APPENDIX A
INITIAL STUDY/ENVIRONMENTAL CHECKLIST AND NOTICE OF PREPARATION (NOP)

INITIAL STUDY

PROJECT TITLE: Regional Landfill Options for Orange County (RELOOC) Strategic Plan-Olinda Alpha Landfill Implementation

LEAD AGENCY: County of Orange Integrated Waste Management Department

INITIAL STUDY NUMBER: 588

LEAD DIVISION: Office of Public Affairs

PROJECT CONTACT: Linda Hagthrop, Public Information Officer **PHONE:** (714) 834-4176

PROJECT LOCATION: The proposed project is within the Olinda Alpha Landfill located at 1942 North Valencia Avenue in unincorporated Orange County adjacent to and within the sphere of influence of the City of Brea. The Olinda Alpha Landfill is generally bounded by Lambert Road to the south and Valencia Avenue to the southwest. The Olinda Alpha Landfill is located on the following assessor parcels: 308-031-3, 7, 8, 9, 14, 15, 17, 22, 30, 31 and 308-021-3, 4, 12, 14.

PROJECT DESCRIPTION: The Regional Landfill Options for Orange County (RELOOC) is a long-range strategic planning program initiated by the County of Orange Integrated Waste Management Department (IWMD). The purpose of RELOOC is to assess the County's existing disposal system capabilities and develop viable short and long-term solid waste disposal options for the County. As part of that endeavor, the County is proposing short-term improvements to an existing municipal solid waste landfill operated by the County's IWMD. The proposed project includes the vertical and horizontal expansion of the Olinda Alpha Landfill to meet the County's short-term solid waste disposal needs.

DECISION-MAKER: County of Orange Board of Supervisors

RESPONSIBLE/TRUSTEE AGENCIES INVOLVED:

Federal Agencies

U.S. Environmental Protection Agency (EPA).

State Agencies

California Integrated Waste Management Board.
California Water Resources Control Board.

Regional Agencies

Regional Water Quality Control Board - Santa Ana Region.
South Coast Air Quality Management District.

County Agencies

Orange County Health Care Agency (Solid Waste Local Enforcement Agency).
Orange County Board of Supervisors.
Orange County Fire Authority.
Orange County Planning Department.

City Agencies

City of Brea.

LAND USE ENTITLEMENT SUMMARY:

General Plan Land Use Designation:

Olinda Alpha Landfill

County of Orange designation - Public Facilities/Landfill Site (4(LS)).
City of Brea designation - Sanitary Landfill.

Zoning:

Olinda Alpha Landfill

County of Orange designation – General Agricultural (Public Facilities).
City of Brea designation – No zoning designation.

PREVIOUS ENVIRONMENTAL DOCUMENTATION:

Olinda Alpha Landfill:

Final EIR 523 for the North Orange County Landfill and Alternative Technologies Study (NOCLATS)

INITIAL STUDY DATE: January 8, 2004.

ENVIRONMENTAL ANALYSIS CHECKLIST

EIR Number 588 for the RELOOC Strategic Plan - Olinda Alpha Landfill Implementation Project

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Impact	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
1. LAND USE & PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) 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, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☒	☐	☐	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
2. AGRICULTURE. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☐	☐	☒
3. POPULATION & HOUSING. Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Impact	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
4. GEOLOGY AND SOILS. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☒	☐	☐	☐
ii) Strong seismic ground shaking?	☒	☐	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☒	☐	☐	☐
iv) Landslides?	☒	☐	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☒	☐	☐	☐
c) 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?	☒	☐	☐	☐
d) Be located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal system where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
5. HYDROLOGY & WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Impact	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course 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?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Have a significant adverse impact on groundwater quality or otherwise substantially degrade water quality?	☐	☒	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?	☐	☐	☐	☒
i) 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?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒
6. TRANSPORTATION/CIRCULATION. Would the project:				
a) Result in an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☒	☐	☐	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☒	☐	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Result in inadequate parking capacity?	☐	☐	☐	☒

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Impact	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
g) Conflict with adopted policies, plan or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks)?	☐	☐	☐	☒
7. AIR QUALITY. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	☒	☐	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☒	☐	☐	☐
8. NOISE. Would the project 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 to or generation of excessive ground borne vibration or ground borne 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 plan has not been adopted, within two miles of a private or public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Impact	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working the project area to excessive noise levels?	☐	☐	☐	☒
9. BIOLOGICAL RESOURCES. Would the project:				
a) 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 Services?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Services?	☐	☐	☐	☒
c) Have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) 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?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
10. AESTHETICS. Would the project:				
a) Have a substantial adverse effect a scenic vista?	☒	☐	☐	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☒	☐	☐	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Impact	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
11. CULTURAL/SCIENTIFIC RESOURCES, Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse changed in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒
12. RECREATION. Would the project:				
a) Increase 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?	☐	☐	☐	☒
b) Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒
13. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒
14. HAZARDS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☒	☐	☐	☐
b) 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?	☒	☐	☐	☐

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Impact	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) 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 it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk or loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐
i) Include a new or retrofitted storm water treatment control Best Management Practice (BMP), (e.g. water quality treatment basin, constructed treatment wetlands), the operation of which could result in significant environmental effects (e.g. increased vectors and odors)?	☐	☐	☐	☒
15. PUBLIC SERVICES. Would the project:				
a) 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:				
i) Fire protection?	☒	☐	☐	☐
ii) Police protection?	☐	☐	☐	☒
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☒	☐	☐	☐
v) Other public facilities?	☐	☐	☐	☒

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Impact	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
16. UTILITIES & SERVICE SYSTEMS. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which would cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state and local statutes and regulations related to solid waste?	☐	☐	☐	☒
MANDATORY FINDINGS				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of 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?	☒	☐	☐	☐
b) Does the project have possible environmental effects, which are individually limited but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Impact	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
c) Does project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly	☒	☐	☐	☐

DETERMINATION:
Based upon the evidence in light of the whole record documented in the attached environmental checklist explanation, cited incorporations and attachments, I find that the proposed project:

COULD NOT have a significant effect on the environment, and a negative declaration (ND) will be prepared pursuant to CEQA Guidelines Article 6, 15070 through 15075. ☐

COULD have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures have been added to the project. A negative declaration (ND) will be prepared pursuant to CEQA Guidelines Article 6, 15070 through 15075. ☐

MAY have a significant effect on the environment, which has not been analyzed previously. Therefore, an environmental impact report (EIR) is required. ☒

Signature: ____

Planner: John Arnau
Environmental Services
Telephone: (714) 834-4107

NOTE: All referenced and/or incorporated documents may be reviewed by appointment only, at the County of Orange Integrated Waste Management Department, 320 N. Flower Street, Fourth Floor, Santa Ana, California, unless otherwise specified. An appointment can be made by contacting the CEQA Contact Person identified above.

Revised 2-5-03

ENVIRONMENTAL ANALYSIS CHECKLIST
Regional Landfill Options for Orange County (RELOOC) Strategic Plan – Olinda Alpha Landfill Implementation

1.0 LEAD AGENCY

The County of Orange will serve as the lead agency for the proposed Regional Landfill Options for Orange County (RELOOC) Strategic Plan - Olinda Alpha Landfill Implementation and the County's Integrated Waste Management Department (IWMD) will act as the designated lead agency in preparing notices, conducting public hearings and implementing California Environmental Quality Act (CEQA)-related processing requirements.

1.1 Discretionary Approvals

A number of discretionary approvals will be required as part of the project's approval and implementation. These discretionary approvals will be required from a variety of agencies and are anticipated to include the following:

County of Orange
- Certification of the Environmental Impact Report
- Grading permits.

California Regional Water Quality Control Board
- Storm Water Management Plans
- Revision to Waste Discharge Requirements

California Integrated Waste Management Board and Local Enforcement Agency (County of Orange Health Care Agency)
- Revision to Solid Waste Facility Permit.

South Coast Air Quality Management District
- Permits to construct – Gas Control Systems.
- Permits to Operate – Gas Control Systems.

City of Brea
- Amendment to the current Memorandum of Understanding (MOU)

2.0 PURPOSE OF THE ENVIRONMENTAL ANALYSIS CHECKLIST

The purpose of this Environmental Analysis Checklist (EAC) is to provide preliminary analysis of potential environmental consequences that may result with the implementation of the proposed project. The IWMD has prepared this EAC to determine the appropriate level of environmental documentation needed for this project. IWMD has determined the appropriate level of environmental documentation needed for this project. IWMD has determined that an Environmental Impact Report (EIR) will be prepared for the proposed project based on the anticipated impacts. Although Section 15063 of the CEQA Guidelines indicates that a Lead Agency may bypass the preparation of an Initial Study (i.e., EAC), IWMD has chosen to prepare and circulate this EAC to more precisely disclose potential impacts and thereby obtain more specific guidance from responsible agencies and the public on the scope and topics to be covered in the EIR.

3.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The following environmental parameters may be potentially affected by implementation of the proposed project:

Land Use and Planning
Geology and Soils
Hydrology & Water Quality
Transportation/Circulation
Air Quality
Noise
Aesthetics
Cultural/Scientific Resources
Hazards
Public Services

A preliminary evaluation of potential impacts is provided below. A more detailed analysis will be contained in the EIR.

