 for habitats capable of supporting special-status wildlife species. Prior to the site surveys, information concerning the known distribution of threatened, endangered, or other special-status wildlife species with potential to occur in the area was collected from several sources and reviewed. The sources included the CDFG's Natural Diversity Database (CNDDDB 2006) and information available through the USFWS, CDFG, Museum of Vertebrate Zoology, and California Academy of Sciences.

The CNDDDB was queried for occurrences of special-status wildlife species within the USGS Milpitas topographical quadrangles in which the project site occurs and the eight surrounding

Table 3. Special-status species, their status, and potential occurrence on the Tri-Cities Recycling and Disposal Facility (TCRDF) Project Site.

NAME	*STATUS	HABITAT	POTENTIAL FOR OCCURRENCE ON SITE
Federal or State Endangered and Threatened Species			
Contra Costa Goldfields (<i>Lasthenia conjugens</i>)	FE, CNPS 1B	Vernal pools and mesic areas in valley and foothill grassland habitat.	Both native wetlands on the project site offer suitable habitat and the CDFG Rarefind Database contains reports of this species in the immediate vicinity. Surveys conducted during the 18 May site visit did not find any populations within the project site. No further surveys are warranted. Considered absent.
Vernal Pool Tadpole Shrimp (<i>Lepidurus packardii</i>)	FE	Vernal pools and swales containing clear to highly turbid water.	Recent records are known from areas northeast of the site (on the other side of the railroad tracks). No suitable habitat on the project site; the seasonal depressions are created by ongoing disturbance, and no stable pools are present. Likely absent from the site.
California Red-legged Frog (<i>Rana aurora draytonii</i>)	FT, SP, CSSC	Streams, freshwater pools and ponds with overhanging vegetation	Marginal habitat on site. No hydrological connection to known populations. Nearest record more than 5 miles to the east. Presumed absent
California Tiger Salamander (<i>Ambystoma californiense</i>)	FT, CSSC	Vernal or temporary pools in annual grasslands, or open stages of woodlands.	Recent records are known from areas less than 0.5 mi. from the site, on the other side of the railroad tracks. Occasional dispersants may cross the tracks and occur on the site. However, given the extent and intensity of ongoing disturbance, the Resource Recovery Area does not provide high-quality dispersal or aestivation habitat, and the seasonal depressions are disturbed too frequently to provide stable breeding habitat. Unlikely to breed on the site.
American Peregrine Falcon (<i>Falco peregrinus anatum</i>)	SE, SP	Forages in many habitats; requires cliffs for nesting.	Occasional forager on site; no suitable breeding habitat on site.
Western Snowy Plover (<i>Charadrius alexandrinus nivosus</i>)	FT, CSSC	Sandy beaches on marine and estuarine shores.	Marginal foraging habitat is present on flats in the muted tidal salt marsh. However, due to the limited nature of these flats, Snowy Plovers are not expected to breed on the site, and they likely occur here rarely, if at all.
California Clapper Rail (<i>Rallus longirostris obsoletus</i>)	FE, SE	Tidal salt marsh dominated by cordgrass and pickleweed; occasionally occurs in brackish marshes.	No suitable habitat on site due to lack of cordgrass, short stature of pickleweed, and lack of tidal channels. Likely absent from the channel northwest of the site due to the very narrow, brackish nature of the wetlands along this channel.
Salt Marsh Harvest Mouse (<i>Reithrodontomys raviventris</i>)	FE, SE	Pickleweed in saline emergent wetlands.	Pickleweed-dominated habitat in muted tidal salt marsh and pickleweed/cattail wetland on site provides high-quality habitat, and this species is presumed present in these areas. Only a few scattered pickleweed plants are present in the disturbed depressions, and this species is not expected to occur in these features.
California Species of Special Concern			
Western Pond Turtle (<i>Clemmys marmorata</i>)	CSSC	Permanent or nearly permanent water in a variety of habitats.	No suitable habitat on site; presumed absent.
American White Pelican (<i>Pelecanus erythrorhynchos</i>)	CSSC	Forages on fish found in freshwater lakes and rivers and breeds up to 150 miles from feeding area.	May forage occasionally in the inundated portions of the muted tidal salt marsh, but not expected to occur frequently or in large numbers. Does not breed on the site.
Double-crested Cormorant (<i>Phalacrocorax auritus</i>)	CSSC	Colonial nester on coastal cliffs, offshore islands, electrical transmission towers, and along interior lake margins. Feeds on fish.	Forages occasionally in the inundated portions of the muted tidal salt marsh, but not expected to occur frequently or in large numbers. Does not breed on the site.
White-faced Ibis (<i>Plegadis chihi</i>)	CSSC	Nest in dense marsh vegetation near foraging areas in shallow water or muddy fields.	Forages occasionally in wetland areas, but not expected to occur frequently or in large numbers. Does not breed on the site.

Table 3. Special-status species, their status, and potential occurrence on the Tri-Cities Recycling and Disposal Facility (TCRDF) Project Site.

NAME	*STATUS	HABITAT	POTENTIAL FOR OCCURRENCE ON SITE
Long-billed Curlew (<i>Numenius americanus</i>)	CSSC	Nests in both dry and wet uplands; occurs on beaches along coast and inland lakes, salt marshes and grain fields.	May occur on site as occasional visitor during non-breeding season. Does not breed on the site.
California Gull (<i>Larus californicus</i>)	CSSC	In South Bay, nests on dried salt pond bottoms and levees. Forages in a variety of open habitats.	Abundant forager at the active landfill. Does not breed on the site.
Cooper's Hawk (<i>Accipiter cooperi</i>)	CSSC	Nests in trees, forages in many habitats.	Occasional forager, but not expected to breed on the site.
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	CSSC	Nests in a variety of dense woodlands, forages in many habitats.	Occasional forager, but not expected to breed on the site.
Merlin (<i>Falco columbarius</i>)	CSSC	Forages in many habitats in winter and migration.	Occasional forager during migration and winter. Does not breed on the site.
Prairie Falcon (<i>Falco mexicanus</i>)	CSSC	Nests on cliffs, forages on birds and small mammals in dry, open grasslands.	Occasional forager, but not expected to breed on the site.
Northern Harrier (<i>Circus cyaneus</i>)	CSSC	Nests in extensive grassland or tall wetland vegetation, forages in a variety of open habitats.	Forages on site; taller vegetation in the wetlands and the Resource Recovery Area could potentially support a single breeding pair on the site.
Ferruginous Hawk (<i>Buteo regalis</i>)	CSSC	Nests north/east of California, forages over grasslands during migration and while wintering.	Occasional forager during migration and winter. Does not breed on the site.
Golden Eagle (<i>Aquila chrysaetos</i>)	CSSC	Breeds on cliffs or in large trees or structures, forages in open grasslands and ruderal habitats.	Occasional forager, but not expected to breed on the site.
Burrowing Owl (<i>Athene cunicularia</i>)	CSSC	Nests and roosts in burrows, usually of ground squirrels, in grasslands and ruderal habitats.	Known to occur in the site vicinity. Ground squirrels on the site provide potential burrows. Burrowing Owls may forage and possibly breed on the site.
Short-eared Owl (<i>Asio flammeus</i>)	CSSC	Requires tall emergent vegetation or grasses for mating.	Possibly a rare forager during the non-breeding season, but not expected to breed on the site.
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	CSSC	Nests in tall shrubs and dense trees, forages in grasslands, marshes, and ruderal habitats.	Likely forages on the site. Trees and shrubs provide potential breeding sites.
California Horned Lark (<i>Eremophila alpestris actia</i>)	CSSC	Short-grass prairies, annual grasslands, coastal plains, and open fields.	Likely forages on site, but breeding is unlikely due to heavy, frequent disturbance.
Saltmarsh Common Yellowthroat (<i>Geothlypis trichas sinuosa</i>)	CSSC	Breeds in fresh and salt marshes around South San Francisco Bay where there is thick foraging cover; breeds in tall grass, tules, willows.	Observed in the pickleweed-cattail wetland, muted tidal salt marsh, and in taller vegetation within the Resource Recovery Area. Likely breeds in these areas.
Alameda Song Sparrow (<i>Melospiza melodia pusillula</i>)	CSSC	Breeds and forages primarily in salt marsh habitats in the South San Francisco Bay.	Song Sparrows observed in the pickleweed-cattail wetland, muted tidal salt marsh, and in taller vegetation within the Resource Recovery Area, and likely breed in these areas. Whether these birds are of the race <i>pusillula</i> or the more widespread race <i>gouldii</i> is unknown, but <i>pusillula</i> is likely represented on-site.
California Yellow Warbler (<i>Dendroica petechia brewsteri</i>)	CSSC	Nests in dense stands of willow and other riparian habitat.	Yellow Warblers (subspecies not determined) occur on-site during migration, but breeding habitat absent from site.
Tricolored Blackbird (<i>Agelaius tricolor</i>)	CSSC	Breeds near fresh water in dense emergent vegetation.	May forage on site, but stands of herbaceous and emergent vegetation are likely not large enough to support nesting by this species. Not expected to breed on site.
Saltmarsh Wandering Shrew (<i>Sorex vagrans halicoetes</i>)	CSSC	Pickleweed-dominated salt marsh.	Potential habitat occurs in the muted tidal salt marsh and pickleweed/cattail marsh. Distribution poorly known, but may occur in these portions of the site.

Table 3. Special-status species, their status, and potential occurrence on the Tri-Cities Recycling and Disposal Facility (TCRDF) Project Site.

NAME	*STATUS	HABITAT	POTENTIAL FOR OCCURRENCE ON SITE
Pallid Bat (<i>Antrozous pallidus</i>)	CSSC	Forages over many habitats; roosts in buildings, rocky outcrops and rocky crevices in mines and caves.	Unlikely forager; no roosting habitat on site. Presumed absent.
State Protected Species or CNPS Species			
Congdon's Tarplant (<i>Hemizonia parryi</i> ssp. <i>congdonii</i>)	CNPS 1B	Valley and foothill grassland often in clay soils.	Ruderal areas within both native wetlands on the project site offer suitable habitat and the CDFG Rarefind Database contains historic reports of this species occurring in the Fremont area. Surveys conducted on June 20 did not detect the species, and it is considered absent from impact areas on the site.
White-tailed Kite (<i>Elanus caeruleus</i>)	SP	Forages in open areas of many habitats.	Forages on site, but not expected to nest due to small size of, and frequent disturbance near, the few trees on site.

***LISTING STATUS**

- FE = Federally listed Endangered
- FT = Federally listed Threatened
- SE = State listed Endangered
- ST = State listed Threatened
- CSSC = California Species of Special Concern
- SP = State Protected Species
- CNPS 1B = Plants considered by CNPS to be rare, threatened, or endangered in California, and elsewhere

quadrangles. The specific habitat requirements and the locations of known occurrences of each special-status wildlife species were the principal criteria used for inclusion in the list of species potentially occurring on the site (Table 3).

The project is outside the known range of, or lacks suitable habitat for, several special-status species that occur elsewhere in the Fremont area. These species include the California Clapper Rail (*Rallus longirostris obsoletus*), California red-legged frog (*Rana aurora draytonii*), western pond turtle (*Clemmys marmorata*), and pallid bat (*Antrozous pallidus*). Other special-status species may occur on the project site only as uncommon to rare visitors, migrants, or transients, or may forage on the site in low numbers while breeding in adjacent areas. However, these species are not expected to breed on the site, or to be substantially affected by the proposed project. These species include the American White Pelican (*Pelecanus erythrorhynchos*), Double-crested Cormorant (*Phalacrocorax auritus*), White-faced Ibis (*Plegadis chihi*), White-tailed Kite, Cooper's Hawk (*Accipiter cooperi*), Sharp-shinned Hawk (*Accipiter striatus*), American Peregrine Falcon (*Falco peregrinus anatum*), Merlin (*Falco columbarius*), Prairie Falcon (*Falco mexicanus*), Ferruginous Hawk (*Buteo regalis*), Golden Eagle (*Aquila chrysaetos*), Western Snowy Plover (*Charadrius alexandrinus nivosus*), Long-billed Curlew (*Numenius americanus*), California Gull (*Larus californicus*), Short-eared Owl (*Asio flammeus*), California Horned Lark (*Eremophila alpestris actia*), California Yellow Warbler (*Dendroica petechia brewsteri*), and Tricolored Blackbird (*Agelaius tricolor*).

More detailed discussion is provided below for those species for which suitable habitat is present on or immediately adjacent to the site, or for which resource agencies have expressed particular concern in the project vicinity.

Federal or State Endangered or Threatened Species

Vernal Pool Tadpole Shrimp (*Lepidurus packardi*). **Federal listing status: Endangered;** **State listing status: None.** Vernal pool tadpole shrimp occur primarily in the Central Valley and range from east of Redding in Shasta County south to the San Luis National Wildlife Refuge in Merced County (59 FR 48136). Outside of the Central Valley, a single population of the vernal pool tadpole shrimp occurs in the Warm Springs Seasonal Wetland in Fremont, Alameda County (Caires *et al.* 1993). They have also been found on the adjoining Catellus site. Tadpole shrimp eat microscopic organisms, detritus, dead tadpoles, earthworms, frog eggs and mollusks. Females deposit eggs on vegetation on the pool bottom. Pools containing vernal pool tadpole shrimp have clear to highly turbid water and range in size from less than an acre to 90 acres. These pools may be highly turbid and mud-bottomed or grass-bottomed in old alluvial soils underlain by hardpan. Pools generally have low conductivity, low total dissolved solids and low alkalinity (Eng *et al.* 1990). Tadpole shrimps are demersal (*i.e.*, they are generally benthic, but are capable of swimming), and they burrow in soft sediments. The periodic flooding that formerly allowed vernal pool species to disperse became rare due to the construction of dams, drainage canals and other barriers that diminished periodic flooding. However, vernal pool tadpole shrimp eggs can pass through bird digestive tracts and may be dispersed by birds.

There are no records of tadpole shrimp on the TCRDF site, and the CNDDDB lists no records from the areas immediately east of the site (*i.e.*, on the other side of the railroad tracks). However, suitable habitat in the form of seasonal pools is present in the areas east of the railroad

tracks, and the species may be present in those areas. On the site itself, the only areas of seasonal ponding that possess suitable hydrology for tadpole shrimp occur in seasonal depressions created by recent, and ongoing, disturbance. Due to the ongoing resource recovery activities, the location and extent of these pools (if present) change from year to year, and no stable pools are present on the site. Some of these pools contain composted material, and may therefore be acidic, while other pools may be too alkaline to support tadpole shrimp.