4.0 ENVIRONMENTAL ANALYSIS

This section of the EAC analyzes the potential for significant environmental impacts that may result from the proposed project. The format for this analysis is based on the enclosed Environmental Analysis Checklist.

For the evaluation of potential impacts, the questions in the checklist are stated and an answer is provided reflecting the analysis conducted for this impact. To each question, there are four possible responses:

- *No Impact* – The proposed project will not have a measurable impact on the environment.

- *Less than Significant Impact* – The proposed project will have the potential for impacting the environment but at a level less than the significance criteria used to evaluate the impact.

- *Less than Significant with Mitigation* – The proposed project will have a significant impact unless mitigation measures are implemented to reduce the impact to a less than significant level.

- *Potential Significant Impact* – The proposed project will have impacts considered significant and either (1) additional analysis is needed to identify specific mitigation measures to reduce this impact to a less than significant level, (2) feasible mitigation measures are not available to reduce this impact to a less than significant level, or (3) the impacts associated with the project are not known at this time and further analysis in an Environmental Impact Report (EIR) is warranted.

NOTE: The Olinda Alpha Landfill is deliberately designed and operated in a manner that avoids and mitigates potential environmental impacts, and it is the intent of IWMD to continue this practice in the design of the proposed project. However, in keeping with the purpose of this NOP, even though an environmental issue identified in the checklist is anticipated to be satisfactorily mitigated in the future, the box "Potential Significant Impact" has been checked rather than "Less than Significant with Mitigation." This is to inform the NOP recipient that the issue will be described and analyzed in the forthcoming Draft EIR, and to invite comments from Responsible Agencies and interested parties on how the assessment of the issue should be addressed in the document and how mitigation or avoidance of the issue should be incorporated into the project.

1. Land Use and Planning

Would the project: (a) Physically divide an established community?

No Impact. The Olinda Alpha Landfill is an existing landfill. The proposed vertical and horizontal expansion of this landfill would not extend beyond the property boundary of this site and therefore would not result in the disruption or division of the physical arrangement of an established community.

Would the project: (b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating and environmental effect?

Potential Significant Impact. The Olinda Alpha Landfill is located in unincorporated Orange County and is designated as a 4(LS) in the County of Orange General Plan. This designation allows for the use of this site for municipal solid waste (MSW) disposal. The County Public Facilities Zoning designation for this site also allows for use of the site for MSW disposal. The landfill is also located in the City of Brea's Sphere of Influence and is designated in the City's General Plan as a Public Facility which allows for the use of this site for MSW disposal. The proposed project would not conflict with the City's existing General Plan land use designation because the proposed expansion activities would occur entirely within the existing landfill boundaries. Nor would the proposed project conflict with the County or City's existing General Plan designations.

The existing MOU between the City of Brea and the County of Orange regarding the operation of Olinda Alpha Landfill would require renegotiation to allow the disposal of MSW over a longer period of time resulting from the additional capacity that is provided under the proposed project. The existing MOU identifies the landfill closure date established as 2013. Under the proposed project, closure would be extended to 2021 based on increased operational efficiencies, current population projections and existing disposal technologies.

Would the project: (c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. There are no known City of Brea environmental plans or policies that would be adversely affected by the proposed project. The vertical and horizontal expansion of Olinda Alpha Landfill would not result in development outside of the existing landfill boundary. The Olinda Alpha Landfill is not located within a designated Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) area.

2. Agriculture

Would the project: (a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The vertical and horizontal expansion of Olinda Alpha Landfill will not impact any Prime, Unique or Farmland of Statewide Importance. There are no existing agricultural preserves on the site or the expansion area, and no preserves will be impacted under the proposed project. Existing roads will be used to haul MSW to the Olinda Alpha Landfill. No new roads and/or modifications to existing roads are proposed. Therefore, the proposed project will not result in impacts related to the conversion of farmlands listed as Prime, Unique or Farmland of Statewide Importance to non-agricultural uses.

Would the project: (b) Conflict with existing zoning for agriculture use, or a Williamson Act contract?

No Impact. The proposed project would not result in the cancellation of any Williamson Act contracts or conflict with any existing zoning for agricultural uses.

Would the project: (c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?

No Impact. The proposed vertical and horizontal expansion at Olinda Alpha Landfill will not result in the conversion of agricultural land to non-agricultural use. There is no agriculture land within the horizontal expansion areas of the existing landfill property. The proposed project would not involve changes in the existing equipment that due to their location or nature could result in conversion of farmland to non-agricultural uses.

3. Population and Housing

Would the project: (a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure?

No Impact. The proposed project will continue operations at Olinda Alpha Landfill. None of the improvements under the proposed project would entail new homes or extending any major infrastructure (i.e., sewer or water lines, roadways, etc.) that could support additional development beyond the individual landfill site boundaries. Employment associated with landfill operations will be drawn from existing onsite employment. There may be brief temporary periods requiring additional personnel, such as during site development activities. No substantial new employment will be generated by the proposed project that could potentially contribute to additional demand for housing or services in the surrounding area.

Would the project: (b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

No Impact. The proposed project will not result in the removal or demolition of any existing housing. The proposed project would not entail the displacement of a substantial number of houses since no housing currently exists on-site or is proposed.

Would the project: (c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. The proposed project will not result in the removal or demolition of any existing housing. The proposed project would not entail the displacement of a substantial number of people since no housing currently exists on-site or is proposed.

4. Geology and Soils

Would the project result: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:(a)(i) Rupture of a known earthquake fault; (a)(ii) Strong seismic ground shaking; (a) (iii) Seismic-related ground failure, including liquefaction; (a)(iv) Landslides?

*Potential Significant Impact***.** The Olinda Alpha Landfill is located immediately north of the active Whittier fault. The project site is located in southern California, an area known to be geologically active and which is subject to seismic events. The soils underlying the Olinda Alpha Landfill site include soils of the Cienaba Association and are underlain by Puente Formation bedrock, both units are locally prone to landslides. The vertical and horizontal expansion of the landfill will result in changes in topography and will be designed to meet stringent landfill regulatory requirements for seismic stability in the California Code of Regulations (CCR), Title 27.

Would the project: (b) Result in substantial soil erosion or the loss of topsoil?

Potential Significant Impact. The soils underlying the Olinda Alpha Landfill site have some potential for erosion. The proposed vertical and horizontal expansion of this landfill will result in changes of topography because of grading and filling on-site. Erosion control measures and facilities (i.e. desilting basins, straw bales, and vegetation) are implemented as part of normal landfill operations in accordance with regulatory requirements in CCR, Title 27. These measures are also proposed for the vertical and horizontal expansion.

Would the project: (c) Be located on a geologic unit or soil that is unsuitable, 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?

Potential Significant Impact. The proposed vertical and horizontal expansion of the landfill will result in changes of topography because of grading and filling on-site. These changes will be designed to meet stringent landfill regulatory requirements for stability in the CCR, Title 27.

Would the project: (d) Be located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Less than Significant Impact. Some of the soils underlying the Olinda Alpha Landfill site and the horizontal expansion area have a moderate to high shrink-swell potential. Although considered to be expansive soils, the soils at the site would not create a substantial risk to life or property.

Would the project: (e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal system where sewers are not available for the disposal of wastewater?

No Impact. The vertical and horizontal expansion of the Olinda Alpha Landfill does not propose the use of septic tanks.

5. Hydrology & Water Quality

Would the project: (a) Violate any water quality standards or waste discharge requirements?

Less than Significant Impact. The Olinda Alpha Landfill is approved under the Waste Discharge Requirements (WDRs) issued by the Regional Water Quality Control Board (RWQCB) and is designed to comply with water quality standards and waste discharge requirements. Semi-annual water quality testing at the landfill is conducted for volatile organic compounds (VOC), minerals, total dissolved solids (TDS), potential of hydrogen (pH), electrical conductivity (EC), nitrates and metals. Groundwater is extracted, treated, and reused on-site. Any modification of the existing landfill design will require coordination with the Landfill Section of the RWQCB to revise the existing National Pollutant Discharge Elimination System (NPDES) permit and WDRs for the Olinda Alpha Landfill in accordance with Federal and State requirements for the protection of water quality.

Would the project: (b) Substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of a local groundwater table level?

No Impact. The proposed project does not include any components that would result in groundwater extraction. The horizontal and vertical expansion and associated drainage patterns will channel runoff downstream to the existing detention basins. The reduction in recharge at the horizontal and vertical expansion areas is not anticipated to substantially reduce recharge in the regional groundwater basin. Moreover, the proposed project would not result in significant adverse impacts related to groundwater depletion that would contribute to a net deficit in aquifer volume or a lowering of a local groundwater table.

Would the project: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in manner which would result in: (c) Substantial erosion or siltation on- or off-site; (d) flooding on- or off-site; (e) 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?

Less than Significant Impact. The proposed project would not substantially alter the existing drainage pattern of the site or area. The project will continue to operate as a solid waste landfill. The existing storm water control system consisting of a network of drainage channels, berms, interceptor ditches and sedimentation basins will be extended, as necessary, to control any additional runoff and erosion associated with the proposed project. The concrete-lined sedimentation basins are sufficiently sized to accommodate storm water drainage associated with existing and future landfill operations. Collected silt is cleaned out of the sedimentation basins at the end of the rainy season.