Because waterbirds foraging in the disturbed seasonal depressions on the site are likely to move between the site and other seasonal pools northeast of the railroad tracks (where habitat is more suitable for tadpole shrimp), it is possible that eggs or cysts of the tadpole shrimp may be dispersed on the feet of, or via the digestive tracts of, these birds. Therefore, it is possible that tadpole shrimp disperse to the TCRDF site on occasion. However, the ongoing resource recovery activities at the TCRDF likely preclude the presence and persistence of suitable, stable aquatic habitat for this species.

California Tiger Salamander (*Ambystoma californiense*). **Federal listing status: Threatened; State listing status: Species of Special Concern.** The California tiger salamander's preferred breeding habitat includes temporary, ponded environments (minimum of three to four months; e.g., vernal pool, ephemeral pool, or human-made ponds) surrounded by uplands that support small mammal burrows. The species will utilize permanent ponds provided that aquatic, vertebrate predators are not present. Such ponds provide breeding and larval habitat, while small mammal burrows (e.g., ground squirrel and Botta's pocket gopher) in the upland habitats support juvenile and adult salamanders during the dry season.

Adults often emerge from the burrows at night during the first moderate to heavy winter rains of the season and migrate to vernal pools, seasonal ponds, or human-made ponds, where they lay their eggs. The eggs are attached singly, or in small clumps, to vegetation under water, or directly to the bottom of a pool if emergent vegetation is lacking. The eggs hatch approximately one week after they are deposited. The larvae prey upon invertebrates and other amphibian larvae for between three and six months, during which time they metamorphose into juveniles. Juveniles typically leave the pools in mass during a one- to two-week period, usually as the ponds dry. The juveniles then search for available burrows. Juveniles feed and grow in these burrows until the following winter (Jennings and Hayes 1994).

There are no records of tiger salamanders on the TCRDF site. On the project site, the only areas of seasonal ponding occur in seasonal depressions created by recent, and ongoing, disturbance. Due to the ongoing resource recovery activities, the location and extent of these pools (if present) change from year to year, and no stable pools are present on the site. Furthermore, ponding in these pools is not of sufficient duration (i.e., 3.5 months) for successful tiger salamander breeding in most years (Jennings and Hayes 1994), although in very wet years, water may pond in such depressions for at least 3.5 months if they are deep enough. The disturbed seasonal depressions on the site, and the ditch along the railroad tracks (between the eastern boundary of the site and the railroad tracks) are also likely too saline to support a breeding population of tiger salamanders. California tiger salamanders are not known to breed lower than 10 m (Shaffer and Fisher 1991). Although salinity of the pools on the TCRDF site was not measured, these ponds likely are too saline to support tiger salamanders. Eggs cannot survive in water of salinity

greater than 6 to 7 parts per thousand, and larvae cannot survive in water of salinity greater than 7 to 8 parts per thousand (Mark Jennings, Unpubl. data). Anderson et al. (1971) suggested that salt marshes can act as barriers to tiger salamanders and brackish water, such as that found in San Francisco Bay salt marshes, is probably too saline for this species.

Tiger salamanders have been recorded approximately 0.5 miles east of the site, and suitable habitat in the form of seasonal freshwater pools are present in the areas east of the railroad tracks. Tiger salamanders are known to disperse up to a mile or more from aquatic breeding sites to upland aestivation sites, and thus the TCRDF site is within dispersal distance of breeding sites to the east. The railroad tracks represent an impediment to dispersal, but voids in the rocky railroad bed are large enough to allow salamanders to disperse onto the TCRDF site. Therefore, dispersing individuals of this species may occur on the site. However, few small mammal burrows are found in the Resource Recovery Area, and the frequent, ongoing disturbance of the Resource Recovery Area limits the suitability of any upland habitat on the site for the tiger salamander.

In summary, the California tiger salamander is unlikely to breed, or at least to breed successfully, on the TCRDF site due to the saline nature, frequent disturbance, and (in most years) short duration of ponding in the disturbed seasonal depressions on the site. Occasional dispersants from breeding sites to the east may reach the site, but the habitat within the Resource Recovery Area is considered unsuitable upland habitat for this species due to the paucity of mammal burrows and frequent, intensive disturbance of this area.

California Clapper Rail (*Rallus longirostris obsoletus*). **Federal Listing Status: Endangered; State Listing Status: Endangered.** The California Clapper Rail is a secretive marsh bird currently endemic to the marshes of San Francisco Bay. California Clapper Rails nest in salt and brackish marshes along the edge of the bay, and are most abundant in extensive salt marshes and brackish marshes dominated by cordgrass (*Spartina foliosa*), pickleweed, and marsh gumplant (*Grindelia stricta*), and containing complex networks of tidal channels. Although California Clapper Rails are typically found in tidal salt marshes, they have also been documented in brackish marshes in the South Bay.

The habitat on the TCRDF site is not suitable for Clapper Rails due to the absence of cordgrass and gumplant from the marsh habitats on the site, the absence of tidal channels, and the low stature of the pickleweed on the site. Although Clapper Rails occur along Mowry Slough, and likely along the lower portion of the channel that drains southwestward from the southwestern corner of the TCRDF site, this species is not expected to occur close enough to the site to be disturbed by any project activities. For example, the brackish, very narrow nature of the wetland vegetation along the channel on the northwest side of the landfill makes this area unsuitable for the Clapper Rail.

Western Snowy Plover (*Charadrius alexandrinus nivosus*). **Federal listing status: Threatened; State listing status: Species of Special Concern.** The Western Snowy Plover is a small shorebird that breeds along sandy coastal beaches and, at scattered inland locations, on alkaline flats and playas. Populations of this race have declined due to beach disturbance, the loss of sandy dunes and swales as a result of dune stabilization, and habitat loss at inland

breeding sites. Although Snowy Plovers are not thought to have bred historically within the San Francisco Bay due to lack of suitable habitat, they have begun breeding in salt ponds around the bay this century. Here, they nest on the bottoms of dried-out ponds or on islands and separated levees where they are protected from mammalian predators.

Snowy Plovers breed in salt ponds around the south end of San Francisco Bay, and nesting has been recorded as close to the TCRDF site as salt ponds A22 and A23 southeast of the site. However, the flats within the muted tidal salt marsh are very limited in extent and are well vegetated, and therefore do not provide suitable breeding habitat. It is possible that Snowy Plovers occasionally forage on these flats, but their occurrence here is expected to be low and irregular, if they occur here at all.

Salt Marsh Harvest Mouse (*Reithrodontomys raviventris*). **Federal listing status: Endangered; State listing status: Endangered, Protected.** The salt marsh harvest mouse is found only in saline wetlands of San Francisco Bay and its tributaries. The southern subspecies *R. r. raviventris* is restricted to an area from San Mateo County and Alameda County along both sides of San Francisco Bay south to Santa Clara County. The salt marsh harvest mouse occurs with the closely related, ubiquitous and abundant western harvest mouse (*R. megalotis*) at upper edges of marshes and in marginal areas. Both animals occur in pickleweed, but the salt marsh harvest mouse replaces the western harvest mouse in denser areas of pickleweed. *R. raviventris* has declined substantially in recent decades. This decline is due primarily to diking and filling of marshes, subsidence, and changes in salinity brought about by increasing volumes of fresh water discharge into the bay

Although intensive, species-specific surveys were not conducted for this project, Dr. Howard Shellhammer captured two salt marsh harvest mice approximately one mile southeast of the site (CNDDDB 2006). These individuals were captured in a narrow band of pickleweed that filled a shallow ditch between a fence line and the base of the bed of the railroad track. Although this habitat was not considered optimal habitat, this species may occur where similar pickleweed habitat is present near the railroad tracks along the southernmost end of the site along a non-tidal channel. Additionally, high-quality habitat for the salt marsh harvest mouse occurs throughout most of the muted marsh and in the northern portion of the pickleweed/cattail wetland. The salt marsh harvest mouse is expected to occur in these portions of the project site. Although a few scattered pickleweed plants are present within the disturbed seasonal depressions within the Resource Recovery Area, no suitable salt marsh harvest mouse habitat occurs within the Resource Recovery Area.

California Species of Special Concern

Northern Harrier (*Circus cyaneus*). **Federal listing status: None; State listing status: Species of Special Concern.** The Northern Harrier is commonly found in open grasslands, agricultural areas and marshes. Nests are built on the ground in areas where long grasses provide cover and protection. Harriers hunt for a variety of prey, including rodents, birds, frogs, reptiles, and insects by flying low and slow in a traversing manner utilizing both sight and sound to detect prey items.

Harriers forage throughout all but the developed portions of the TCRDF site, and the tall herbaceous vegetation in the southern part of the Resource Recovery Area and in marshes on the site may support breeding by a single pair of harriers.

Burrowing Owl (*Athene cunicularia*). **Federal listing status: None; State listing status: Species of Special Concern.** The Burrowing Owl is a small, terrestrial owl of open country. These owls prefer annual and perennial grasslands, typically with sparse or nonexistent tree or shrub canopies. In California, Burrowing Owls are found in close association with California ground squirrels. Owls use the abandoned burrows of ground squirrels for shelter and nesting. Burrowing Owl populations are thought to be declining throughout much of their range in the United States. Loss of habitat and campaigns against the burrowing mammals upon which Burrowing Owls depend for nesting habitat are suspected causes of this decline. The Bay Area Burrowing Owl population is estimated to have lost 61% of its nesting colonies since the late 1980's (DeSante and Ruhlen, unpl. data). The South Bay region (from San Mateo on the Peninsula and Alameda County on the East Bay) supports the state's fourth largest discrete population.

No evidence of Burrowing Owls was observed on the site during surveys conducted for the project. However, this species is known to occur in some numbers in the grasslands and ruderal habitats east and north of the site, and Burrowing Owls are expected to occur on the site at least as occasional foragers. The Resource Recovery Area provides only marginal foraging habitat due to the tall vegetation present in less disturbed areas and the frequent, ongoing disturbance in much of this portion of the site. However, the shorter ruderal vegetation on the slopes of the landfill provide higher-quality foraging habitat for Burrowing Owls. California ground squirrel burrows on the site provide potential roosting and nesting sites for the species, and Burrowing Owls could potentially nest or roost on the site.

Loggerhead Shrike (*Lanius ludovicianus*). **Federal Listing Status: None; State Listing Status: Species of Special Concern.** The Loggerhead Shrike is a predatory songbird that prefers open habitats interspersed with shrubs, trees, poles, fences, or other perches from which it can hunt. Nation-wide, Loggerhead Shrike populations have declined significantly over the last 20 years. Even with this trend, Loggerhead Shrikes are still considered a fairly common species in California. Nests are built in densely foliated shrubs or trees, often containing thorns, which offer protection from predators and upon which prey items are impaled.

Loggerhead Shrikes forage in the ruderal habitats on the TCRDF site, and the trees near the corporation yard provide potential nesting sites for the species. At most, however, one or two pairs would be expected to breed on the site due to the paucity of trees and shrubs.

Saltmarsh Common Yellowthroat (*Geothlypis trichas sinuosa*). **Federal listing status: None; State listing status: Species of Special Concern.** The Saltmarsh Common Yellowthroat inhabits emergent vegetation and breeds in fresh and brackish marshes and associated upland areas in the San Francisco Bay Area. This subspecies is one of the approximately 12 subspecies of Common Yellowthroat recognized in North America. The Saltmarsh Common Yellowthroat breeds from mid-March through early August and pairs frequently raise two clutches per year. Because subspecies cannot be reliably distinguished in the field, determination of the presence of

Saltmarsh Common Yellowthroat can be achieved only by locating a nest in the breeding range known for this subspecies, or by observing them during the summer months when only the Saltmarsh Common Yellowthroat is present. Although little is known regarding the movements of this taxon, the wintering areas have been described as coastal salt marshes from the San Francisco Bay region to San Diego County (Grinnell and Miller 1944).

Despite the common name, Saltmarsh Common Yellowthroats breed primarily in fresh and brackish marshes. In the South Bay, this species is a fairly common breeder in such habitats virtually wherever they occur, although very small patches of marsh often lack this species. Several males were observed singing in portions of the muted tidal salt marsh, pickleweed/cattail wetland, and Resource Recovery area supporting tall vegetation such as cattails and mustard during our site visits, and this species is expected to nest in these areas.

Alameda Song Sparrow (*Melospiza melodia pusillula*). Federal listing status: None; State Listing Status: Species of Special Concern. The Alameda Song Sparrow is one of three subspecies of Song Sparrow breeding only in salt marsh habitats in the San Francisco Bay area. This subspecies is found in marshes bordering the South San Francisco Bay. Here it is most abundant in the taller vegetation found along tidal sloughs, including pickleweed, salt marsh cordgrass and marsh gumplant, nesting from early March to mid-August. Although it is occasionally found in bulrushes in brackish marshes, the Alameda Song Sparrow is very sedentary and is not known to disperse upstream into freshwater habitats (Basham and Mewaldt 1987). Populations of the Alameda Song Sparrow have declined due to the loss of salt marshes around the Bay, although within suitable habitat it is still fairly common.

Song Sparrows were observed to be fairly common in several areas of the TCRDF project site, including portions of the muted tidal salt marsh, pickleweed/cattail wetland, and Resource Recovery area supporting tall vegetation such as cattails and mustard, and Song Sparrows are expected to nest in these areas. The location of the interface between populations of the Alameda Song Sparrow and those of the race breeding in freshwater habitats (*M. m. gouldii*) in the vicinity of the project area is not well known due to difficulties in distinguishing individuals of these two races in the field. Conclusive identification of individual Song Sparrows as *pusillula* (rather than the widespread upland race *M. m. gouldii*) is not possible unless the birds are examined in the hand. Therefore it is difficult to make confident determinations about the racial identity of Song Sparrows breeding on the project site.

Due to the freshwater influence in the upland areas of the project area, it is possible that at least some of the Song Sparrows breeding on the site are *gouldii*. However, given the proximity of these habitats to saline habitats on and adjacent to the site, we recommend assuming that all Song Sparrows breeding on the project site could be *pusillula* unless they can be examined in the hand.

Salt Marsh Wandering Shrew (*Sorex vagrans halicoetes*). Federal Listing Status: None; State Listing Status: Species of Special Concern. Formerly more widely distributed in the Bay Area, this small insectivorous mammal is now confined to salt marshes of the South Bay. Salt marsh wandering shrews occur most often in medium-high wet tidal marsh (6 to 8 feet above sea level), with abundant driftwood and other debris for cover. They have also been

recorded occasionally in diked marsh. This species is typically found in fairly tall pickleweed, in which these shrews build nests. They breed and give birth during spring, although very little is known regarding the natural history of the species.

This subspecies was formerly recorded from marshes of San Pablo and San Francisco bays in Alameda, Contra Costa, San Francisco, San Mateo, and Santa Clara counties, but captures in recent decades have been very infrequent anywhere in these areas. Shrews are occasionally captured during salt marsh harvest mouse trapping studies, but the difficulty in identifying them to species has precluded a better understanding of the current distribution of this species in the South Bay. It is unknown whether the salt marsh wandering shrew occurs on the TCRDF site. However, because the species has been recorded in diked marshes, the pickleweed-dominated habitat in the muted tidal salt marsh and pickleweed/cattail marsh on the TCRDF site are considered potential habitat for this species.

Sensitive and Regulated Habitats

U.S. Army Corps of Engineers Jurisdictional Habitats. Areas meeting the regulatory definition of “Waters of the U.S.” (jurisdictional waters) are subject to the jurisdiction of the USACE under provisions of Section 404 of the Clean Water Act (1972) and Section 10 of the Rivers and Harbors Act (1899). These waters may include all waters used, or potentially used, for interstate commerce, including all waters subject to the ebb and flow of the tide, all interstate waters, all other waters (intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of waters otherwise defined as “Waters of the U.S.,” tributaries of waters otherwise defined as “Waters of the U.S.,” the territorial seas, and wetlands (termed Special Aquatic Sites) adjacent to “Waters of the U.S.” (33 CFR, Part 328, Section 328.3). Wetlands on non-agricultural lands are identified using the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987).

Construction activities within jurisdictional waters are regulated by the USACE. The placement of fill into such waters must comply with permit requirements of the USACE. No USACE permit will be effective in the absence of state water quality certification pursuant to Section 401 of the Clean Water Act. The State Water Resources Control Board is the state agency (together with the Regional Water Quality Control Boards) charged with implementing water quality certification in California.

Reconnaissance-level field surveys for jurisdictional waters on the project site were conducted on May 18, 2006 in accordance with USACE regulations and guidelines. A formal wetland delineation prepared in 1992 and approved by the USACE located the jurisdictional wetland boundaries along the southwestern edge of the landfill and along the berm separating the Resource Recovery Area from the muted tidal salt marsh (Blodgett 1992 in LSA 1992). An updated delineation in 2002 again designated all areas south/southeast of this berm (i.e., the muted tidal salt marsh habitat in Figure 2) to be within the regulatory jurisdiction of the USACE (WRA 2002); this delineation, which dealt primarily with Section 404 issues, was apparently not submitted to the USACE for confirmation, although the USACE did confirm in a November 18, 2002 letter to Waste Management that no historic Section 10 waters are present within the Resource Recovery Area.

The WRA delineation designated an area within an older berm in the extreme southeastern part of the site, and a linear feature extending northwestward along the eastern boundary of the property along the railroad tracks, as “jurisdictional seasonal wetland areas”, though the delineation report noted that repair of a tide gate may reduce ponding and saturation in these areas to the point that they revert to uplands. Based on our habitat mapping, the narrow linear feature along the eastern boundary of the site is now upland, ruderal habitat, while the larger area in the extreme southeastern part of the site is at least botanically (and likely hydrologically) similar to the rest of the muted tidal salt marsh.

The disturbed seasonal depressions within the Resource Recovery Area on the project site, and the small detention basins along the southeastern edge of the landfill, have been created either specifically as detention basins or have been excavated incidental to ongoing resource recovery operations (e.g., frequent movement of fill material). Such features have generally been considered non-jurisdictional by the USACE in the past due to their manmade nature, USACE-authorized fill-material holding area, and ongoing use for construction and operations. Confirmation of WRA’s 2002 delineation, or an update to this delineation, would be necessary to ultimately define the limits of the USACE’s jurisdiction under Section 404 on this site.

California Department of Fish and Game Jurisdictional Habitats. The CDFG potentially extends the definition of stream to include “intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams (USGS), and watercourses with subsurface flows. Canals, aqueducts, irrigation ditches, and other means of water conveyance can also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife” (CDFG 1994). Such areas on the site were determined using methodology described in *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607* (CDFG 1994).

Activities that result in the diversion or obstruction of the natural flow of a stream, or which substantially change its bed, channel or bank, or which utilize any materials (including vegetation) from the streambed, may require that the project applicant enter into a Streambed Alteration Agreement with the CDFG.

Reconnaissance-level field surveys were also conducted within the TCRDF project area for streams and other waterways potentially under the regulatory jurisdiction of the CDFG. Given the manmade nature of the landfill drainage ditch found within the project boundaries, and its lack of vegetative cover, it is our opinion that the CDFG would likely not assert jurisdiction over this waterway. Based on past experience working with CDFG representatives in similar habitats to those encountered on site, it is our determination that there are no channels, drainages or waterways that they would claim under The Fish and Game Code as cited above.

Ordinance and Landmark Trees. The City of Fremont Tree-Removal Controls (Fremont Municipal Code, Sec. 4-5101) serve to protect all trees having a trunk diameter of 6 inches or greater at a height measured 4 ½ feet above the natural grade of slope, growing within the city limits. The ordinance protects all trees other than commercial nut and fruit bearing trees, except black walnut and olive trees, or any tree located on a lot or parcel of land which is less than ten thousand square feet in area. A tree-removal permit is required from the City of Fremont city

manager for the removal of ordinance-sized trees. The City of Fremont also maintains a list of Landmark Trees (Fremont Municipal Code, Sec. 4-5109) which serves to protect trees having significant girth, height, spread, or is of some unique quality or species. It is unlawful to vandalize, mutilate, remove, or destroy landmark and ordinance trees. In addition, the City of Fremont requires, prior to the issuance of any approval or permit for construction of any improvement of the project site, that all trees on a project site be inventoried and categorized in a Tree Location Plan according to size, species, and spot elevation at the base of each tree (Fremont Municipal Code, Sec. 4-5107). Some of the eucalyptus trees on the site appear to be of ordinance size, although no tree survey was performed as part of this study.

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

The proposed project may have effects on the biological resources of the project site. The California Environmental Quality Act (CEQA) and the CEQA Guidelines provide guidance in evaluating project impacts and determining which impacts will be significant. CEQA defines “significant effect on the environment” as “a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” Under CEQA Guidelines section 15065 and Appendix G, a project’s effects on biotic resources may be significant when the project would:

- “have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory”
- “have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service”
- “have a substantial adverse effect on any riparian habitat or other sensitive natural community (e.g., oak woodland) identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service”
- “have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act”
- “interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites”
- “conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance”
- “conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan”

REGULATORY SETTING

Biological resources are regulated by the following:

Federal Endangered Species Act. The federal Endangered Species Act (FESA) protects listed wildlife species from harm or “take” which is broadly defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Take can

also include habitat modification or degradation that directly results in death or injury to a listed wildlife species. An activity can be defined as “take” even if it is unintentional or accidental. Listed plant species are provided less protection than listed wildlife species. Listed plant species are legally protected from take under FESA if they occur on federal lands or if the project requires a federal action, such as a Section 404 fill permit.

The USFWS has jurisdiction over federally listed threatened and endangered species under the FESA. The USFWS also maintains lists of proposed and candidate species. Species on these lists are not legally protected under the FESA, but may become listed in the near future and are often included in their review of a project.

California Endangered Species Act. The California Endangered Species Act (CESA) prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with the CESA, CDFG has jurisdiction over state-listed species (California Fish and Game Code 2070). Additionally, the CDFG maintains lists of “species of special concern” that are defined as species that appear to be vulnerable to extinction because of declining populations, limited ranges, and/or continuing threats.

California Environmental Quality Act. Section 15380(b) of the California Environmental Quality Act (CEQA) Guidelines provides that a species not listed on the federal or state lists of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definitions in FESA and CESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on a species that has not yet been listed by either the USFWS or CDFG.

Clean Water Act. Under Section 404 of the Clean Water Act, the Corps is responsible for regulating the discharge of fill material into waters of the United States. Waters of the U.S. and their lateral limits are defined in 33 CFR Part 328.3 (a) and include streams that are tributary to navigable waters and their adjacent wetlands. Wetlands that are not adjacent to waters of the U.S. are termed “isolated wetlands” and, depending on the circumstances, may also be subject to Corps jurisdiction.

California Water Quality and Waterbody Regulatory Programs. Pursuant to Section 401 of the federal Clean Water Act, projects that are regulated by the Corps must obtain water quality certification from the RWQCB. This certification ensures that the Project will uphold state water quality standards. The RWQCB may impose mitigation requirements even if the Corps does not.

The CDFG exerts jurisdiction over the bed and banks of rivers, lakes, and streams according to provisions of Section 1601 to 1603 of the Fish and Game Code. The Fish and Game Code requires a Streambed Alteration Agreement for the fill or removal of material within the bed and banks of a watercourse or waterbody and for the removal of riparian vegetation.

The Federal Migratory Bird Treaty Act (16 U.S.C. Sec. 703) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of

the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Most native bird species in the project area are covered by this Act.

The California Native Plant Society (CNPS), a non-governmental conservation organization, has developed lists of plant species of concern in California. Vascular plants included on these lists are defined as follows:

List 1A Plants considered extinct.

List 1B Plants rare, threatened, or endangered in California and elsewhere.

List 2 Plants rare, threatened, or endangered in California but more common elsewhere.

List 3 Plants about which more information is needed - review list.

List 4 Plants of limited distribution-watch list.

Although the CNPS is not a regulatory agency and plants on these lists have no formal regulatory protection, plants appearing on List 1B or List 2 are, in general, considered to meet CEQA's Section 15380 criteria and adverse effects to these species may be considered significant.

KEY ASSUMPTIONS

The following impact analysis is based on the draft project description provided by David J. Powers & Associates and dated May 31, 2006. It is assumed that the entire Resource Recovery Area may be used as a borrow area for soils used to cap the existing landfill, and that the landfill will be revegetated following closure. This impact assessment also assumes that Best Management Practices (e.g., the use of construction fencing, silt fence, and other erosion and sediment controls around the borrow areas and the landfill) will be employed during construction to avoid the inadvertent placement or translocation of sediment into the wetlands surrounding the borrow and landfill areas.

IMPACTS FOUND TO BE LESS THAN SIGNIFICANT

Disturbance to and Loss of Disturbed Seasonal Depression, Ruderal, and Developed Habitat

The disturbed seasonal depression habitat and ruderal habitat within the Resource Recovery Area is continually manipulated with landfill operation needs. The fill material present in this area supports an assemblage of primarily non-native plant species. No special-status plant species were found in this area, nor are any expected to occur in this habitat. Its biological value is limited due to the frequent and ongoing disturbance of this area and the lack of stable (i.e., infrequently disturbed) wetlands or pools. Although the disturbed seasonal depressions provide some of the functions of wetlands or aquatic habitats by providing foraging habitat for waterbirds (and, in a wet year such as 2006, breeding habitat for some species), these artificial features are continuously disturbed. The much higher-quality, naturally occurring wetlands to the south are not manipulated and offer contiguous, natural habitat for plant and wildlife use. Loss of the disturbed seasonal depression and ruderal habitat as a result of borrow activities will result in the displacement of some common wildlife species and will result in a loss of habitat for these species. However, the borrow area represents a very small fraction of such habitat available

regionally, and the loss of such habitat thus will not result in significant impacts to biological resources.

The disturbance of the ruderal habitat on the landfill will result in a temporary loss of such habitat (and a temporary displacement of wildlife species that use this area). However, following landfill closure, the landfill will be revegetated and will again provide ruderal habitat. Ruderal and developed habitats predominantly support common plant and wildlife species. These habitats are locally and regionally common, and the majority of biotic resources associated with these habitats will continue to be abundant following the capping of and closure of the Tri-Cities Landfill. Loss of these habitats would not result in significant impacts to biological resources.

Disturbance to Aquatic Habitat within the Landfill Drainage Ditch

The drainage ditch along the northwestern and southwestern sides of the landfill was man-made and was constructed to contain any sediment or pollution draining from the landfill to prevent it from entering the unnamed channel to the north (and ultimately San Francisco Bay). This ditch provides limited, low-quality habitat for wildlife, and habitat of this type is regionally abundant. Therefore, impacts to this ditch (e.g., by filling or sedimentation during landfill closure) are considered less than significant.

Impacts to Certain Special-Status Animal Species and Their Habitats

A number of special-status wildlife species occur on the TCRDF site only as occasional visitors, migrants, or transients. These species may occasionally forage on the site, but they are not expected to breed there. These species include the Long-billed Curlew, White-faced Ibis, Double-crested Cormorant, American White Pelican, California Gull, Sharp-shinned Hawk, Cooper's Hawk, Short-eared Owl, American Peregrine Falcon, Merlin, Prairie Falcon, Golden Eagle, White-tailed Kite, Western Snowy Plover, California Horned Lark, California Yellow Warbler, and Tricolored Blackbird. The project will have no effect on the breeding success of any of these species, although it may result in a very small reduction of foraging habitat available to them locally or regionally. Due to the abundance of similar habitats locally and regionally and the infrequency with which most of these species occur on the project site, the project is expected to have a less-than-significant impact these species that may occasionally occur on, but not breed, on the site.

Several other special-status species, including the Northern Harrier, Burrowing Owl, Loggerhead Shrike, Alameda Song Sparrow, and Saltmarsh Common Yellowthroat, may breed on the site. At most, one pair of harriers and one or two pairs of shrikes may nest on the site. Impacts to breeding habitat of one or two pairs of these species will not substantially impact regional populations, and thus impacts to these species and their habitat are considered less than significant. Because this project will impact only a very small amount of habitat available to the Alameda Song Sparrow and Saltmarsh Common Yellowthroat regionally, impacts to these species' habitat are likewise considered less than significant (however, see "Potential Loss of Active Nests of the Alameda Song Sparrow and Saltmarsh Common Yellowthroat" below). Impacts to Burrowing Owl habitat are expected to be minimal in the Resource Recovery Area (due to the paucity of ground squirrel burrows and frequent disturbance), and the landfill is expected to provide high-quality foraging habitat for owls following its closure. Therefore,

impacts to Burrowing Owl habitat are also considered less than significant (but see “Potential Impacts to Individual Burrowing Owls and Their Burrows” below).

California tiger salamanders dispersing from breeding ponds east of the project site could potentially occur on the site in the Resource Recovery Area. It is also possible that vernal pool tadpole shrimp may occasionally be transported to the site (e.g., by birds). However, the site does not provide suitable breeding habitat for either species due to the ongoing disturbance associated with resource recovery activities. This disturbance also limits the value of upland habitat on the site for the tiger salamander. If these species occur on the site, borrow activities may result in the loss of habitat occupied by these two species. However, such habitat is of such limited value (due to disturbance) that the loss of this habitat would be a less-than-significant impact, especially in light of the availability of much more suitable habitat managed for these species northeast of the railroad tracks (however, see “Potential Impacts to Individual California Tiger Salamanders” below). In addition, given the infrequency with which individual vernal pool tadpole shrimp are expected to occur on the site (if at all), impacts to occasional individuals are considered less than significant. It should be noted that Endangered Species Act consultation with the USFWS may be necessary if this project will impact the California tiger salamander or vernal pool tadpole shrimp.