The continued operation and expansion of the Olinda Alpha Landfill will result in an increase in excavation and grading, potentially causing increases in erosion and runoff. Vertical and horizontal expansion of Olinda Alpha Landfill will modify the surface hydrology and change stormwater runoff rates on this site. The change in stormwater runoff is not expected to be substantially different from the existing condition and is not anticipated to result in flooding on or off-site. Off-site discharge will be controlled to only release pre-development condition flows during a storm event. The proposed project will not impact the capacity of existing or planned stormwater drainage systems off-site.

Would the project: (f) Have a significant adverse impact on groundwater quality or otherwise substantially degrade water quality?

Less than Significant Impact with Mitigation. The proposed project would result in the approximately 115-foot vertical and 33-acre horizontal expansion at the Olinda Alpha Landfill site. The landfill expansion must be designed, operated and monitored to preclude any significant impacts to groundwater resources or water quality. In addition, the vertical and horizontal expansion must be approved under WDRs issued by the RWQCB.

Would the project: (g) Place housing within a 100 year flood hazard area; (h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?

No Impact. The proposed project does not include the development of housing or structures that would be located within a 100-year flood hazard area.

Would the project: (i) 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 (j) Inundation by seiche, tsunami, or mudflow?

No Impact. The proposed project is not anticipated to result in any impacts related to flooding as a result of the failure of a levee or dam, inundation by seiche, tsunami or mudflow.

6. Transportation and Circulation

Would the project: (a) Result in an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system?

Potential Significant Impact. Olinda Alpha Landfill is currently permitted to process a maximum of 8,000 tons per day (TPD) of MSW although this landfill is currently restricted to an annual average of 7,000 TPD consistent with the memorandum of understanding (MOU) with the City of Brea. In 2003, the Olinda Alpha Landfill received an annual average daily tonnage of approximately 6,800 TPD. The proposed expansion of Olinda Alpha Landfill includes no increase in the maximum permitted TPD. However, additional soil import trucks would access the site by 2017 at which time refuse importation truck traffic would cease resulting in no substantial increase in truck traffic. Therefore, the proposed project would not result in increased vehicle trips beyond traffic forecasts assumed for the currently approved annual average of 7,000 TPD and would not result in more trips than currently experienced at Olinda Alpha Landfill. However, the proposed project would result in vehicle trips for a longer period of time than is currently permitted or planned which may result in traffic congestion beyond adopted policies and forecasts anticipated.

Would the project: (b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

Potential Significant Impact. The Orange County Congestion Management Program (CMP) Highway System designated roads in the vicinity of Olinda Alpha Landfill include Valencia Avenue, Carbon Canyon Road, and Imperial Highway. The intersections of Imperial Highway/Valencia Avenue and Imperial Highway/Rose Drive are CMP intersections. The proposed project, in combination with cumulative projects, may result in exceeding the level of service (LOS) standards on designated CMP roads or intersections.

Would the project: (c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?

No Impact. The Olinda Alpha Landfill is outside the defined airspace of any airport. The proposed expansion at Olinda Alpha Landfill would not result in changes in air traffic patterns. Because the proposed expansion will not generate demand for air passenger or cargo trips, the expansion will not result in changes in air traffic levels in this area. Therefore, the proposed project will not result in adverse impacts related to air traffic patterns.

Would the project: (d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?

No Impact. Access to Olinda Alpha Landfill is provided via existing public and private roads, designed to local jurisdictions' standards, which are suitable for use by waste disposal trucks. Private access roads provide connections from public roads to and onto this landfill site. These access roads are adequate for use by waste disposal trucks. These private access roads are restricted to use by waste disposal vehicles, landfill employee vehicles, and vehicles operated by the public. The proposed vertical and horizontal expansion do not include road improvements or the use of vehicles not compatible with public and private access roads serving the landfill. Therefore, expansion of Olinda Alpha Landfill will not result in impacts related to safety hazards from design features or incompatible uses.

Would the project: (e) Result in inadequate emergency access?

No Impact. Access to Olinda Alpha Landfill is provided via public and private roads. Private roads provide connections from public roads (namely Valencia Avenue) to and onto the landfill site and are restricted to use by waste disposal vehicles, landfill employee vehicles, and public vehicles. Emergency vehicles can use these private roads if necessary to respond to fire, medical, or police emergency. Consistent with the California Vehicle Code and local restrictions, trucks using public roads to access the landfill do not block emergency vehicles and do not block access to adjacent uses. At the landfill, trucks do not queue off the landfill site and therefore, do not block emergency access in the area. On the landfill site, truck queuing is managed to ensure that emergency vehicles can access the site, if necessary. The proposed vertical and horizontal expansions do not include any features that would alter traffic operations onto or off the landfill site. Therefore, expansion of Olinda Alpha Landfill will not result in adverse impacts related to emergency access or access to other land uses.

Would the project: (f) Result in inadequate parking capacity?

No Impact. Parking for employees and vehicles waiting for inspection or to deposit loads is currently provided on the Olinda Alpha Landfill site. In the event that additional parking is temporarily needed as a result of the proposed vertical and horizontal expansion, it also would be provided on the landfill site. No off-site parking will be required. Therefore, the proposed vertical and horizontal expansion at Olinda Alpha Landfill will not result in any impacts related to inadequate parking capacity.

Would the project: (g) Conflict with adopted policies, plan or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks)?

No Impact. Trucks transporting solid waste to Olinda Alpha Landfill, including the areas for the proposed vertical and horizontal expansion, would operate on public roads consistent with laws and regulations controlling vehicle traffic, similar to existing conditions associated with trucks currently accessing the landfill. Alternative modes, including rail, bus, transit, bicycling, carpooling, and vanpooling would not be adversely affected by these truck operations on public roads. Therefore, the proposed vertical and horizontal expansion at Olinda Alpha Landfill would not result in conflicts with adopted policies regarding alternative transportation.

7. Air Quality

Would the project: (a) Conflict with or obstruct implementation of the applicable air quality plan?

Less than Significant Impact. The proposed project would not result in an obstruction to the implementation of the 2003 Air Quality Management Plan.

Would the project: (b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation; (c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment?

Potential Significant Impact. The entire South Coast Air Basin (SCAB) is designated as a national-level extreme non-attainment area for ozone, meaning that national ambient air quality standards are not expected to be met until beyond 2010, and a non-attainment area for CO and PM_{10}. The proposed project would extend the operational life of the Olinda Alpha Landfill by means of vertical and horizontal expansion at this landfill. However, this would not result in an increase in the daily maximum or annual tonnage volumes of MSW deposited at the landfill. The proposed project would not change the number of trucks currently accessing the site each day, the number of vehicle miles traveled (VMT) by project-related vehicles, or the number of vehicles and equipment working on the active landfill face. However, an increase in the duration of emissions generated during the operation of the project would occur due to the extension of the site's closure date. In addition, an increase in landfill gas would occur due to the larger quantity of landfill space created by the project. The landfill will be collecting landfill gas and will be maintaining a landfill gas collection and control system. No substantial modifications to existing support structures at the landfill are anticipated under the proposed project. Because landfill operations are not anticipated to change substantially with the exception of landfill gases, air pollutant emissions associated with the proposed expansion would not change substantially from existing conditions. However, the project, in combination with cumulative projects, may result in a potential significant impact to air quality.

Would the project: (d) Expose sensitive receptors to substantial pollutant concentrations?

Potential Significant Impact. The expansion of Olinda Alpha Landfill would increase the potential for windblown dust in the local area. However, SCAQMD rules 402 and 403 governing nuisance and dust emissions would regulate dust emissions.

The proposed project will not result in new truck trips or impact areas not currently affected by landfill operations. The project would not expose sensitive population groups to pollutants in excess of acceptable levels beyond existing conditions, although the existing sources of air pollutants would continue for a longer time frame. For those projects in the area near the landfill that are planned but are not yet constructed, an extension of the operational life of the landfill could expose future sensitive receptors to substantial pollutant concentrations.

Would the project: (e) Create objectionable odors affecting a substantial number of people?

Potential Significant Impact. Though the air pollutant emissions due to vehicles exhaust from waste haulers would remain the same, the volume of MSW within the Olinda Alpha Landfill would increase due to the extension in capacities and operating period at the landfill. This increase in the volume of MSW would result in greater methane generation from the decomposition of organic solid waste materials. In addition, odor impacts may result from waste-hauling vehicles transporting solid waste to the site.

8. Noise

Would the project 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 to or generation of excessive ground borne vibration or ground borne 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?

Potential Significant Impact. The proposed project would extend the operating life of Olinda Alpha Landfill through vertical and horizontal expansion. However, this would not increase the daily maximum or annual tonnage volumes of MSW deposited in the landfill on a daily basis. In addition, no change in the number of trucks accessing the landfill each day or the number of vehicles and equipment working on the active landfill face would occur. As such, the proposed project is not anticipated to significantly increase noise levels. However, noise from landfill operations currently experienced would be prolonged over the extended life of the landfill, as opposed to landfill related noise ceasing after the landfill closure under the current closure date (2013). In addition, the project, in combination with cumulative projects, could result in noise impacts.

Would the project: (e) For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a private or public airport or public use airport would the project expose people residing or working in the project area to excessive noise levels; (f) For a project within the vicinity of a private airstrip, would the project expose people residing or working the project area to excessive noise levels?