IMPACTS THAT ARE LESS THAN SIGNIFICANT WITH MITIGATION

Potential Impacts to Individual California Tiger Salamanders

As discussed above, the site lacks suitable habitat for the California tiger salamander due to the ongoing disturbance in the Resource Recovery Area. Nevertheless, California tiger salamanders (federally listed as threatened) are known to breed within about 0.5 miles from the project site, and individuals could potentially disperse into impact areas on the project site. Construction activities, in particular activities in the Resource Recovery Area, have the potential to result in injury or mortality of tiger salamanders due to crushing or trampling. Tiger salamanders may also become trapped in the borrow pits, or attempt to breed in any pools that form within these pits, with little chance of successful breeding due to disturbance and possible salinity of the water.

Because California tiger salamanders live underground during most of their life cycle, it is difficult to determine with certainty if California tiger salamanders occupy a site, or to determine that number of individuals that could be impacted. Injury or mortality of individual California tiger salamanders due to landfill closure activities in the Resource Recovery Area is considered a significant impact. Implementation of Mitigation Measure 1a and/or Mitigation Measures 1b, 1c, and 1d (as applicable) would reduce potential impacts to individual California tiger salamanders to less-than-significant levels. Note that any of these mitigation measures would likely require prior USFWS approval.

Mitigation Measure 1a. Protocol-level Surveys. Surveys conducted according to the most recent USFWS and CDFG protocol could be conducted to determine conclusively whether tiger salamanders occur on the project site. Site-specific authorization from the USFWS would be required before such a survey could be conducted, and the USFWS would have to approve the

precise protocol for this particular site. Most likely, the survey would entail performing larval surveys for tiger salamanders in any aquatic, freshwater habitats on the site (if any pools are present during the year(s) in which the survey is conducted) and a trapline survey conducted over one or two rainy seasons designed to intercept any tiger salamanders moving across the eastern boundary of the site during dispersal to or from breeding areas east of the railroad tracks.

A negative finding from tiger salamander surveys conducted according to USFWS/CDFG protocol, and during a non-drought year, would be definitive (i.e., would demonstrate absence from the site). However, because tiger salamander activity is associated with rainfall, the USFWS may not accept a survey effort as valid if rainfall during a season of trapping is <70% of normal, potentially necessitating an additional year of trapping.

If no tiger salamanders are detected during protocol-levels surveys, the project can be presumed to have no impacts on the species, and no further measures are warranted. If tiger salamanders are detected on the site, or if no protocol-level survey is conducted and presence of tiger salamanders is assumed, Mitigation Measures 1b and 1c should be implemented.

Mitigation Measure 1b. Exclusion of California Tiger Salamanders from Project Site. To minimize impacts to individual tiger salamanders from borrow activities, a barrier to tiger salamander dispersal should be placed along the eastern boundary of the site, from the existing entrance road southeast to the southeastern limit of the borrow area. This barrier should be designed to prevent salamanders dispersing from breeding sites east of the railroad tracks from entering the project area. This barrier should be designed by a qualified herpetologist, and should be checked and maintained regularly to ensure that gaps that could allow salamanders to enter the project site do not occur. Because the borrow activities are proposed to be phased, such a barrier should also be placed between borrow areas and portions of the Resource Recovery Area not being used for borrow activities, to prevent any salamanders from entering the active borrow area.

Mitigation Measure 1c. Salvage of Individuals During Project Activities. While Mitigation Measure 1b would minimize the probability of salamanders entering the site, any salamanders already present in the borrow area should be salvaged and translocated off site to the extent practicable. Although detecting every tiger salamander on a site is not feasible due to this species' secretive, subterranean habits, a qualified herpetologist should be present during removal of debris and initial clearing and grubbing on the Resource Recovery Area prior to excavation at a particular borrow area. The herpetologist would look for individual tiger salamanders that may be taking refuge under debris or in the few mammal burrows present on the site. Any individuals detected would be captured and translocated to a safe location outside the project area; this site should be approved by the USFWS prior to translocation.

Mitigation Measure 1d. On-site Construction Crew Education Program. A worker education program will take place before the commencement of borrow impacting activities. A USFWS-approved biologist will explain to construction workers how best to avoid impacts to California tiger salamanders. The approved biologist will conduct a training session that would be scheduled as a mandatory informational field meeting for contractors and all construction personnel. The field meeting will include topics on species identification, life history,

descriptions, and habitat requirements during various life stages. Handouts, illustrations, photographs, and project mapping showing areas where minimization and avoidance measures are being implemented will be included as part of this education program. The program will increase the awareness of the contractors and construction workers about existing federal and state laws regarding endangered species as well as increase their compliance with conditions and requirements of resource agencies.

Prior to the start of work each day, dedicated construction personnel will inspect trenches and pits that were left open overnight for tiger salamanders. If a tiger salamander is encountered during project construction, the following protocol will be implemented:

- All work that could result in direct injury, disturbance, or harassment of the individual animal must immediately cease;
- The foreman will be immediately notified;
- The foreman will immediately notify a qualified biologist, who in turn will immediately notify USFWS and CDFG; and
- If approved by the USFWS and CDFG, the qualified biologist will remove the individual to a safe location nearby.

Potential Impacts to Individual Salt Marsh Harvest Mice and Salt Marsh Wandering Shrews

The salt marsh harvest mouse (federally listed as endangered) is expected to occur in the muted marsh, the pickleweed/cattail habitat, and possibly the southernmost extreme of the ditch adjacent to the railroad and the muted marsh. The salt marsh wandering shrew may likewise occur in these areas. These habitats are not expected to be impacted directly by the TCRDF closure project. However, the salt marsh harvest mouse and salt marsh wandering shrew could potentially occur in dense vegetation at the edges of these habitats, and grading of dense vegetation in these areas could result in the injury or mortality of individuals. Such loss would be considered a significant impact. To reduce impacts to individual salt marsh harvest mice and salt marsh wandering shrews to less-than-significant levels, Mitigation Measures 2a, 2b, and 2c should be implemented for any activities involving work within 10 feet of the edge of the pickleweed/cattail wetland, the muted tidal salt marsh, or the ditch along the railroad tracks adjacent to the extreme southeastern corner of the borrow area. Note that these mitigation measures may require prior USFWS approval due to the potential for “take” of the federally listed mouse.

Mitigation Measure 2a. Exclusion of Individuals from Project Site. A barrier to exclude salt marsh harvest mice and salt marsh wandering shrews from the project’s impact areas shall be constructed under the guidance of a qualified biologist. The fence should consist of a three-foot tall, tight cloth silt fence toed into the soil at least three inches deep and supported with stakes. Additionally, vegetation within the impact area and within ten feet of the barrier shall be removed by hand; such bare areas are unlikely to be crossed by salt marsh harvest mice and salt marsh wandering shrews and provide additional insurance against the dispersal of individuals into the project site. Alternatively (if the barrier of bare ground is not practicable), a three-foot-

high smooth metal fence toed into the soil at least three inches should be constructed instead. All fence construction and vegetation removal shall be conducted under the supervision of a qualified biological monitor who is permitted by the USFWS to move salt marsh harvest mice out of the construction area.

Mitigation Measure 2b. Salvage of Individuals During Project Activities. While Mitigation Measure 1a would minimize the probability of salt marsh harvest mice and salt marsh wandering shrews entering the site, any individuals already present in the impact areas should be salvaged and translocated off site to the extent practicable. Although detecting every individual on a site is not feasible due to these species' secretive habits, a qualified mammalogist should be present during construction of the barrier fence, removal of vegetation, and initial clearing and grubbing within ten feet of the barrier fence. The mammalogist would look for individual salt marsh harvest mice and salt marsh wandering shrews that may be present within the project area. Any individuals detected would be captured and translocated to a safe location within the closest suitable, pickleweed-dominated habitat.

Mitigation Measure 2c. On-site Construction Crew Education Program. A worker education program will take place before the commencement of borrow activities. A USFWS-approved biologist will explain to construction workers how best to avoid impacts to salt marsh harvest mice and salt marsh wandering shrews. The approved biologist will conduct a training session that would be scheduled as a mandatory informational field meeting for contractors and all construction personnel. The field meeting will include topics on species identification, life history, descriptions, and habitat requirements. Handouts, illustrations, photographs, and project mapping showing areas where minimization and avoidance measures are being implemented will be included as part of this education program. The program will increase the awareness of the contractors and construction workers about existing federal and state laws regarding special-status species as well as increase their compliance with conditions and requirements of resource agencies.

Potential Impacts to Individual Burrowing Owls and Their Burrows

No Burrowing Owls were observed on the project site during reconnaissance-level surveys conducted for this EIR. However, Burrowing Owls (listed as a Species of Special Concern by the CDFG) occur in a number of locations immediately north and east of the site. All but the aquatic and developed portions of the TCRDF site provide suitable foraging habitat for Burrowing Owls, and the ground squirrel burrows on the site (primarily on the inactive slopes of the landfill) provide potential nesting and roosting burrows. Therefore, it is possible that Burrowing Owls could roost or nest in burrows on the site in small numbers.

Despite the occurrence of Burrowing Owls in multiple locations in the western Fremont and Newark areas, this species is regionally rare and declining. Therefore, any impacts from the TCRDF project that result in the injury or mortality of individual owls or active nests, such as excavation or grading, or project-related disturbance that results in the abandonment of eggs or nestlings, would be considered significant. Implementation of Mitigation Measure 3a, in combination with Measures 3b and 3c if necessary, would reduce impacts to a less-than-significant level.

Mitigation Measure 3a. Pre-construction Surveys. Pre-construction surveys for Burrowing Owls should be conducted in potential habitat in conformance with CDFG protocols, no more than 30 days prior to the start of any ground-disturbing activity such as clearing and grubbing, excavation, or grading. If no Burrowing Owls are located during these surveys, no additional action would be warranted. However, if Burrowing Owls are located on or immediately adjacent to the site the following mitigation measures will be implemented.

Mitigation Measure 3b. Buffer Zones. If Burrowing Owls are present during the nonbreeding season (generally 1 September to 31 January), a 150-foot buffer zone, within which no new project-related activity will be permissible, should be maintained around the occupied burrow(s). During the breeding season (generally 1 February to 31 August), a 250-foot buffer, within which no new project-related activity will be permissible, will be maintained between project activities and occupied burrows. Owls present at burrows on the site after 1 February will be assumed to be nesting on or adjacent to the site unless evidence indicates otherwise. This protected area will remain in effect until 31 August, or at the CDFG's discretion and based upon monitoring evidence, until the young owls are foraging independently.

Mitigation Measure 3c. Relocation. If ground-disturbing activities will directly impact occupied burrows, eviction outside the nesting season may be permitted pending evaluation of eviction plans by, and receipt of formal written approval of the relocation from, the CDFG. No Burrowing Owls should be evicted from burrows during the nesting season (1 February through 31 August) unless evidence indicates that nesting is not actively occurring (e.g., because the owls have not yet begun nesting early in the season, or because young have already fledged late in the season). Although this EIR has determined that impacts to Burrowing Owl habitat are less-than-significant, the CDFG may require compensation for impacts to Burrowing Owls as a condition of approval of a relocation plan.

Potential Loss of Active Nests of the Alameda Song Sparrow and Saltmarsh Common Yellowthroat

Song Sparrows, possibly including the Alameda Song Sparrow, and Saltmarsh Common Yellowthroats are fairly common in dense wetland and ruderal vegetation on the project site. Both species are listed as Species of Special Concern by the CDFG. If project activities such as vegetation removal, excavation, and grading take place during the breeding season (roughly early March to mid-August for these two species) in areas supporting suitable nesting habitat, the nests, eggs, and/or young of these species could be destroyed. In addition, project activities performed in close proximity to active nests could cause disturbance that results in the abandonment of eggs or young. Given the number of individuals of these species present on the site, including the proposed borrow areas, such destruction or abandonment of nests of these species would constitute a potentially significant impact. Implementation of one of the following mitigation measures would reduce impacts to breeding Alameda Song Sparrows and Saltmarsh Common Yellowthroats to less-than-significant levels.

Mitigation Measure 4a. Restrict Project Activities to the Non-breeding Season. Alameda Song Sparrows and Saltmarsh Common Yellowthroats breed from early March to mid-August. If project activities in close proximity to potential nesting habitat can be scheduled to occur between mid-August and late February, the nesting season would be avoided, and no impacts to nesting Song Sparrows and Common Yellowthroats would occur.

Mitigation Measure 4b. Clear Vegetation During the Non-breeding Season. If project activities are to occur between early March and mid-August, all vegetation in the areas that are to be disturbed by project activities, and that could serve as nesting habitat for these species, should be removed during the non-breeding season (which is approximately mid-August to late February for these two species). In addition, all vegetation that could serve as suitable nesting habitat for these species, and that is located within 50 feet of areas of disturbance, should be removed to prevent the project from disturbing active nests. During the construction period, the project site and adjacent areas should be maintained so that no vegetation suitable for nesting by Song Sparrows and Common Yellowthroats is allowed to develop. If vegetation is removed during the non-breeding season prior to construction, no impacts to nesting would occur.

Mitigation Measure 4c. Conduct Pre-disturbance Surveys and Avoid Disturbance to Active Nests. If project activities are to occur during the breeding season in or near potential nesting habitat, a qualified ornithologist should conduct pre-disturbance surveys no more than 15 days prior to the initiation of disturbance in any given area. If Song Sparrow or Common Yellowthroat nests are found to be present within or near (i.e., within 50 feet of) the impact areas during the breeding season, a buffer free from any new project-related disturbance should be established around any active nest, the width of this buffer being determined by an experienced ornithologist in consultation with CDFG. This buffer should be respected until nesting has been completed.

CUMULATIVE IMPACTS

Impacts to sensitive resources within the TCRFD project will be minimal, as the habitats to be impacted are either heavily disturbed (and disturbed on an ongoing basis) or are less frequently disturbed ruderal habitats that are regionally abundant. Although the project will result in the loss of habitat for some species, the majority of these species are also regionally common, the amount of habitat lost is very small compared to regional availability, and much of the impact to habitat (e.g., on the landfill) will be temporary. Furthermore, for more sensitive species (e.g., those associated with wetland habitats), the proposed South Bay Salt Ponds Restoration Project is expected to increase habitat substantially in the coming years. Therefore, the TCRFD is not expected have significant cumulative adverse impacts to biological resources.

The closure of the Tri-Cities Landfill is expected to reduce regional food resources for “nuisance” species, such as California Gulls, Common Ravens, American Crows, feral cats, red foxes, Virginia opossums, raccoons, and skunks, considerably. These nuisance species are important predators on a variety of sensitive species in the South Bay, such as nesting terns, Black-necked Stilts, American Avocets, Western Snowy Plovers, California Clapper Rails, salt marsh harvest mice, salt marsh wandering shrews, and others. A reduction in food availability at the landfill has the potential to result in a short-term increase in predation as these nuisance species turn to more natural food supplies (although many individuals will simply refocus foraging efforts on other landfills). However, in the long term, closure of the TCRDF will likely result in a decline in populations of these nuisance species in the South Bay, thus benefiting the native, more sensitive species that are occasionally preyed upon by the nuisance species.

COMPLIANCE WITH ADDITIONAL LAWS AND REGULATIONS APPLICABLE TO BIOTIC RESOURCES OF THE PROJECT SITE

REGULATORY OVERVIEW FOR BIRDS

The Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA; 16 U.S.C., §703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment, a violation of the MBTA.

California State Fish and Game Code

Migratory birds are also protected in California. The State Fish and Game Code §3503 emulates the MBTA and protects birds' nests and eggs from all forms of take. Disturbance that causes nest abandonment resulting in the loss of eggs or young may be considered "take" by the CDFG. Nesting raptors (birds of prey) are specifically protected under CDFG Code §3503.5.

Project Applicability

The vast majority of birds found on the project site are protected under the MBTA, and by Fish and Game Code. Project activities have the potential to take nests, eggs, young or individuals of these protected species. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to the abandonment of nests. Although this impact is not significant under CEQA due to the local and regional abundance of the species in question and the low magnitude of the potential impact, we recommend that the following measures be implemented to reduce the risk of a violation of the MBTA and the California Fish and Game Code.

Compliance Measures

Measure 1. Avoid Construction during the Nesting Season. Grading and other project activities should be scheduled to avoid the nesting season to the extent possible. The period of January through September encompasses the nesting season for most birds in the project area.

Measure 2. Pre-disturbance Surveys. If construction is to occur during the breeding season, preconstruction surveys should be conducted by a qualified ornithologist no more than 15 days prior to the initiation of construction in any given area. Pre-disturbance surveys should be used to ensure that no nests of species protected by the MBTA or State Code will be disturbed during project implementation.

Measure 3. Inhibiting Nesting. If vegetation is to be removed by the project and all necessary approvals have been obtained, potential nesting substrate (*e.g.*, bushes, trees, grass, buildings, burrows) that will be removed by the project should be removed during the period October through December (outside the nesting season), to help preclude nesting.

Measure 4. Buffer Zones. If an active nest is found, a qualified ornithologist, in consultation with CDFG, should determine the extent of a construction-free buffer zone to be established around the nest.

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APPENDIX A.
Special-Status Plant Species Considered but Rejected
for Occurrence at the Project Site

Scientific Name	Common Name	Lack of Serpentine Soils	Lack of Other Edaphic Requirements	Believed to Be Extirpated or Extinct Outside of the Elevation Range	Lack of Associated Species	Highly Degraded Site Conditions
<i>Amsinckia grandiflora</i>	large-flowered fiddleneck			X		X
<i>Amsinckia lunaris</i>	bent-flowered fiddleneck		X			X
<i>Androsace elongata</i> ssp. <i>acuta</i>	California androsace			X		
<i>Astragalus tener</i> var. <i>tener</i>	alkali milk-vetch		X			
<i>Atriplex cordulata</i>	heartscale		X			
<i>Atriplex coronata</i> var. <i>coronata</i>	crownscale				X	X
<i>Atriplex depressa</i>	brittlescale					X
<i>Atriplex joaquiniana</i>	San Joaquin spearscale		X			X
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	big-scale balsamroot			X		
<i>Blepharizonia plumosa</i>	big tarplant			X		X
<i>Calochortus umbellatus</i>	Oakland star-tulip			X		
<i>Caulanthus coulteri</i> var. <i>lemmonii</i>	Lemmon's jewelflower			X		
<i>Cirsium fontinale</i> var. <i>campylon</i>	Mt. Hamilton thistle			X		X
<i>Clarkia franciscana</i>	Presidio clarkia			X		
<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	Point Reyes bird's-beak				X	X
<i>Cordylanthus mollis</i> ssp. <i>hispidus</i>	hispid bird's-beak					X
<i>Cordylanthus palmatus</i>	palmate-bracted bird's-beak					X
<i>Delphinium gypsophilum</i> ssp. <i>gypsophilum</i>	gypsum-loving larkspur			X		
<i>Delphinium recurvatum</i>	recurved larkspur			X		X
<i>Eriogonum luteolum</i> var. <i>caninum</i>	Tiburon buckwheat	X		X		X
<i>Erodium macrophyllum</i>	round-leaved filaree			X		X
<i>Eschscholzia rhombipetala</i>	diamond-petaled California poppy				X	X
<i>Fritillaria agrestis</i>	stinkbells	X		X		X
<i>Fritillaria liliacea</i>	fragrant fritillary	X				
<i>Helianthella castanea</i>	Diablo helianthella			X		
<i>Hesperevax caulescens</i>	hogwallow starfish		X			
<i>Holocarpha macradenia</i>	Santa Cruz tarplant			X		X
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tule pea					X
<i>Leptosiphon acicularis</i>	bristly leptosiphon			X		
<i>Leptosiphon ambiguus</i>	serpentine leptosiphon	X		X		
<i>Leptosiphon grandiflorus</i>	large-flowered leptosiphon		X			
<i>Lessingia hololeuca</i>	woolly-headed lessingia	X				
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis		X			X
<i>Micropus amphibolus</i>	Mt. Diablo cottonweed			X		

Scientific Name	Common Name	Lack of Serpentine Soils	Lack of Other Edaphic Requirements	Believed to Be Extirpated or Extinct	Outside of the Elevation Range	Lack of Associated Species	Highly Degraded Site Conditions
<i>Microseris sylvatica</i>	sylvan microseris	X			X		
<i>Monardella villosa</i> ssp. <i>globosa</i>	robust monardella				X		
<i>Navarretia cotulifolia</i>	cotula navarretia		X				
<i>Navarretia prostrata</i>	prostrate navarretia				X	X	
<i>Plagiobothrys diffusus</i>	San Francisco popcorn-flower				X		
<i>Plagiobothrys glaber</i>	hairless popcorn-flower			X	X	X	
<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup				X	X	
<i>Sanicula maritima</i>	adobe sanicle				X	X	
<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	most beautiful jewel-flower				X		
<i>Suaeda californica</i>	California seablite			X			
<i>Trifolium amoenum</i>	showy Indian clover	X					X
<i>Trifolium depauperatum</i> var. <i>hydrophilum</i>	saline clover			X			
<i>Tropidocarpum capparideum</i>	caper-fruited tropidocarpum		X				

APPENDIX E

Noise Analysis

***TRI-CITIES RECYCLING
AND DISPOSAL FACILITY CLOSURE EIR
ENVIRONMENTAL NOISE STUDY
FREMONT, CALIFORNIA***

January 25, 2007

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INTRODUCTION

This study evaluates the environmental noise impacts which could result from the proposed closure of the 378-acre Tri-Cities Recycling and Disposal Facility (TCRDF) in Fremont, California. The Setting section includes background information on community noise to assist the reader in understanding the technical concepts, regulatory background information, and a description of the existing setting including surrounding land uses and their sensitivity to noise, and existing noise levels in the area. The Impacts and Mitigation section includes a discussion of the potential environmental noise impacts associated with the proposed closure project and recommends mitigation measures for any significant impacts that are identified.

SETTING

Background Information on Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its loudness. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is amplitude of sound waves combined with the reception characteristics of the ear. Amplitude may be compared with the height of an ocean wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its level. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq} . The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

TABLE 1

Definitions of Acoustical Terms Used in this Report

Term	Definition
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period. The hourly L_{eq} used for this report is denoted as dBA $L_{eq[h]}$.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels in the night between 10:00 pm and 7:00 am.
Day/Night Noise Level, L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
L_{01} , L_{10} , L_{50} , L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

TABLE 2

Typical Noise Levels in the Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
	120 dBA	
Jet fly-over at 300 meters		Rock concert
	110 dBA	
Pile driver at 20 meters		
	100 dBA	
		Night club with live music
	90 dBA	
Large truck pass by at 15 meters		
	80 dBA	
		Noisy restaurant
		Garbage disposal at 1 meter
Gas lawn mower at 30 meters		Vacuum cleaner at 3 meters
Commercial/Urban area daytime	70 dBA	Normal speech at 1 meter
Suburban expressway at 90 meters		
Suburban daytime	60 dBA	Active office environment
	50 dBA	
Urban area nighttime		Quiet office environment
	40 dBA	
Suburban nighttime		
Quiet rural areas	30 dBA	Library
	20 dBA	Quiet bedroom at night
Wilderness area		
	10 dBA	Quiet recording studio
Threshold of human hearing	0 dBA	Threshold of human hearing

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level, CNEL*, is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level, L_{dn}*, is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Regulatory Background

The State of California and the City of Fremont have established plans and policies designed to limit noise exposure at noise-sensitive land uses and evaluate the significance of environmental noise impacts. These plans and policies are contained in the following documents: (1) The State CEQA Guidelines, Appendix (G); and (2) The City of Fremont Noise Element of the General Plan.

(1) California Environmental Quality Act

Under the California Environmental Quality Act, noise impacts would be considered significant if the project would result in:

- (a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- (b) Exposure of persons or generation of excessive ground-borne vibration or ground-born noise levels;
- (c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- (d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- (e) For a project located within an airport land use plan or where such a plan has not been adopted within 2 miles of a public airport or public use airport, if the project would expose people residing or working in the project area to excessive noise levels;
- (f) For a project within the vicinity of a private airstrip, if the project would expose people residing or working in the project area to excessive noise levels.

With these guidelines, Items (a), (c), and (d) are applicable to the proposed project. Guideline (b) is not applicable to the project because the project would not generate ground-borne vibration

off-site and is not located adjacent to any known sources of ground-borne vibration or ground-borne noise. Guidelines (e) and (f) are not applicable because the project is not located within an airport land use plan or in the vicinity of a private airstrip, and would not expose people residing or working in the area to excessive aircraft noise.

CEQA does not define what noise level increase would be considered substantial on a permanent or a temporary basis. Typically, an increase in the day/night average noise level resulting from a project at noise sensitive land uses of 3 dBA or greater where noise levels exceed those considered those normally acceptable for the particular use, or 5 dBA or greater where noise levels would remain normally acceptable, would cause a substantial increase leading to a significant noise impact.

(2) City of Fremont Noise Element

Noise and land use planning issues are addressed in the Health and Safety Chapter of the City of Fremont General Plan. Objective HS 8.9 states, “A noise environment which meets which meets standards”. Policy HS 8.1.1 addresses proposals for new residential development in Fremont. This policy is not applicable to the closure project. Policy HS 8.1.2 is intended to protect the noise environment in existing residential areas and states the following:

“In general, the City will require the evaluation of mitigation measures for projects under the following circumstances:

- The project would cause the L_{dn} to increase by 3 dBA or more;
- An increase would result in an L_{dn} greater than 60 dBA;
- The L_{dn} already exceeds 60 dBA;
- The project has the potential to generate significant adverse community response.”

Policy HS 8.1.3 addresses noise created by commercial or industrial sources and states the following:

“Noise created by commercial or industrial sources associated with new project or developments shall be controlled so as not to exceed the noise level standards set forth in Table 10-2 as measured at any affected residential use.”

Table 10-2 Noise and Land Use Compatibility Standards for New Industrial and Commercial Noise Sources

Maximum Cumulative Duration of Noise Event in any One-Hour Period	Exterior Noise Level Standards, dBA	
	Daytime 7:00 AM to 10:00 PM	Nighttime 10:00 PM to 7:00 AM
30 Minutes	50	45
15 Minutes	55	50
5 Minutes	60	55
1 Minute	65	60
0 Minutes	70	65

(3) City of Fremont Noise Performance Standards

Section 8-21904 establishes performance standards for all uses of property. Under noise, the performance standard states, “At the point of measurement specified under Section 8-21903, the maximum normally acceptable sound level generated by any user shall not exceed an L_{dn} level of 70 dB when adjacent uses are industrial or wholesale users. When adjacent to offices, retail, or sensitive industries, the sound shall be limited to an L_{dn} level of 65 dB. When uses are adjacent or contiguous to residential, park, or institutional uses, the maximum sound shall not exceed an L_{dn} level of 60 dB.” Excluded from these standards are occasional sounds generated by the movement of railroad equipment, temporary construction activities, or warning devices. Each of the noise level standards specified in this section shall be reduced by 5 dBA for single-tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises when the site is adjacent to residential uses.

Existing Noise Environment

The TCRDF is located at the west end of Auto Mall Parkway adjacent to the Union Pacific Railroad tracks west of Interstate 880 in Fremont, California. The 378-acre site includes a 115-acre Class III landfill, resource recovery operations and storage on approximately 61 acres, and an approximate 14-acre corporation yard. Approximately 32 acres of upland and 4 acres of wetlands are located immediately south of the resource recovery operations. The remainder of the site consists of two diked areas and levees in the northeast and western areas of the property. The Don Edwards San Francisco Bay National Wildlife Refuge adjoins the western, southern, and eastern sides of the site. There are no developed lands contiguous to the site. The nearest developed land is a light industrial development located about 1/3-mile northeast of the site along the south side of Auto Mall Parkway.