No Impact. The Olinda Alpha Landfill is not within two miles of an existing public airport and is not within an adopted Airport Land Use Plan. Therefore, the landfill will not result in exposure of people in this area to excessive noise levels.

9. Biological Resources

Would the project: (a) 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 Services?

No Impact. The vertical and horizontal expansion of Olinda Alpha Landfill would have no impact on endangered, threatened or rare species or their habitats since the proposed expansion does not extend into any previously undisturbed areas on-site. The field survey conducted by P&D's biologist concluded that there is no suitable habitat in the area of the proposed expansion. In addition, no new infrastructure and/or expansions of the existing infrastructure to support the proposed project are required. Cover material for the expansion will be obtained from designated stockpiles or will be imported to the landfill from off-site sources.

Would the project: (b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Services?

No Impact. The vertical and horizontal expansion at Olinda Alpha Landfill would have no impact on any riparian habitat or other sensitive natural communities. The proposed expansion will only extend into areas that previously have been disturbed. No expansion of the existing infrastructure is required to support the proposed project. Cover material for the proposed expansion will be obtained from designated stockpiles or will be imported to the site from off-site sources.

Would the project: (c) Have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. The proposed vertical and horizontal expansion of Olinda Alpha Landfill would not impact wetlands or other watercourses subject to regulatory control since none are located on-site and no expansion activities are planned for off-site areas.

Would the project: (d) 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?

No Impact. The proposed vertical and horizontal expansion at Olinda Alpha Landfill is not expected to impact wildlife movement or migration patterns through wildlife corridors. No disturbance along the ridgeline east of the horizontal expansion area is proposed. However, landfill operations may generate dust, noise, or light emissions that could potentially disturb wildlife behavior, including possible shifts in the use of the eastern ridgeline. The majority of wildlife movement through and near the landfill occurs after dark. Since operations at the landfill cease at dark, no impacts to wildlife dispersal or migration through wildlife corridors will occur.

Would the project: (e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. The proposed vertical and horizontal expansion at Olinda Alpha Landfill would not have an impact on locally designated species. The County of Orange has no officially adopted heritage tree ordinance or policy. Therefore, the proposed project would not result in impacts to locally designated species.

Would the project: (f) Conflict with provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The Olinda Alpha Landfill is not within an approved NCCP/HCP Reserve System and therefore, would not impact any NCCP/HCP areas.

<u>10. Aesthetics</u>

Would the project: (a) Have a substantial adverse effect upon a scenic vista?

Potential Significant Impact. The proposed Olinda Alpha Landfill will largely be accommodated on the same footprint as the existing landfill, with the exception of the relatively small area of the horizontal expansion. Most of the Olinda Alpha Landfill has been graded and/or excavated for landfill purposes and most of the area has been filled with MSW, covered and in some areas vegetated. The existing Olinda Alpha Landfill is visible from locations in the extreme north part of Carbon Canyon Regional Park and the northwest part of Chino Hills State Park that is open or planned to be open to the public. The expanded landfill also will be visible from these areas. Views of the expanded landfill would be similar to views of the permitted landfill except that the final elevation of the landfill will be higher. It is anticipated that once the landfill is closed and vegetated that the visual effect of the landfill expansion on these public views would be reduced.

Would the project: (b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Potential Significant Impact. Olinda Alpha Landfill is visible from Carbon Canyon Road. In the Open Space and Conservation Element of the City of Brea General Plan, this road is given special consideration. Development immediately adjacent to Carbon Canyon Road must be screened to soften its presence. The City suggests that vertical trees, shrub planting and walls/ berms be used where necessary for sound attenuation. The edge of Olinda Alpha Landfill is set back from Carbon Canyon Road approximately one-half mile and the Olinda Ranch residential development is between the landfill and Carbon Canyon Road. Landscape screening has been provided by Olinda Ranch along Carbon Canyon Road. The vertical expansion of Olinda Alpha Landfill will be accommodated on the same footprint as the existing landfill. Under the proposed expansion, the final landfill elevation will be higher than currently permitted and, therefore, more of the landfill may be visible from Carbon Canyon Road beyond the residences in the Olinda Ranch Development.

Would the project: (c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Potential Significant Impact. The proposed vertical and horizontal expansion of the Olinda Alpha Landfill largely will be accommodated on the same footprint as the existing landfill. Most of the Olinda Alpha Landfill site has been graded and/or excavated for landfill purposes and part of the area has been filled with MSW and covered. These developed landfill areas contrast with the adjacent undeveloped land in both form and color. The symmetrical shape of the constructed fill is distinct from the undisturbed adjacent ridges and the earth-toned graded areas contrast with nearby native vegetation. The color contrast is most apparent in the spring when new vegetation is green and is less vivid during the summer and fall when adjacent coastal sage scrub vegetation is more muted in color. The currently permitted landfill, including some graded and filled areas, is visible from the following locations: points along State Routes 55, 57 and 91 (SR 55, SR 57 and SR 91); Lambert Road and Carbon Canyon Road; the extreme north edge of Carbon Canyon Regional Park which is southeast of the landfill; elevated areas in the northwest part of Chino Hills State Park; and elevated areas of Brea and Los Angeles County north of the landfill.

Land uses in Chino Hills east and northeast of this landfill do not have views of the currently permitted landfill and will not have views of the proposed expansion because of intervening topography. Some land uses at higher elevations in Diamond Bar may have glimpses of the ultimate height of the current landfill beyond the ridges at the edge of the landfill. These locations will see slightly more of the landfill as a result of the proposed vertical expansion. Views of the landfill with the proposed vertical expansion will be similar to views under the current permit, except that the landfill would be higher (by 115') with the vertical expansion and, therefore, more of the landfill will be visible. This site is currently an operating landfill and views under the proposed vertical expansion will be similar to views under the permitted landfill. However, more of the landfill may be visible to land uses that would have views of the currently permitted landfill. Land uses that do not have views of the currently permitted landfill may have views of the expanded landfill because of the increased height.

Would the project: (d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

No Impact. Potential light and glare impacts associated with the expansion of Olinda Alpha Landfill would be the same as existing impacts associated with the permitted landfill. Sources of light at this landfill, including lighting for access roads, parking areas, buildings and security, would not change appreciably under the proposed expansion. Therefore, there would be no impacts related to light and glare associated with the expansion at Olinda Alpha Landfill.

11. Cultural/Scientific Resources

Would the project: (a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

No Impact. No historic resources have been documented or discovered on the Olinda Alpha Landfill site. Therefore, no historic resources will be impacted by the proposed expansion.

Would the project: (b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

No Impact. The proposed expansion of the landfill would only occur in areas previously disturbed by landfill operations. No impacts to known archaeological resources would occur. The majority of the proposed expansion area has been previously surveyed and there are no known archaeological sites within the existing site boundary.

Would the project: (c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less than Significant Impact with Mitigation. Although the proposed expansion of the landfill would only occur in areas previously disturbed by landfill operations, rare paleontological specimens have been found at the site. The IWMD provides archaeological /paleontological monitoring services during construction to recover any paleontological resources specimens that may be discovered in the future**.** These resources are preserved in accordance with the County of Orange which enforce Standard Conditions of Approval that require paleontological monitoring during construction.

Would the project: (d) Disturb any human remains, including those interred outside of formal ceremonies?

No Impact. The proposed expansion of the landfill would only occur in areas previously disturbed by landfill operations. No known human remains would be disturbed by the proposed project.

12. Recreation

Would the project: (a) Increase 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?

No Impact. The vertical and horizontal expansion of the Olinda Alpha Landfill would not entail the construction of residential or commercial land uses that would result in an increased use of area parks or recreational facilities by employees. The proposed project also would not increase the number of employees at Olinda Alpha Landfill because the average daily TPD limit will not be increased at the landfill. Therefore, the proposed project would not increase 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.

Would the project: (b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact. The proposed project does not propose the construction of additional recreational facilities either on or off site at the Olinda Alpha Landfill. Therefore, the proposed project will not result in adverse impacts related to the provision of recreation resources. Olinda Alpha Landfill's ultimate land use is a passive regional park.

13. Mineral Resources

Would the project: (a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. The California Department of Mines and Geology (CDMG) has classified the Olinda Alpha Landfill site as Mineral Resource Zone (MRZ-1) which indicates that adequate information exists to indicate that no significant mineral deposits are presently or likely to be present for this site. Therefore, the proposed project will not result in impacts related to known mineral resources of possible state or regional value.

Would the project: (b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local General Plan, Specific Plan or other land use plan?

No Impact. There are no significant mineral deposits documented on the Olinda Alpha Landfill site and this site is not identified as an important mineral resource recovery site. Therefore, the proposed vertical and horizontal expansion of this existing landfill will not result in the loss of availability of a locally important mineral resource recovery site delineated on local plans.

14. Hazards

Would the project: (a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials; (b) 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?

Potential Significant Impact. The Olinda Alpha Landfill is a certified Class III landfill that does not accept hazardous, radioactive or explosive wastes for on-site disposal. There is an IWMD program in place at the Olinda Alpha Landfill to prevent hazardous wastes from entering the landfill and to ensure landfill workers are protected from potentially hazardous substances. This includes visual inspection of loads at the fee booths and the active face of the landfill and the rejection of loads containing hazardous wastes. Studies on the composition of MSW indicate the amount of hazardous wastes contained in MSW is small and is not likely to pose a threat of exposure to the public. However, landfill activities at Olinda Alpha Landfill under the proposed project would continue to be monitored by personnel trained to inspect incoming refuse and waste being deposited on the active landfill face to identify and remove potentially hazardous wastes.