TCRDF currently receives residential, commercial, and industrial wastes collected in the Cities of Fremont, Newark, and Union City. Collection trucks and private vehicles make deposits at specified locations on the top and sides of the landfill. A landfill gas collection system and landfill flare are also in place at the landfill. The gas collection system is a system of extraction wells which are operated under a slight vacuum. The gas is collected and burned at a landfill flare located north of the corporation yard. Construction and demolition debris, wood waste, yard waste, soil and large appliances are currently processed as part of resource recovery operations in an area south of the existing corporation yard and east of the landfill. Material is accepted from contractors, landscapers, and private individuals. Concrete and asphalt recycling is carried out onsite. The concrete recycling facility is opened Monday through Saturday from 7:30 AM to 4:00 PM. Customers haul material to and from the site with the busiest period of the year being May through August. A portable processing plant is brought to the site approximately once per month and concrete rubble is crushed and sized using a crusher and a variety of screens. Crushed concrete is stored in piles prior to trucking offsite. Approximately 8,800 trucks per year bring loads to the concrete recycling facility. Approximately 6,000 larger capacity trucks per year transport crushed concrete and asphalt products from the site. In the most active month, there was a maximum of 64 trucks per day. Other noise-generating activities include the yard and wood waste area where material is separated and ground in a barrel grinder to create wood chips. Ground wood waste is hauled offsite for use as fuel or used at the landfill as alternative daily cover in the active landfill areas. Recycled materials, such as cardboard, newspaper, metal cans, and bottle glass, are dropped off and stored south of the truck scales. Large appliances, such as stoves, washing machines, refrigerators, and clothes dryers, are recycled onsite. The TCRDF also accepts whole tires for recycling. An outside recycler removes

tires from the site for offsite recycling. E-waste, such as television and computer monitors, is collected and shipped offsite for processing. At the corporation yard, noise-generating activities include the shop facility or waste oil recycling area, a truck and container washing facility, a water supply station, and wastewater pump station. Also included along the access haul road in this area are truck scales and collection booths.

There are a number of pieces of mobile equipment that currently operate at the landfill. These equipment include bulldozers, compactors, scrapers, front-end loaders, bulldozers, water and vacuum trucks, graders, excavators, backhoes, and various miscellaneous trucks. There are approximately 15 large pieces of equipment operating intermittently at the landfill.

Sources of community noise in the area include ongoing operations at the site, intermittent railroad train operations on the UPRR tracks, vehicular traffic on Auto Mall Parkway, and vehicular traffic on Interstate 880. The project site was visited and noise levels were measured at one location adjacent to Auto Mall Parkway at the nearest light industrial facility located east of the project site. During a mid-morning measurement, noise levels ranged from 51 dBA to 76 dBA. The most significant source of noise affecting the environment at this nearest receptor was vehicular traffic on Auto Mall Parkway. Thirteen heavy trucks passed the site during a 10-minute period. Noise levels reached 75-76 dBA. The trucks included dump trucks, and smaller trucks, such as pickups with trailers. The average noise level (L_{eq}) during the measurement was 65 dBA, 60 feet from the roadway centerline. Noise resulting from ongoing operations did not contribute measurably to the noise environment at the noise measurement location. A comprehensive inventory of noise sources was not conducted at the project site because of the absence of noise sensitive receptors in the area. The nearest noise-sensitive residential receivers are located over one-mile from the landfill site. Furthermore, the proposed project is a closure project, so the focus of the noise study is on predicting noise levels from closure activities and assessing those noise levels against appropriate significance thresholds.

Impacts and Mitigation Measures

The Tri-Cities Landfill Closure Project includes several components. Components which could generate community noise include (1) installation of a final cover over the active landfill; (2) excavation and conditioning of soil materials; (3) alternative import of offsite materials for landfill cover; and (4) continued use of the corporation yard and concrete recycling facility on up to 48 acres of the site. The construction of the cover would occur in four phases in four consecutive years with working occurring between May and September of each year. Phases 1, 2, and 3 would complete the side slope cover and Phase 4 would complete the top-of-landfill cover.

During the closure process, there will be mobile equipment operating on the landfill site. During Phases 1, 2, and 3, the following equipment are anticipated for each phase of the landfill closure: Water trucks, scrapers, excavators, haul trucks, soil compactors or smooth drum rollers, motor graders, bulldozers, and backhoes and/or front end loaders. There would be 15-20 pieces of heavy equipment operating at any one time during Phases 1, 2, and 3 and 25-30 percent less equipment operating during Phase 4. Equipment necessary to close the landfill is similar to equipment usage during the historical operation of the landfill.

Impact 1: Noise generation from the site during closure activity would not increase substantially above noise levels generated on the site during historical operation of the landfill. This is a less-than-significant impact.

Primary noise sources associated with the landfill closure are mobile equipment used to construct the landfill covers. The numbers and types of pieces of equipment that would operate during the closure period are similar to the number and types of pieces of equipment that currently operate at the landfill. There could be, during maximum utilization of equipment, up to approximately 5 more pieces of heavy equipment operating at any one time than currently occurs. Noise generation from the site could increase about 1 dBA L_{eq} during daytime operations. Such an increase in noise from the site would be imperceptible in the surrounding areas. Other activities at the landfill that currently generate noise include the corporation yard and the concrete recycling facility. Both of these facilities would continue to operate during the closure period so noise levels would not be expected to change. The concrete recycling facility was originally approved to operate until the landfill closes. The project includes extension of the operation of the existing concrete facility into the future in the same general configuration and scope of activities as currently exists at the site. The continued operation of the concrete recycling facility would cause no change in noise levels above levels currently existing. This is a less-than-significant impact.

Impact 2: Haul trucks for soil delivery from offsite sources would not cause a measurable increase above existing noise levels along Auto Mall Parkway. This is a less-than-significant impact.

Haul trucks for soil deliveries from offsite sources are anticipated to be 10-12 trucks per hour on average, 15-20 trucks per hour during the peak periods with daily totals on the order of 125-150 truck trips. The maximum hourly average noise level resulting from closure truck traffic is calculated to be 62 dBA $L_{eq\ hour}$ during a peak truck traffic hour. The measured noise level along Auto Mall Parkway was 65 dBA L_{eq} during a mid-morning measurement. One of the major contributors to existing noise levels was truck traffic to and from the landfill where the volume of truck traffic during the noise measurement during a mid-morning sample was substantially higher than what is projected for the closure. Noise levels during the closure period are, therefore, expected to be equal to or less than noise levels than currently exists along the roadway, so there would be no noise impact resulting from closure-related truck traffic. This is a less-than-significant impact.

APPENDIX F

Air Quality Analysis

***TRI-CITIES RECYCLING
AND DISPOSAL FACILITY CLOSURE EIR
AIR QUALITY ASSESSMENT
FREMONT, CALIFORNIA***

February 14, 2007

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INTRODUCTION

This report provides the results of an air quality impact assessment for the proposed closure of the Tri-Cities Recycling and Disposal Facility (TCRDF) in Fremont, California. Once the landfill at the TCRDF reaches its permitted capacity, waste disposal and landfilling operations will cease and the entire landfill area will be capped with a multiple layer final cover system designed to minimize moisture infiltration into the landfill. Cover material for the landfill will come primarily from an on-site borrow area. However, depending on the quality and quantity of material available on-site, additional cover material from off-site sources may be needed. The proposed landfill cover system would be installed in four phases over a period of four years, with cover construction activities occurring about three to four months during each summer. Landfill side slopes would be covered first, followed by covering of the top deck. The first phase of the project would begin in June 2008. Subsequent phases would follow in the summer months of 2009, 2010, and 2011.

A landfill gas collection system and landfill flare are currently in place and being used at the landfill. Gas generated in the landfill is collected using a system of extraction wells that are operated under slight vacuum. The collected gas is then burned in a landfill flare. The collection and disposal of landfill gas through flaring will continue at the TCRDF after the landfill is capped.

The project also includes a General Plan amendment and rezoning that would allow use of the TCRDF Corporation Yard for parking, maintenance, and repair of up to 50 trucks per day. These trucks would travel to and from the site daily, generating approximately 100 trips. The concrete recycling facility at the site would also continue to operate at current levels. The number of employees at the Corporation Yard and concrete recycling facility are assumed to be similar to existing conditions.

This analysis evaluates the potential air quality impacts from the proposed project, resulting from activities associated with construction of the landfill cover and continued operation of the landfill gas collection and flaring. The analysis primarily focuses on air pollution emissions from the proposed project and their significance based on comparison to established significance thresholds. This analysis was conducted following the Bay Area Air Quality Management District (BAAQMD) CEQA guidelines for assessing air quality impacts (BAAQMD, 1999).

AIR QUALITY SETTING

The TCRDF project site is located in Fremont, in the southwestern portion of Alameda County, which is within the San Francisco Bay Area Air Basin (SFAAB). The air basin includes the counties of San Francisco, Santa Clara, San Mateo, Marin, Napa, Contra Costa, Alameda, along with the southern portion of Sonoma County and the southwest portion of Solano County. The local air quality regulatory agency responsible for this air basin is the BAAQMD.

REGULATORY BACKGROUND

Air Quality Standards

Ambient air quality is generally described by the concentration of various pollutants in the atmosphere. Pollutant concentrations are typically expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The significance of pollutant concentrations is determined by comparing the ambient concentration of a particular pollutant against the appropriate ambient air quality standard. These standards represent the allowable concentration of a pollutant in the ambient air, and are designed to ensure that the public health and welfare are protected.

The federal and state governments have established ambient air quality standards for common pollutants that are known to adversely affect human health. At the federal level, national ambient air quality standards (NAAQS) have been established for the following “criteria” pollutants: carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), respirable particulate matter with a diameter less than 10 microns (PM₁₀), fine particulate matter with a diameter less than 2.5 microns (PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb). The State of California has also established ambient air quality standards (CAAQS) which are generally more stringent than the national standards, and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles.

Both National and State air quality standards are summarized in Table 1. The “primary” standards have been established to protect the public health. The “secondary” standards are intended to protect the nation’s welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation and other aspects of the general welfare. Since the CAAQS are the same as, or more stringent than, the NAAQS, the CAAQS are used as the comparative standard in this analysis.

Pollution within the Bay Area is generated by stationary, area-wide, and mobile sources of emissions. Air pollution in and around the Fremont area is primarily related to on-road vehicle traffic and industrial sources operating in the area. A brief description of the criteria air pollutants generated from on-road vehicle traffic and industrial operations is provided below.

Ozone. Ground-level ozone is the principal component of smog. It is not directly emitted into the atmosphere, but is formed by the photochemical reaction of reactive organic gases (ROG) and nitrogen oxides (known as ozone precursors) in the presence of sunlight. Ozone levels are highest during late spring through early summer when precursor emissions are high and meteorological conditions are favorable for the complex photochemical reactions to occur. Approximately half of the reactive organic gas and nitrogen oxide emissions in the Bay Area are from motor vehicles. Adverse health effects of ground-level ozone include respiratory impairment and eye irritation.

Reactive Organic Gases (ROG). Reactive organic gases, sometimes referred to as Volatile Organic Compounds (VOCs), are organic compounds emitted directly into the atmosphere from a variety of sources, including motor vehicles and industrial processes. Once in the atmosphere, ROG combine with oxides of nitrogen (NO_x) to form ozone.

Nitrogen Dioxide (NO₂). Nitrogen dioxide is a reddish-brown gas that is a by-product of combustion processes. Like ozone, NO₂ is not directly emitted, but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO₂ are collectively referred to as nitrogen oxides (NO_x) and are major contributors to O₃ formation. NO₂ also contributes to the formation of PM₁₀ (see discussion of PM₁₀ below). Automobiles and industrial operations are the primary sources of NO_x. Adverse health effects associated with exposure to high levels of nitrogen dioxide include the risk of acute and chronic respiratory illness.

Carbon Monoxide (CO). Carbon monoxide is a colorless and odorless gas than can interfere with the transfer of oxygen to the brain. Adverse health effects of carbon monoxide include the impairment of oxygen transport in the bloodstream, increase of carboxy-hemoglobin, aggravation of cardiovascular disease, impairment of central nervous system function, and fatigue, headache, confusion, dizziness. Exposure to carbon monoxide can be fatal in the case of very high concentrations in enclosed places. It is formed by the incomplete combustion of fuels. The largest source of carbon monoxide emissions is motor vehicles. Wood stoves and fireplaces also contribute to high levels of carbon monoxide. Unlike ozone, carbon monoxide is directly emitted to the atmosphere.

**Table 1
National and State Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards	National Standards ^(a)	
			Primary ^(b,c)	Secondary ^(b,d)
Ozone	8-hour	0.07 ppm (137 µg/m ³)	0.08 ppm (157 µg/m ³)	—
	1-hour	0.09 ppm (180 µg/m ³)	— ^e	Same as primary
Carbon monoxide	8-hour	9 ppm (10 mg/m ³)	9 ppm (10 mg/m ³)	—
	1-hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	—
Nitrogen dioxide	Annual	—	0.053 ppm (100 µg/m ³)	Same as primary
	1-hour	0.25 ppm (470 µg/m ³)	—	—
Sulfur dioxide	Annual	—	0.03 ppm (80 µg/m ³)	—
	24-hour	0.04 ppm (105 µg/m ³)	0.14 ppm (365 µg/m ³)	—
	3-hour	—	—	0.5 ppm (1,300 µg/m ³)
	1-hour	0.25 ppm (655 µg/m ³)	—	—
PM ₁₀	Annual	20 µg/m ³	-- ^f	Same as primary
	24-hour	50 µg/m ³	150 µg/m ³	Same as primary
PM _{2.5}	Annual	12 µg/m ³	15 µg/m ³	
	24-hour	—	35 µg/m ³ ^f	
Lead	Calendar quarter	—	1.5 µg/m ³	Same as primary
	30-day average	1.5 µg/m ³	—	—

Notes: (a) Standards, other than for ozone and those based on annual averages, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

(b) Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.

(c) Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the EPA.

(d) Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

(e) The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005.

(f) The annual PM₁₀ standard was revoked by U.S. EPA on September 21, 2006 and a new PM_{2.5} 24-hour standard was established.

The highest carbon monoxide concentrations occur during the nighttime and early mornings in late fall and winter. Carbon monoxide levels are strongly influenced by meteorological factors such as wind speed and atmospheric stability.

Sulfur Dioxide (SO₂). Sulfur dioxide is a colorless gas with a strong odor and potential to damage materials. It is produced by the combustion of sulfur containing fuels such as oil and coal, and to a lesser extent natural gas. Refineries and chemical plants are the primary sources of SO₂ emissions in the Bay Area. SO₂ concentrations in the Bay Area are well below the ambient standards. Adverse health effects associated with exposure to high levels of sulfur dioxide include aggravation of chronic obstruction lung disease and increased risk of acute and chronic respiratory illness.

Suspended Particulate Matter. Particulate matter pollution consists of very small particles suspended in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when industry and gaseous pollutant undergo chemical reactions in the atmosphere. Respirable particulate matter, PM₁₀ (particulate matter 10 microns or less in diameter), and fine particulate matter, PM_{2.5} (particulate matter 2.5 microns or less in diameter), refer to a wide variety of solid or liquid particles in the atmosphere. Although particulates are found naturally in the air, most particulate matter found in the Bay Area is emitted either directly or indirectly by motor vehicles, industry, construction, agricultural activities, and wind erosion of disturbed areas. Most PM_{2.5} is comprised of combustion products from fossil fuels (motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. PM₁₀ include all PM_{2.5} sources as well as emissions from dust generated by construction, landfills, and agriculture; wildfires and brush/waste burning, industrial sources, windblown dust from open lands, and atmospheric chemical and photochemical reactions.

PM₁₀ and PM_{2.5} pose a greater health risk than larger-size particles, because these small particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract increasing the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Whereas, larger particles tend to collect in the upper portion of the respiratory system, PM_{2.5} is so small that they can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

U.S. EPA recently adopted a new more stringent standard of 35 µg/m³ for 24-hour exposures, based on a review of the latest new scientific evidence. At the same time, U.S. EPA revoked the annual PM₁₀ standard due to a lack of scientific evidence correlating long-term exposures of ambient PM₁₀ with health effects.

Toxic Air Contaminants

In addition to "criteria" air pollutants, there is another group of substances found in ambient air referred to as Toxic Air Contaminants (TACs). TACs are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer, as well as other adverse health effects). TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., benzene near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to the CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the ARB, and are listed as carcinogens either under the state's Proposition 65 or under the federal Hazardous Air Pollutants programs. California has adopted a comprehensive diesel risk reduction program. The U.S. EPA and CARB have adopted low sulfur diesel fuel standards that will substantially reduce diesel particulate matter. These go into effect in late 2006.

Air Quality Regulations and Planning

The Federal Clean Air Act governs air quality in the United States. In addition to being subject to federal requirements, air quality in California is also governed by more stringent regulations under the California Clean Air Act. At the Federal level, the United States Environmental Protection Agency (U.S. EPA) administers the Clean Air Act (CAA). The California Clean Air Act is administered by the California Air Resources Board (CARB) at the State level, and by the Air Quality Management Districts at the regional and local levels. The Bay Area Air Quality Management District regulates air quality at the regional level, which includes the nine-county Bay Area.

Federal Air Quality Regulations

The U.S. EPA is responsible for developing regulations and NAAQS pursuant to the CAA and enforcing those regulations and standards. The U.S. EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The agency has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by the CARB.

The TCRDF is subject to the EPA's Standards of Performance for New Stationary Sources (NSPS) for Municipal Solid Waste (MSW) Landfills (40 CFR Part 60, Subpart WWW) and Emissions Guidelines for Municipal Solid Waste Landfills (40 CFR Part 60, Subpart Cc). These regulations have been adopted by, and are enforced by, the BAAQMD. The NSPS and Emission guidelines for MSW Landfills require the facility to obtain a Title V Operating Permit, calculate emissions of non-methane organic compounds (NMOC) from the landfill, and, for facilities with NMOC emission greater than 55 tons per year, install a gas collection and control system.

Title V of the Clean Air Act requires all major stationary sources and other specific sources of air pollution obtain a permit to operate from the EPA or delegated state agency. Title V operating permits limit the emissions that can occur from a stationary source, set performance standards for pollution control devices, and require monitoring and reporting of source emissions. The BAAQMD is the delegated state agency in the Bay Area authorized to perform major source reviews and issue operating permits under Title V of the CAA.

Section 112 of the CAA establishes a list of hazardous air pollutants (HAPs) not covered by the NAAQS and requires the EPA regulate emissions of these pollutants. Landfills subject to the NSPS for MSW Landfills are also subject to the requirements of the EPA's National Emissions Standards for Hazardous Pollutants (NESHAP) for MSW Landfills. These regulations are listed in 40 CFR Part 63, Subpart AAAA. The BAAQMD is also the delegated state agency in the Bay

Area authorized to perform reviews of facilities with the potential to emit HAPs.

California Air Quality Regulations

In California, the CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for meeting the state requirements of the Federal CAA, administering the California CAA, and establishing the California Ambient Air Quality Standards (CAAQS). The CARB is the state agency responsible for preparation of the State Implementation Plan (SIP), which contains the strategies and control measures designed to achieve state attainment of the NAAQS. The California CAA, as amended in 1992, requires all air districts in the State to endeavor to achieve and maintain the CAAQS. The CARB designates areas of the state as attainment or nonattainment and requires the local pollution control agency in an area of nonattainment prepare air quality attainment plans designed to achieve attainment of the CAAQS. Attainment plans must provide for district-wide emission reductions of five percent per year averaged over consecutive three-year periods or if not, provide for the adoption of “all feasible measures on an expeditious schedule”.

The CARB regulates mobile air pollution sources, such as motor vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. The CARB has established fuel specifications for on-road and off-road vehicles. The CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level.

Regional Air Quality Regulations and Planning

The BAAQMD is primarily responsible for assuring that the National and State ambient air quality standards are attained and maintained in the Bay Area and is responsible for the development of attainment plans designed to achieve attainment of the air quality standards. The BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitors regional air pollutant levels (including measurement of toxic air contaminants), develops air quality control strategies, and conducts public awareness programs. The BAAQMD has jurisdiction over much of the nine-county Bay Area counties.

The BAAQMD along with the other regional agencies (i.e., ABAG and MTC) has prepared an Ozone Attainment Plan to address the NAAQS for O₃. However, this plan became obsolete when EPA revoked the 1-hour O₃ NAAQS. There are no plans required for the Bay Area to address the 8-hour O₃ NAAQS, since the area’s attainment date is 2007. The region will be required to submit a maintenance plan and demonstration of attainment with a request for redesignation to EPA in when the 8-hour O₃ NAAQS is met. A Carbon Monoxide Maintenance Plan was approved in 1998 by the U.S. EPA, which demonstrated how the NAAQS for carbon monoxide standard would be maintained.

Air quality plans addressing the California Clean Air Act are developed about every three years. The plans are meant to demonstrate progress toward meeting the more stringent 1-hour O₃ CAAQS. The latest plan, which was adopted in January 2006, is called the *Bay Area 2005 Ozone Strategy*. This plan includes a comprehensive strategy to reduce emissions from stationary, area, and mobile sources. The plan objective is to indicate how the region will make progress toward attaining the stricter state air quality standards, as mandated by the California Clean Air Act. The

plan is designed to achieve a region-wide reduction of O₃ precursor pollutants through the expeditious implementation of all feasible measures. The plan proposes implementation of transportation control measures (TCMs) and programs such as Spare the Air. Spare the Air is a public outreach program designed to educate the public about air pollution in the Bay Area and promote individual behavior changes that improve air quality. Some of these measures or programs rely on local governments for implementation.

As mentioned above, the BAAQMD has adopted rules and regulations that apply to a variety of air pollution sources. The TCRDF is permitted by the BAAQMD as a Title V source (Facility No. A2246) and is subject to specific BAAQMD rules and regulations. A summary of the pertinent BAAQMD requirements applicable to the TCRDF is provided below.

BAAQMD Regulation 1 (General Provisions and Definitions): Regulation 1 contains the provisions and definitions that apply to all other District rules and regulations. Section 523 of Regulation 1 sets the Parametric Monitoring and Recordkeeping requirements of the TCRDF.

BAAQMD Regulation 2 (Permits), Rule 6 (Major Facility Review): Regulation 2, Rule 6 implements the operating permit requirements of Title V of the Federal Clean Air Act and enforces the NSPS and NESHAP limitations and conditions for MSW Landfills. The Rule requires a facility wide review of the potential to emit regulated pollutants, including criteria air pollutants and TACs.

BAAQMD Regulation 6 (Particulate Matter and Visible Emissions): Regulation 6 limits the quantity of particulate matter in the air by limiting emissions rates, concentrations and visible emissions and opacity of PM emissions from stationary sources. Section 310 of Regulation 6 limits the amount of PM to a maximum of 0.15 grains / dry standard cubic feet of exhaust gas volume.

BAAQMD Regulation 8 (Organic Compounds), Rule 2 (Miscellaneous Operations): Regulation 8, Rule 2 limits the emissions of precursor organic compounds to no more than 15 pounds per day and 300 PPM total carbon on a dry weight basis for soil handling and disposal activities at the TCRDF.

BAAQMD Regulation 8, Rule 34 (Solid Waste Disposal Sites): Rule 34 limits the amount of NMOC and methane emissions from the waste decomposition process at solid waste sites and requires facility operators to continuously operate a gas collection and control system with a minimum 98% control efficiency for NMOC emissions.

BAAQMD Regulation 9 (Inorganic Gaseous Components), Rules 1 (SO₂) and 2 (H₂S): Regulation 9, Rules 1 and 2 limits the concentration of SO₂ and H₂S emissions that can occur from the TCRDF gas control system.

City of Fremont General Plan

Natural Resources Goal 12 of the Fremont General Plan contains the following policy related to improved air quality that would be applicable to the proposed project:

Policy NR 12.1-7: Reduce particulate emissions

Implementation 1: Reduce emissions from construction of roads and buildings through enforcement of construction practices that reduce dust and other emissions.

REGIONAL CLIMATE

The climate of the Bay Area is Mediterranean in character, with mild, rainy winter weather from November through March, and warm, dry weather from June through September. In summer, the Pacific high-pressure system typically remains near the coast of California. Subsidence of warm air associated with the Pacific high creates frequent summer atmospheric temperature inversions, which may be several hundred to several thousand feet deep, effectively trapping pollutants near the ground within the inversion layer. In winter, the Pacific high-pressure system moves southward, allowing ocean-formed storms to move through the region.

The project region is indirectly affected by marine airflow. Marine air entering through the Golden Gate is blocked by the East Bay hills, forcing the air to diverge into northerly and southerly paths. The southern flow is directed down the bay, parallel to the hills, where it eventually passes over southwestern Alameda County. The sea breezes are strongest in the afternoon. The further from the ocean the marine air travels, the more the ocean's effect is diminished. Thus, although sea breezes affect the climate of Fremont, it is less affected than those regions of the Bay Area that are closer to the Golden Gate.

Temperatures in the project region are moderated by the effects of the Bay and the overall influence of the Pacific Ocean. Summer temperatures range from the high 80's during the day to the 50's in the evening while winter temperatures range from the low 60's during the day to the low 40's in the evenings. Rainfall in the Bay area averages two to three inches per month during the rainy season (November through March), with a total annual of rainfall average of approximately 15 inches.

The Fremont area is susceptible to the build-up of pollutant concentrations during the summer and fall when high pressures dominate the area. High pressures result in low pollutant mixing depths (i.e., close to ground surface) and prevent the dispersion of pollutants out of the South Bay. Pollutant build-up is further enhanced by Bay and ocean wind patterns that can concentrate and carry pollutants from other cities to the Fremont area, adding to locally emitted pollutants. In wintertime, the Pacific high-pressure system moves further off the coast resulting in higher mixing depths and greater dispersion of pollutants.

EXISTING AIR QUALITY CONDITIONS

Air Quality Monitoring Data

Air quality in the region is controlled by the rate of pollutant emitted into the region and meteorological conditions that can transport and disperse pollution. Meteorological conditions such as wind speed, atmospheric stability, and mixing height affect the atmosphere's ability to mix and disperse pollutants. Long-term variations in air quality typically result from changes in air pollutant emissions, while frequent, short-term variations result from changes in atmospheric conditions. The San Francisco Bay Area is considered to be one of the cleanest metropolitan areas in the country with respect to air quality.

The BAAQMD monitors air quality conditions at over 30 locations throughout the Bay Area. There are several BAAMQD monitoring stations in the project area. The closest BAAQMD monitoring station to the TCRDF is located on Chapel Way in Fremont, approximately 3 miles from the TCRDF. Criteria pollutants monitored at the station include ozone, carbon monoxide, nitrogen dioxide, and particulate matter (PM₁₀ and PM_{2.5}). Table 2 summarizes the number of

days that pollutant concentrations at the Fremont monitoring station exceeded national and state air quality standards for the four-year period from 2003 through 2006.

**Table 2
Days Above Air Quality Standards at Fremont Monitoring Station, 2003 – 2005**

Pollutant	Standard	Days Exceeding Standard			
		2003	2004	2005	2006
Ozone	State 1-hour	4	0	1	4
	National 8-hour	1	0	0	0
Carbon Monoxide	State 1-hour	0	0	0	0
	National 1-hour	0	0	0	0
	State & Federal 8-hr	0	0	0	0
Respirable Particulate Matter (PM ₁₀)	State 24-hr	0	0	1	0
	National 24-hr	0	0	0	0
	State Annual	0	0	0	*
	National Annual	0	0	0	*
Fine Particulate Matter (PM _{2.5})	National 24-hr	0	0	0	0
	State Annual	0	0	0	*
	National Annual	0	0	0	*
Nitrogen Dioxide	State 1-hour	0	0	0	0
	State Annual	0	0	0	0
	National Annual	0	0	0	0

Source: California Air Resources Board Air Quality Data Statistics, 2007. Accessed online at: http://www.arb.ca.gov/adam/php_files/aqdphp/sc8start.php

* Insufficient data to make determination.

The pollutant of most concern in the Fremont area is ozone, since prevailing summertime wind conditions tend to cause a build up of ozone. Ozone levels measured at the Fremont station exceeded the state ozone standard from 0 to 4 times in 2003-2006 and the federal 8-hour ozone standard was exceeded once in the last four years. Measured exceedances of the state PM₁₀ standard have occurred once during the four-year period from 2003 – 2006, while the PM_{2.5} standards have not been exceeded. PM₁₀ and PM_{2.5} are measured every sixth day. Standards for other air pollutants were not exceeded.

Data from all BAAQMD monitoring stations for the same four year period indicate the entire Bay Area exceeded the federal 8-hour ozone standard between 1 and 12 days per year. The more stringent state ozone standard was exceeded on 7 to 19 days annually. The state 24-hour PM₁₀ standard was exceeded on 3 to 4 days annually.

Attainment Status

Areas that do not violate ambient air quality standards are considered to have attained the standard. Violations of ambient air quality standards are based on air pollutant monitoring data and are judged for each air pollutant. The Bay Area as a whole does not meet state or federal ambient air quality standards for ground level O₃ and state standards for fine particulate matter.

Under the Federal CAA, the U.S. EPA has classified the region as marginally nonattainment for the 8-hour O₃ standard. EPA requires the region to attain the standard by 2007. The Bay Area has met the CO standards for over a decade and is classified attainment maintenance by the US EPA. The US EPA considers the region unclassified (which is treated as an attainment area for regulatory purposes) for all other air pollutants, which include PM₁₀ and PM_{2.5}.

At the State level, the region is considered serious nonattainment for ground level O₃ and nonattainment for PM₁₀. California ambient air quality standards are more stringent than the national ambient air quality standards. The region is required to adopt plans on a triennial basis that show progress towards meeting the state O₃ standard. The area is considered attainment or unclassified for all other pollutants with respect to the state standards.