Hazardous materials used on-site would be handled according to existing state and federal regulations and would be limited to fuels, oils and other materials used in the operation and maintenance of landfill equipment and vehicles. The operation and refueling of heavy construction equipment does have the potential to result in spills and leaks of fuels, oils and other liquids. Vehicles used in existing landfill operations are maintained and fueled on-site. A vehicle maintenance facility services the equipment, including oil changes, fueling and other typical maintenance activities. Waste oil currently is collected in a non-site storage tank and is emptied and hauled away by a certified commercial hauler. Disposal of waste oil, either in a certified landfill or by recycling, is the responsibility of the waste hauler. The use of hazardous materials and generation of hazardous wastes would continue under these existing on-site programs over the extended life of the Olinda Alpha Landfill. The nearest existing and/or planned residential use is approximately 0.3 mile from the existing boundary of Olinda Alpha Landfill. Similar to existing conditions, no hazardous wastes would be disposed of at the landfill under the proposed project.

Would the project: (c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school?

No Impact. There are no existing or proposed schools within one-quarter mile of Olinda Alpha Landfill and no hazardous wastes will be disposed of in this landfill under the proposed project. The existing landfill design, including methane gas collection and groundwater monitoring facilities, would ensure that the landfill is operated in a safe and sanitary manner. Therefore, the proposed expansion will not result in impacts related to hazardous emissions within one-quarter mile of a school near Olinda Alpha Landfill.

Would the project: (d) Be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. The Olinda Alpha Landfill project site is not listed as a hazardous materials site. The landfill accepts only Class III municipal solid wastes.

Would the project: (e) For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The Olinda Alpha Landfill is not within an airport land use plan or within two miles of a public airport or public use airport based on review of area maps. Therefore, the proposed project will not result in adverse impacts related to aviation safety hazards for people residing or working in the project area.

Would the project: (f) For a project within the vicinity of private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. There are no private airstrips in the immediate vicinity of Olinda Alpha Landfill. Therefore, the proposed project would not result in significant adverse impacts related to safety hazards for people residing or working in this area.

Would the project: (g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evaluation plan?

No Impact. The City of Brea has an Emergency Response Plan and an Emergency Evacuation Plan which was adopted in 1991. An updated Emergency Response and Evacuation Plan were approved by the State in December 2003, and will be updated by the City of Brea in January 2004. The City of Brea does not service unincorporated areas of Orange County. However, the Olinda Alpha Landfill designated evacuation routes include streets within the City of Brea.

Olinda Alpha Landfill is in unincorporated Orange County adjacent to the City of Brea. The County has adopted an Emergency Response Plan and an Emergency Evacuation Plan for all unincorporated areas. The Emergency Evacuation Plan was updated in October 2003 and the Emergency Response Plan will be updated in February 2004. The designated emergency routes from the landfill are through the City of Brea.

Would the project: (h) Expose people or structures to a significant risk or loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Less than Significant Impact. The Olinda Alpha Landfill site is located within a Very High Fire Hazard Area as designated on the City of Brea General Plan Draft EIR, Wildland Fire Hazard Areas Map. There is a remote possibility of fire at Olinda Alpha Landfill from combustible refuse, vegetation or litter being ignited by sparks from vehicles, lighted cigarettes or matches thrown from vehicles. However, this potential risk is addressed in the design and daily operations of this landfill. Landfilling under the proposed project is not anticipated to have a significant impact on the occurrence of wildland fires in the area.

The landfill may be subject to surface fires started by burning waste material deposited on the working landfill face. Should this occur, the fire would be limited to the materials deposited prior to the daily application of cover materials, as fire will not generally propagate through cover soil. The Orange County Fire Authority has procedures for the prevention of fires at waste disposal sites. Current practices at this landfill to reduce the potential for fire and for rapid control of fires, should they occur, include keeping fire extinguishers on-site, frequent site watering for dust control, on-site water storage, prohibiting smoking on-site, clearing vegetation and fire breaks.

All landfills contain combustible materials and insulating characteristics and can, under certain conditions, facilitate subsurface combustion. Subsurface fires can occur as combustible materials in refuse are heated, either through burial of hot loads with other refuse or through an aerobic decomposition process. Because combustion requires a continuous source of oxygen, subsurface fires can be controlled by avoiding air intrusion and maintaining proper balance of a landfill gas collection system. While open flames are not likely to occur during a subsurface fire, accelerated or sudden localized settlement of refuse and cover materials in the vicinity of the fire can occur. Although this localized settlement can affect landfill operations, potential subsurface fires would not result in any significant impacts to users of the landfill or the general public, as few persons have access to covered parts of a landfill.

Safety and health hazards such as fires or explosions could occur if landfill gas (LFG) containing methane or toxic gases is permitted to migrate into nearby buildings. The existing LFG control and monitoring system at the Olinda Alpha Landfill would reduce LFG migration and associated potential impacts associated with the proposed project to below a level of significance.

Would the project: (i) Include a new or retrofitted storm water treatment control Best Management Practice (BMP), (e.g. water quality treatment basin, constructed treatment

wetlands), the operation of which could result in significant environmental effects (e.g. increased vectors and odors)?

No Impact. The proposed project does not include the development of new or retrofitted stormwater control BMPs.

15. Public Services

Would the project: (a) 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: (i) Fire protection?

Potential Significant Impact. The nearest fire station to Olinda Alpha Landfill is City of Brea Station #4, at 170 Olinda Place, off of Carbon Canyon Road. Station #4 is located less than two and a half miles southwest of the landfill.

Fires could be caused at the Olinda Alpha Landfill when combustible refuse, vegetation or litter in the landfill is ignited by sparks from vehicles, lighted cigarettes or matches thrown from vehicles or from tipping of hot or smoldering loads. The design and operation of the landfill incorporates fire safety requirements. In addition, the Olinda Alpha Landfill has regulatory mandates requiring extensive operational procedures for the prevention and control of fires. Equipment used in landfilling, such as earth movers and water trucks, would also be available for use in controlling and extinguishing fires on or adjacent to this landfill. The vertical and horizontal expansion at the landfill would result in a time extension in demand for fire protection associated with the increased life of the landfill under the proposed project. It is anticipated that personnel and equipment from Station #4 will be required to provide fire service to the landfill site for the duration of the proposed project.

Would the project result in need(s) for new/altered government facilities/services in (a)(ii) police protection?

No Impact. The nearest police station to Olinda Alpha Landfill is at 1 Civic Center Circle in the City of Brea, approximately five miles southwest of the landfill. No increase in traffic is expected due to the vertical and horizontal expansion of the landfill because the permitted tons per day will not change under the proposed project. The existing police services in the area would be adequate to meet the demand for police protection services under the proposed project. Therefore, the proposed project will not result in adverse impacts related to police services.

Would the project result in need(s) for new/altered government facilities/services in (a)(iii) schools?

No Impact. The proposed project will not adversely impact schools since no new population increases are associated with the expansion plan.

Would the project result in need(s) for new/altered government facilities/services in (a)(iv) parks?

Potential Significant Impact. The vertical and horizontal expansion of Olinda Alpha Landfill is proposed within the existing boundary of this site and will not impact any existing or planned trails. The landfill site is shown on the County of Orange Master Plan of Regional Recreational Facilities as a proposed regional park. No development plans have been adopted for the future regional park. However, the ultimate configuration of recreational uses on the site may be impacted due to the proposed project, but will not foreclose the recreational opportunity. It should be noted however, that the proposed project would extend the landfill's closure date by providing additional capacity and would therefore, delay the use of this site as a recreational facility.

The conceptual alignment for the Diamond Bar Trail is in the vicinity of the expansion within the landfill site boundary. However, the implementation of this conceptual trail alignment is not planned in then near future and most likely would be implemented after closure of the landfill. If this proposed tail is implemented prior to landfill closure, it could be located outside the landfill site or, if after the landfill closes, on the landfill site. Implementation of the proposed project at Olinda Alpha Landfill would not preclude the establishment of this regional trail and is considered a less than significant impact.

Would the project result in need(s) for new/altered government facilities/services in (a)(v) other public facilities?

No Impact. The proposed project will require some permit processing by the County of Orange. However, the proposed project is not anticipated to adversely affect the County's overall ability to provide permitting services Countywide. The proposed project will not result in an increase in the number of employees at the landfill or other changes which would result in the need for other new or altered government facilities or services such as libraries or jails. Therefore, the proposed project will not result in adverse impacts related to other governmental services.

16. Utilities and Service Systems

Would the project: (a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board; (b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?

No Impact. The proposed project would not result in the construction of new or expanded water or wastewater treatment facilities. In addition, the project would not exceed wastewater treatment requirements.

Would the project: (c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which would cause significant environmental effects?

No Impact. The project would not result in the need for the off-site construction of new or expanded stormwater drainage facilities. With the development of the proposed project, the existing landfill stormwater collection system that consists of a series of drainage channels, berms, interceptor ditches and sedimentation basins would be extended to landfill expansion areas as appropriate. This would occur in areas already disturbed by landfill operations and would not result in any additional environmental impacts.