SENSITIVE RECEPTORS

Sensitive receptors are those individuals especially susceptible to air pollutants and generally include children, seniors, and the sick. Locations that may include high densities of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks. The nearest sensitive receptors to the TCRDF are residences located approximately 1.2 miles north of the facility in Newark, north of Stevenson Boulevard, between Cherry Street and Cedar Boulevard.

AIR QUALITY IMPACTS AND MITIGATION

The potential impacts from closure of the TCRDF are discussed below.

THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, a project would have a significant effect on the environment with respect to air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any nonattainment pollutant.
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

Appendix G provides that, when available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to determine whether the above determinations of significance. The BAAQMD has established significance thresholds for project emissions. The thresholds are contained in the District CEQA Guidelines for Assessing the Air Quality Impacts of Projects and Plans (BAAQMD, 1999) and are recommended for use by lead agencies.

Construction Emissions

The BAAQMD's approach to the CEQA analysis of construction impacts is to emphasize the implementation of effective and comprehensive control measures rather than detailed quantification of emissions. PM₁₀ is the pollutant of greatest concern from construction activities¹. The BAAQMD CEQA Guidelines provide feasible control measures for construction emissions of PM₁₀. If the appropriate construction controls are implemented, air pollutant emissions for construction activities would be considered less than significant.

¹ Construction equipment emits ozone precursors. These emissions, however, are included in the BAAQMD emissions inventory, which is the basis for the regional air quality plan, and are not expected to impede planning efforts to attain ozone standards in the Bay Area.

Operational Emissions

Consistent with the District's CEQA Guidelines, operation of a proposed project would have a significant impact if it would result in:

- Ozone precursor (ROG and NO_x) and PM₁₀ emissions from direct and indirect sources that exceed the thresholds recommended by the BAAQMD. The BAAQMD recommends a threshold of 80 pounds per day or 15 tons per year for direct and indirect sources of ROG, NO_x, and PM₁₀.
- Emissions of carbon monoxide (CO) cause a projected exceedance of the ambient carbon monoxide state standard of 9.0 ppm for 8-hour averaging period. For CO, an increase of 550 pounds per day would be considered significant if it leads to a possible local violation of the carbon monoxide standards (i.e. if it creates a "hot spot").
- Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million

The BAAQMD considers any project that would individually result in a significant impact from criteria pollutant emissions to have a significant cumulative air quality impact.

LANDFILL CLOSURE CONSTRUCTION IMPACTS

The proposed landfill cover would be constructed in phases over a period of four years. Landfill side slopes would be covered first, followed by the top deck. Phase 1 of the proposed project would begin in June 2008 and would cover the eastern side-slope of the TCRDF landfill. Subsequent phases would begin in 2009, 2010, and 2011 and would cover the western side-slope, southern-side slope, and top deck, respectively. Each phase of construction would last three to four months. The proposed construction schedule would allow for settlement of solid waste prior to installation of the final closure liner on the top deck and limits the area of disturbance at any one time.

Up to 541,000 cubic yards of soil material could be required to construct the proposed landfill cover, which would consist of soil layers of varying depth up to four feet. Soil material used for the cover would be obtained from an on-site borrow area at the TCRDF, south of the landfill, and from off-site sources. The amount of soil material to be hauled from off-site locations would depend on the quality and quantity of the soil available from the on-site borrow area. The estimated total amount of off-site soil material that would be required is 185,000 cubic yards. This soil could be obtained from sites in east and south Fremont, Milpitas, and Sunol.

Table 3 shows the proposed landfill cover construction schedule, summaries of the acreages to be covered, and the estimated amount of soil required for each project phase.

Table 3

TCRDF Landfill Closure Schedule, Acreage, and Landfill Cover Soil Requirements

Phase	Schedule	Cover Placement Location	Acreage to be Covered	Soil Material Required	Soil From Off-Site Sources
1	June – Sept. 2008	East Side-Slope	20.9	98,320	33,620
2	June – Sept. 2009	West Side-Slope	19.8	93,150	31,850
3	June – Sept. 2010	South Side-Slope	33.0	155,240	53,090
4	June – Sept. 2011	Top Deck	41.3	194,290	66,440

Closure of the TCRDF would generate fugitive dust and exhaust emissions from construction equipment used to install the landfill cover and from on-road trucks used to transport soil materials from off-site sources.

Impact 1: Landfill closure activities would intermittently generate fugitive dust and exhaust emissions from construction equipment. This would be a significant impact.

During construction of the landfill cover, grading and other cover construction activities would intermittently generate fugitive dust and exhaust emissions. The amount of dust generated would be highly variable and is dependent on the size of the area being worked, amount of activity, soil conditions, and meteorological conditions. Dust generating construction activities would occur for about three months per year for each of the phases of the landfill cover construction. Standard construction equipment, including bulldozers, excavators, backhoes, scrapers, rollers, and graders would be used to install the cover liners. This equipment is similar to the equipment the TCRDF currently operates at the landfill on a year-round basis. Once the closure activities begin the existing landfill equipment would no longer be operated.

Construction Dust

Although grading and cover construction activities would be temporary, they would have the potential to cause both nuisance and health-related air quality impacts. PM₁₀ is the pollutant of greatest concern associated with dust. If uncontrolled, PM₁₀ levels downwind of actively disturbed areas could possibly exceed State standards. In addition, dust fall on adjacent properties could be a nuisance. If uncontrolled, dust generated by grading and landfill cover construction activities represents a potentially significant impact.

Mitigation Measure 1:

Impacts can be greatly reduced by implementing fugitive dust control measures. The BAAQMD has identified PM₁₀ as the pollutant of greatest concern from construction activities (BAAQMD, 1999) and has identified control measures to reduce the impact from construction generated fugitive dust. Implementation of the measures recommended by the BAAQMD and listed below would reduce the air quality impacts associated with grading and other landfill cover construction activities to a less-than-significant level.

- Water all active construction areas twice daily and more often during windy periods.
- Cover all trucks hauling soil, sand, and other loose materials or maintain at least two feet of freeboard.

- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas.
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas and sweep streets daily (with water sweepers) if visible soil material is deposited onto the adjacent roads.
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas.
- Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles.
- Limit traffic speeds on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.
- Suspend excavation and grading activity when high winds cause visible dust clouds to extend beyond the construction site.
- Limit the area subject to excavation, grading, and other construction activity at any one time

Construction Equipment Exhaust

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known Toxic Air Contaminant. The BAAQMD has not developed any procedures or guidelines for identifying these impacts from temporary construction activities where emissions are transient. They are typically evaluated for stationary sources (e.g., large compression ignition engines such as generators) in health risk assessments over the course of lifetime exposures (i.e., 24 hours per day over 70 years). Diesel exhaust poses both a health and nuisance impact to nearby receptors. These construction activities are expected to occur during a relatively short time, and therefore, the impacts are considered to be less than significant if reasonable available control measures are applied.

Mitigation Measure 2:

- Prohibit the use of “dirty” equipment. Opacity is an indicator of exhaust particulate emissions from off-road diesel powered equipment. The project shall ensure that emissions from all construction diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately.
- The contractor shall install temporary electrical service whenever possible to avoid the need for independently powered equipment (e.g. compressors).
- The proposed project shall limit idling of construction equipment to two minutes.
- Properly tune and maintain equipment for low emissions.

Significance after mitigation: *Less than Significant.*

Impact 2: Landfill closure activities would generate exhaust emissions and road dust from on-road haul trucks. This would be a less-than-significant impact.

Landfill closure activities could involve the transport of up to 185,000 cubic yards of off-site soil material over the life of the project. Use of heavy-duty diesel-fueled trucks to haul the soil to the project site would result in additional exhaust emissions and fugitive dust being generated from the trucks traveling over the haul route roadways.

Emissions of air pollutants from the haul trucks exhaust were estimated using emission factors for heavy-duty diesel-fueled trucks from the CARB's mobile source emission factor model EMFAC2007. Particulate matter emissions from truck tire and break wear were also calculated using EMFAC2007 emission factors. Fugitive dust (PM₁₀) emissions from haul truck travel over the haul routes were calculated using U.S. EPA emission factors for vehicle travel on paved roadways. In calculating the exhaust and dust emissions summer conditions and a haul route length of 11 miles were assumed. The 11-mile haul distance represents the greatest distance to an off-site source of soil (i.e., Sunol). The average truck travel speed was assumed to be 40 miles per hour to account for both freeway and surface street travel.

As identified in Table 3, Phase 4 of the proposed project would require the greatest amount of soil material and could result in the transport of up to 66,440 cubic yards of off-site soil material. The estimated emissions associated with the transport of 66,44 cubic yards of soil materials are presented in Table 5 below.

**Table 5
Phase 4 Potential Off-Site Soil Transport Emissions¹**

Daily Emissions (lbs/day)			
ROG	NO _x	CO	PM ₁₀ ²
3.0	53.7	14.7	38.4
Annual Emissions (tons/year)			
ROG	NO _x	CO	PM ₁₀ ²
0.1	1.8	0.5	1.3

¹ Based on 5,537 trucks traveling 22 miles roundtrip for 66 days using EMFAC2007 Emission Factors

² PM₁₀ includes PM₁₀ from exhaust, tire and break wear, and fugitive road dust.

As shown in Table 5, the daily and annual emissions generated from off-site soil transport during Phase 4 would be below BAAQMD daily and annual significance thresholds of 80 lb/day and 15 tons per year, respectively for ROG, NO_x, and PM₁₀. CO emissions would be well below the 550 lbs/day threshold and, as discussed below, are not expected to result in increased local ambient CO concentrations.

Level of Significance: *Less than significant.*

OPERATIONAL EMISSIONS

The TCRDF operates several stationary sources of emissions that are permitted by the BAAQMD. The largest source of emissions at the TCRDF is the landfill itself, which generates emissions of methane gas from the decomposition of solid waste. Emissions of methane are

controlled by the facility's landfill gas collection system, which consists of extraction wells and a gas combustion flare. Landfill gas is collected in the extraction wells and conveyed by vacuum pressure to the flare. The combustion of the landfill gas creates combustion pollutants, including NO_x, CO, ROGs, SO₂, and PM₁₀. Other existing permitted sources of emissions at the TCRDF includes a portable generator used to chip and grind yard, landscaping, and wood waste for cover materials and diesel engines used in air compressors, a vacuum truck, and a sweeper truck.

Active landfill operations also generate emissions from approximately 449 daily haul trucks delivering solid waste to the landfill and mobile equipment used to dispose, move, and cover the solid waste.

Impact 3: Landfill closure would reduce emissions of criteria pollutants from active landfill operations. This would result in a net air quality benefit.

Closure of the TCRDF landfill would eliminate emissions from the mobile equipment used to dispose, move, and cover solid waste. Under the proposed General Plan amendment and rezoning, the Corporation Yard at the TCRDF could be used for parking, maintenance, and repair of up to 50 trucks per day. These trucks would travel to and from the site daily, generating approximately 100 truck trips. The number of employees at the Corporation Yard, and associated vehicle trips, would be similar to existing conditions. Currently, approximately 449 daily haul trucks deliver solid waste to the landfill (approximately 900 daily trips) and mobile equipment is used to dispose, move, and cover the solid waste. Under the proposed project, there would be a net decrease in the number of truck trips to and from the site and, therefore, a local air quality benefit to the project area. Exhaust emissions from the haul trucks used to transport waste, however, would likely continue to occur on the regional level as these trucks would likely continue to haul solid waste to other landfills within the San Francisco Bay Air Basin. Thus, closure of the landfill would reduce emissions of criteria pollutants from the landfill sources but some of these emissions would still exist at the regional level.

Closure of the landfill, would, however, reduce emissions of criteria air pollutants from permitted sources of emissions, including the portable generators, diesel engines, as well as eliminate fugitive dust generated from ongoing landfill operations.

As a MSW facility approaches its capacity, the decomposition of solid waste will peak and then gradually decrease as less solid waste is added to the landfill. As less solid waste is decomposed, less methane is generated from the landfill and thus less secondary combustion pollutants are generated from the gas flare. TCRDF gas generation has been estimated to peak during 2006 (EMCON/OWT, 2003). Closure of the landfill would ensure that an increase in methane gas and associated secondary combustion pollutants would not occur from the TCRDF. Emissions from these sources, therefore, would gradually decrease as the landfill generates less methane gas over time.

The closure of the TCRDF landfill would result in reduced operational emissions from associated activities and would ensure landfill gas generation and associated secondary combustion pollutants would gradually decrease. The reduction in pollutant emissions from closure of the TCRDF represents a net air quality benefit at both the local and regional level.

Level of Significance: *Net air quality benefit.*

TOXIC AIR CONTAMINANTS

Construction and operation of the proposed project would result in emissions of diesel particulate matter and other toxic air contaminants.

Impact 4 : Closure of the landfill would result in exposure of sensitive receptors to diesel particulate matter and other toxic air contaminants. This would be a less-than-significant impact.

CARB has declared that diesel particulate matter (DPM) from diesel engine exhaust is a toxic air contaminant. Combustion emissions from diesel equipment during construction would contribute to ambient concentrations of toxic air contaminants and associated exposure levels, however, these emissions would occur over 1.2 miles away from sensitive receptor areas. These emissions would occur intermittently over a period of four years. Additionally, the TCRDF's existing diesel landfill equipment that are operated year round would not be operated once closure of the landfill begins. Thus, reducing emissions from these sources. Sensitive receptors would not be exposed to construction emissions continuously over a 70-year period, and the long-term contribution to chronic health effects would be small in comparison to the 70-year exposure. The impacts of diesel construction emissions, therefore, are considered less than significant.

As discussed above, closure of the TCRDF landfill would result in a net air quality benefit from reduce emissions associated with diesel powered compressors, a vacuum truck, and a street sweeper. Additionally, closure of the landfill would reduce solid waste haul trucks and other vehicle traffic along access routes and at the TCRDF facility itself. Closure of the landfill would therefore result in reduced DPM emission at the local level.

In addition to methane, landfill gas contains trace amounts of TACs produced during decomposition of solid waste. As part of its Major Facility Review Permit, the BAAQMD performed a health risk screening analysis for TCRDF based on the projected landfill gas peak flow and continuous 24-hour combustion of the landfill gases. The BBAQDM determined operation of the TCRDF facility would result in a carcinogenic health risk to the maximally exposed receptor of 0.13, well below the threshold of 10. Closure of the landfill would ensure an increase in methane gas and associated secondary combustion pollutants would not occur from the TCRDF landfill and gas collection system and would therefore not increase the potential exposure of sensitive receptors to TACs.

Level of Significance: *Less than significant*

CARBON MONOXIDE HOTSPOTS

The proposed project would eliminate 449 daily truck trips along facility access routes and is considered to have a local air quality benefit in terms of reduced CO concentrations at local intersections.

Level of Significance: *Net air quality benefit*