Would the project: (d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

No Impact. The proposed vertical and horizontal expansion at Olinda Alpha Landfill would extend the use period of this landfill. Therefore, the proposed project will result in an increase in the total amount of water needed over time including offices, earthwork, dust control, on-site road construction and other on-site improvements. However, the proposed expansion is not anticipated to result in a substantial increase in the amount of water currently used daily at the landfill. The existing water facilities and supplies are anticipated to be adequate to continue providing water to the landfill over the extended use period of Olinda Alpha Landfill under this proposed project. Therefore, the proposed project will not result in significant adverse impacts related to water treatment and distribution facilities.

Would the project: (e) Have adequate wastewater treatment capacity?

No Impact. The proposed vertical and horizontal expansion at Olinda Alpha Landfill will increase the use period of the landfill and will result in an increase in the total amount of sewage generated over the life of the landfill. However, the proposed expansion is not anticipated to result in a substantial increase in the amount of sewage currently generated daily at Olinda Alpha Landfill. The existing wastewater facilities are anticipated to be adequate to accommodate the additional sewage generated at Olinda Alpha Landfills over the extended use period of the landfill under the proposed project. Therefore, the proposed project will not result in significant adverse impacts related to sewer or septic systems.

Would the project: (f) disposable served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; (g) Comply with federal, state and local statutes and regulations related to solid waste?

No Impact. The proposed vertical and horizontal expansion will extend the use period of Olinda Alpha Landfill and will provide additional capacity for MSW. Therefore, the proposed project will not result in adverse impacts to MSW disposal.

Mandatory Findings

(a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of 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?

Potential Significant Impact. As described in the environmental analysis herein, the proposed project has the potential to degrade the environment. The proposed project will not substantially alter biological resources since the proposed horizontal expansion area of the Olinda Alpha Landfill previously has been disturbed. There are no waters of the U.S. or wetlands, endangered flora or fauna, or habitat conservation areas within the proposed expansion areas which are located entirely within the landfill property boundary . The proposed project would not result in any impacts to archaeological resources because the site has been previously disturbed by landfill operations.

There are no known historical resources on the proposed project site. Therefore, the proposed Olinda Alpha Landfill expansion will not result in any adverse impacts to historical resources.

(b). Does the project have possible environmental effects, which are individually limited but cumulatively considerable ("cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects).

Potential Significant Impact. Implementation of the proposed project may result in cumulative impacts. These impacts will be considered in detail in the EIR.

(c). Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Potential Significant Impact. Implementation of the proposed project may result in adverse environmental effects. These impacts will be evaluated in detail in the EIR.

Determination

Based upon the evidence in light of the whole record documented in the attached environmental checklist explanation, cited incorporations and attachments, I find that the proposed project:

The proposed project may have a significant effect on the environment which has not been previously analyzed. Therefore, an environmental impact report (EIR) is required.

5.0 NAMES OF PREPARERS

County of Orange Integrated Waste Management Department

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Jeff Post, Graphics
Daryl Fisher, Word Processing

6.0 REFERENCES

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Herrick, Craig, Safety Coordinator Representative. Public Facilities and Resources Department. County of Orange. Pers. comm., December 11, 2003.

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INTEGRATED WASTE MANAGEMENT DEPARTMENT
320 N. FLOWER STREET, SUITE 400
SANTA ANA, CALIFORNIA 92703

NOTICE OF PREPARATION

DATE: January 8, 2004 (Previously issued September 9, 2002)

SUBJECT: Notice of Intent to Prepare Draft Environmental Impact Report # 588

Project Title: Regional Landfill Options for Orange County (RELOOC) Strategic Plan-Olinda Alpha Landfill Implementation

Applicant: County of Orange Integrated Waste Management Department

Project Contact: Linda Hagthrop, Public Information Officer Phone: (714) 834-4176
Fax: (714) 834-4057

The County of Orange Integrated Waste Management Department (IWMD) has conducted an Environmental Analysis Checklist for the RELOOC Strategic Plan-Olinda Alpha Landfill Implementation project and has determined that an Environmental Impact Report (EIR) is necessary. The County of Orange IWMD will be the Lead Agency for the subject project and will prepare the EIR. In order for your concerns to be incorporated into the EIR, we request your input as to the scope and content of the environmental information. In the case of some agencies receiving this Notice, your agency must consider the EIR prepared by the County of Orange IWMD when considering a permit or approval for the project. Please restrict your comments to issues to be addressed in the EIR relevant to your agency's statutory responsibilities for the proposed project. The project description, location, a description of alternatives under review and an analysis indicating the probable environmental effects of the proposed action are contained in the attached materials. Interested individuals and groups also are invited to comment on the issues to be addressed in the EIR.

Please be advised that any written comments received in response to the Notice of Preparation (NOP) previously issued on September 9, 2002 will be retained and incorporated into the Draft EIR if we are requested to do so by the commentor. Otherwise, we encourage recipients of this reissued NOP to provide comments specifically on issues to be addressed in Draft EIR 588 for the amended project.

Pursuant to Section 21080.4 of CEQA, your response must be sent as soon as possible but *not later than 30 days after receipt of this notice.*

A public Scoping Meeting is scheduled for January 22, 2004 at Brea City Hall in the City Council chambers at 7:30 PM. All parties are invited to attend this meeting to provide comments and input on the contents of the Draft EIR for this project.

All parties that have submitted their names and mailing addresses will be notified if any significant changes in the proposed project occur. If you wish to be placed on the mailing list, please submit your name and mailing address to the contact person at the address below. If you have any questions or need additional information, please call the IWMD Project Contact at the number listed above. The mailing address is County of Orange, Integrated Waste Management Department, Office of Public Affairs, 320 North Flower Street, Suite 400, Santa Ana, CA 92703.

Submitted by:

____
Ray Hull, RELOOC Project Manager

Attachment: Project Description and Alternatives
Initial Study

NOTICE OF PREPARATION
For Draft EIR 588

Regional Landfill Options for Orange County (RELOOC)
Strategic Plan - Olinda Alpha Landfill Implementation

1.0 INTRODUCTION

In compliance with the California Environmental Quality Act (CEQA), the County of Orange's Integrated Waste Management Department (IWMD) is preparing an Environmental Impact Report (EIR) to consider potential impacts from its proposed vertical and horizontal expansion of the Olinda Alpha Landfill. This Notice of Preparation (NOP) is being provided to Responsible Agencies, trustee agencies, federal, state and local agencies and other interested parties for the purpose of soliciting comments on the scope of the EIR and potential environmental impacts that may result from this proposed action.

2.0 BACKGROUND

2.1 REGIONAL LANDFILL OPTIONS FOR ORANGE COUNTY (RELOOC)

Strategic Planning

Strategic planning for municipal solid waste (MSW) needs in Orange County is the responsibility of the IWMD. The IWMD's mission is "…to meet the solid waste disposal needs of Orange County through efficient operations, sound environmental practices, strategic planning, innovation and technology." Regional Landfill Options for Orange County (RELOOC) is a short- and long-term strategic planning project initiated by IWMD in 1998 to address existing disposal system capabilities and future needs, and to develop viable short- and long-term solid waste disposal options. Following completion of the planning and feasibility phase of RELOOC, the Orange County Board of Supervisors selected the Strategic Plan (described below) as the preferred alternative to be evaluated in an EIR. The RELOOC Strategic Plan provides a framework for solid waste management over the next 40 years in the most cost-effective manner. The RELOOC Strategic Plan includes a two-phased approach to accomplishing this goal.

Phase I strategies include fully utilizing existing landfill system capacity by:

- Maximizing operational efficiency at existing landfills.
- Expanding FRB and Olinda Alpha landfills.
- Promoting diversion, recycling and market development with the public and haulers.
- Seeking to resolve community concerns related to the extended use of the existing landfills.
- Annually reviewing the RELOOC Strategic Plan and modifying it as appropriate in response to disposal industry trends and advances in technology.

Phase II strategies consist of a series of studies, which will:

- Determine if there is a need to increase the daily amount of solid waste permitted at the Prima Deshecha Landfill five years prior to the closure of the Olinda Alpha Landfill.
- Identify strategies to support, develop and implement feasible, viable alternative technologies or other approaches to maximize landfill capacity for possible consideration in future waste disposal agreements.
- Complete a study to determine the feasibility of expanding FRB Landfill into adjacent Round Canyon prior to re-negotiation of the 2017-2027 Waste Disposal Agreements.

The purpose of this EIR is to analyze potential impacts and provide environmental documentation for the implementation of the RELOOC Strategic Plan component to expand the Olinda Alpha Landfill, proposed as a Phase I strategy in the RELOOC Strategic Plan. A detailed discussion of the proposed project based on parameters developed pursuant to the Strategic Plan is provided below in Section 4.0.

The only other Phase I strategy component requiring CEQA analysis is the expansion of the Frank R. Bowerman (FRB) Landfill, which will be addressed in a separate EIR when the expansion plan for that site is better defined. A major landslide that occurred at the FRB Landfill in early 2002 has required extensive geotechnical investigation, landslide remediation design, biological resource evaluations and coordination/permitting with resource agencies in developing a remediation design for full development of the site. It is anticipated that the CEQA and resource agency approval process for the FRB Landfill will be lengthy. Since the Olinda Alpha and FRB components are independent of each other, a separate EIR will be prepared for the FRB Landfill expansion component of RELOOC Phase I once the full extent of the landslide remediation needs and its effect on the current master plan effort are known. In order to reduce further delays in implementing the overall RELOOC Phase I strategy, the implementation of the Olinda Alpha Landfill expansion is being proposed now.

The Phase II strategies are considered studies and are not subject to CEQA requirements. The Phase II strategies are considered long-term RELOOC program components and, if determined to be feasible as a result of future studies, may be selected for analysis in accordance with CEQA requirements at a later date during the RELOOC 40-year planning timeframe.

RELOOC Planning Process

The RELOOC planning process included the formation of a Steering Committee to provide policy guidance for the strategic planning process. The Committee's formation was developed in consultation with the County of Orange Waste Management Commission. Membership within the Steering Committee consisted of representatives from the:

- Orange County community at-large.
- City Managers Solid Waste Working Group.
- Landfill Host Cities (i.e., Brea, Irvine, San Juan Capistrano and San Clemente).
- Waste Management Commission.
- League of California Cities (Orange County Division).

- IWMD.
- County of Orange (County Executive Office).

The RELOOC Steering Committee directed the Consultant Team (comprised of landfill engineers, environmental experts and other individuals under contract with the IWMD) to evaluate a number of strategic planning options that would meet the short- and long-term RELOOC strategies. Key tasks assigned to the Consultant Team were:

- Identification of available options.
- Capacity analysis.
- Demand analysis.
- Economic analysis.
- Environmental impacts analysis.
- Evaluation (or goal achievement) matrix of options.
- Recommended Strategic Plan.

The RELOOC planning process involved extensive community and agency outreach and was an important element in the evaluation and selection of available options. In the ranking of options, community acceptance was one of five criteria used and was evaluated using a Community Involvement Program (CIP) developed specifically for RELOOC. The CIP and preliminary findings of the RELOOC Feasibility Study Report (FSR) were presented to the Orange County City Managers Association's Solid Waste Working Group (SWWG). As an outcome of input received from the SWWG and concurrence by the RELOOC Steering Committee, a phased approach to RELOOC developed. The phased approach to RELOOC was presented in a series of meetings and briefings to community groups, City Councils, Chambers of Commerce, and the community-at-large, primarily within the host cities affected by the phased approach. These meetings were conducted between August 23, 2001 and October 18, 2001. Based upon recommendations from the community, the SWWG and subsequent action by the RELOOC Steering Committee, a phased approach for the RELOOC Strategic Plan, previously discussed above, was selected by the County Board of Supervisors for CEQA analysis in May 2002.

In September 2002, an NOP for EIR 588 was circulated for public review that identified the RELOOC Phase I strategies. That NOP described vertical and horizontal expansions of the Olinda Alpha and FRB landfills based on preliminary information on the complex geological conditions at FRB Landfill available at that time scoping meetings were held in September, 2002 to receive public comments on the NOP for EIR 588. Since then, extensive work has occurred at the FRB Landfill to develop a landslide remediation design and, as discussed above, the approval process for that project is anticipated to be lengthy may take a number of years to complete. In order not to further delay the implementation of the Olinda Alpha Landfill expansion component of RELOOC Phase I, this EIR 588 is being prepared separate from an EIR to be prepared at a future date for the FRB Landfill expansion component of RELOOC Phase I. Each of these landfill expansion projects is independent of and does not alter the need for or impacts of the other.

2.2 COUNTY OF ORANGE SOLID WASTE DISPOSAL SYSTEM

Active Landfills and Former Refuse Disposal Stations

IWMD operates three MSW landfills strategically located throughout the County. Figure 1 shows the location of the three active landfills in Orange County (Olinda Alpha, Frank R. Bowerman and Prima Deshecha). Olinda Alpha Landfill serves northern Orange County. It also receives MSW from Los Angeles, San Bernardino and Riverside Counties. FRB Landfill serves the central area of the County and also receives MSW from southeastern Los Angeles County. FRB Landfill is the newest landfill in the system. Prima Deshecha Landfill serves the southern areas of Orange County and also receives MSW from cities in northern San Diego County and southern Los Angeles County. Importation of MSW from Los Angeles, San Bernardino and Riverside Counties will cease in 2015. At about that time, Olinda Alpha Landfill will need to import cover material if the landfill closure date is extended. It is anticipated that the truck trip reduction that occurs with the cessation of MSW importation at Olinda Alpha Landfill will offset the increase in truck trips required for the transport of cover material.

In addition to the management of the landfill disposal system, the IWMD is responsible for a range of activities at a number of former refuse disposal stations including the closed Coyote Canyon Landfill and the inactive Santiago Canyon Landfill that is currently going through final closure construction. A discussion of the three active landfills and the County's Landfill operations is provided herein.

Household Hazardous Waste Collection Centers

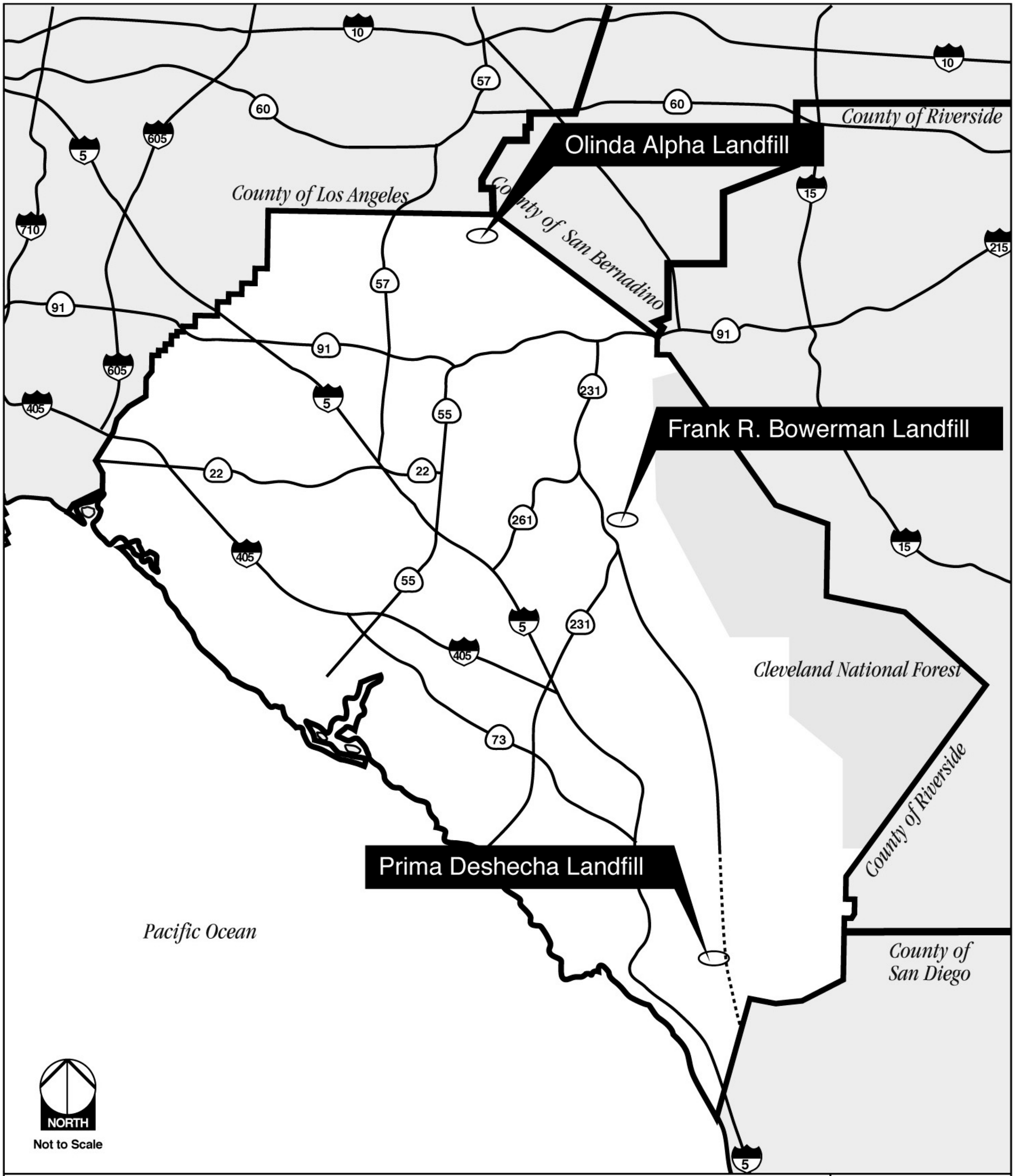
IWMD also operates four household hazardous waste (HHW) collection centers within the County that provide easily accessible disposal facilities for Orange County residents to properly dispose of HHW, thereby reducing the amount of HHW being improperly delivered to the landfills.

Landfill Operations

All of the County’s active landfills are deep canyon, cut and cover facilities where the majority of waste is brought to the site from commercial haulers. To determine tipping fees, trucks are weighed by scales before entering the facility and then driven to a designated area of the landfill for waste disposal. The IWMD heavy equipment operators use compactors, bulldozers and large earthmovers to push and compact waste for ultimate burial and daily covering by soil or an approved alternative. No waste is left uncovered at the end of the working day.

Environmental Regulations

Landfill operation in the State of California is highly regulated and monitored by federal, state and local agencies. All Orange County landfills comply with the applicable California Code of Regulations (CCR) (primarily Title 27) and the Code of Federal Regulations, Title 40 (CFR), Parts 257 and 258 (Subtitle D) for landfills. The Olinda Alpha Landfill is a Class III landfill



Note: Project only includes landfill expansions at the FRB and Olinda Alpha Landfills;
only implementation of bio-cell technology at Prima Deshecha Landfill

RELOOC Strategic Plan - Olinda Alpha Landfill Implementation

Regional Location of Orange County Landfills

Figure
1

permitted for the disposal of non-hazardous MSW. State law requires that landfills operate under the various regulatory requirements of the California Integrated Waste Management Board (CIWMB) that exercises its authority through the approval of Solid Waste Facilities Permits (SWFPs) issued by the Local Enforcement Agency (LEA). The LEA for Orange County landfills is the County of Orange Health Care Agency, Environmental Health Division.

Additionally, the Regional Water Quality Control Board (RWQCB) regulates landfill operations and designs to ensure protection of surface water and groundwater. The RWQCB exercises its authority through issuance of Waste Discharge Requirements (WDR). The South Coast Air Quality Management District (SCAQMD) also regulates landfill operations related to landfill gas emissions, subsurface gas migration, and fugitive dust control for Orange County landfills. Environmental monitoring of air, landfill gas (LFG) and groundwater is conducted at all the sites to detect LFG migration or groundwater contamination. A LFG extraction system and flare station are located at each site for LFG control. In addition, utilization of LFG for energy production currently is being conducted at Olinda Alpha and Prima Deshecha landfills and is in the development stages for the FRB Landfill. A groundwater remediation program including extraction wells and treatment currently is ongoing at Olinda Alpha Landfill. Additional LFG extraction wells and increased groundwater monitoring have been implemented at Prima Deshecha and FRB landfills to determine whether any groundwater remediation efforts also may be required at these sites.

Although the CIWMB has primary oversight and regulatory responsibilities for the landfills in Orange County and has designated the County of Orange Environmental Health Care Agency, Environmental Health Division as its LEA, landfills also are regulated through other laws enforced by agencies at the federal, state and local regulatory levels. In addition to the RWQCB and SCAQMD, these agencies include: U.S. Environmental Protection Agency (USEPA), U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (ACOE), California Department of Fish and Game (CDFG), Orange County Fire Authority (OCFA) and the County of Orange Public Facilities & Resources Department (PFRD). Adherence to applicable laws and regulations would be required as part of project approval and operating conditions.

Landfill System Capacity

A variety of factors are utilized to determine landfill system capacity including total air space, refuse volume, liner volume, refuse-to-soil ratio and other factors. Based upon these factors, IWMD's records show that the current permitted remaining refuse capacity for Olinda Alpha, FRB and Prima Deshecha landfills is 23.9, 49.2 and 42.8 million tons, respectively, as of June 30, 2003. The Prima Deshecha Landfill is currently undergoing a permit revision process that will increase its remaining refuse capacity from 42.8 million tons to 76.4 million tons (as of June 30, 2003).

The permitted daily tonnage limit for FRB Landfill is 8,500 tons per day (TPD) of refuse. However, under the Settlement Agreement with the City of Irvine, the FRB Landfill currently is allowed to accept an annual average of 7,785 TPD (as of December 2003) and can increase this average daily rate by 1.75% per year until it reaches the permitted maximum of 8,500 TPD. The permitted daily tonnage limit for Olinda Alpha Landfill is 8,000 TPD of refuse. However, under the Memorandum of Understanding with the City of Brea waste disposal is limited to an annual average of 7,000 TPD. The permitted daily tonnage for Prima Deshecha currently is 4,000 TPD.

Existing Landfill Agreements and Permits

A number of landfill agreements and permits currently are in place with Orange County cities, waste haulers and regulatory agencies responsible for oversight of the County's landfills. In addition to those regulatory agency permits and city agreements described above, the County also has ten-year Waste Disposal Agreements (WDA) with contract cities that are subject to negotiation for renewal by June 2004. The negotiations for renewal will need to be extended since the county landfill system will not have been defined by June 2004. Approval of the Olinda Alpha Landfill expansion is a key component of the system implementation required for negotiation of WDAs for an additional ten-year period.

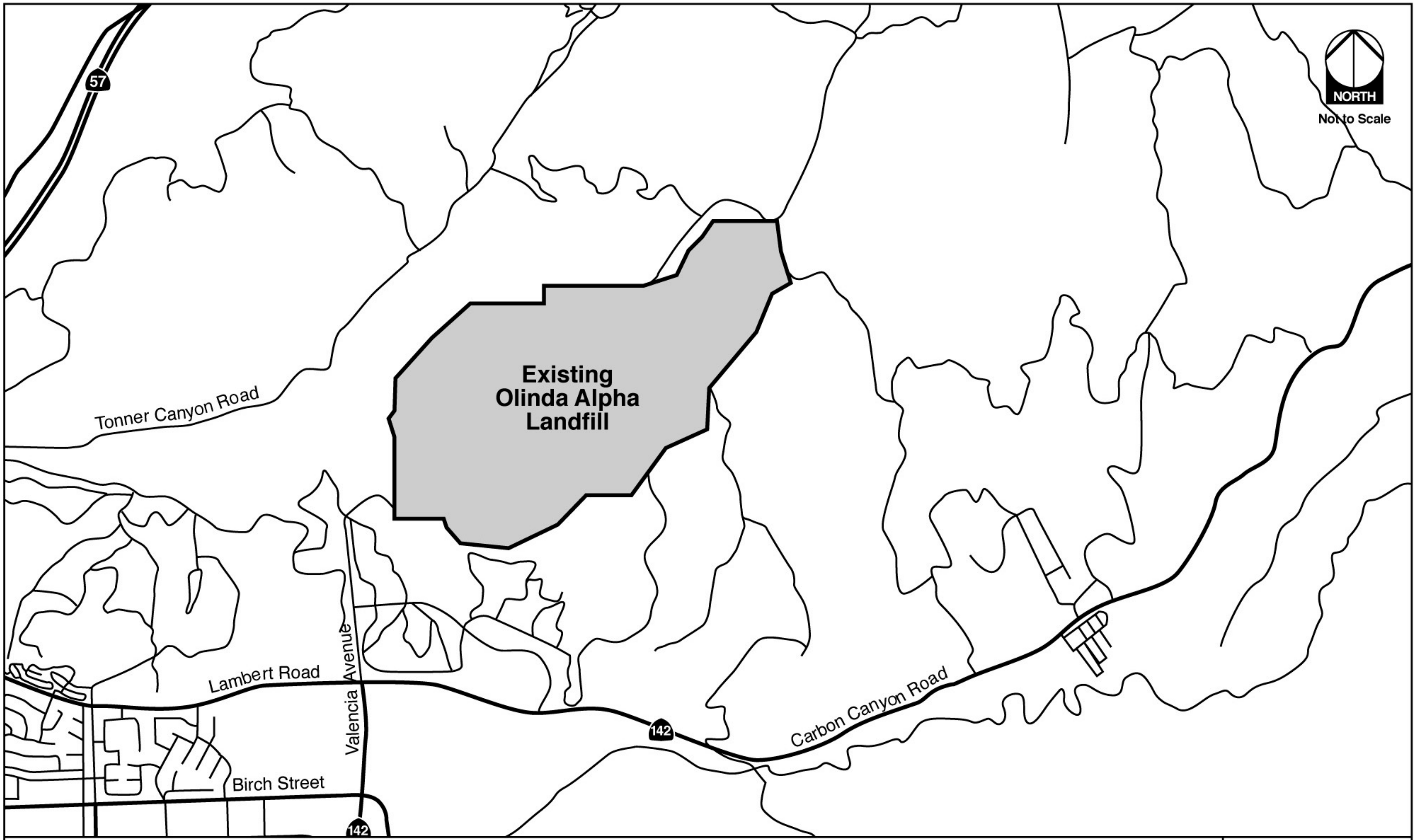
Existing Landfill Characteristics

Olinda Alpha Landfill

The Olinda Alpha Landfill is located at 1942 North Valencia Avenue near the City of Brea. This landfill opened in 1960. The site is comprised of 565 acres with approximately 420 acres permitted for refuse disposal. Access to the site is via Valencia Avenue as shown in Figure 2. The landfill is open Monday through Saturday from 6:00 A.M. to 7:00 A.M. for transfer trucks only and 7:00 A.M. to 4:00 P.M. for all commercial and non-commercial deliveries. Commercial haulers based both within and outside the County deliver to the site. Refuse disposal by private citizens is allowed and is limited to Orange County residents. Only municipal solid waste (MSW) is accepted at the landfill, although limited special wastes (i.e., tires) also are accepted. Hazardous materials such as asbestos, batteries, chemicals, paints, non-autoclaved medical waste and other substances considered hazardous are not accepted at this landfill.

A Memorandum of Understanding (MOU) between the County and the City of Brea limits daily waste disposal to an annual average of 7,000 tons per day (TPD). However, the Olinda Alpha Landfill's Solid Waste Facility Permit (SWFP) currently allows a daily maximum of 8,000 TPD of MSW. The IWMD is in the process of increasing the daily tonnage limit to 10,000 TPD for up to 36 days per year to allow for increased tonnage days. These increased tonnage days would be floating (not designated) and by the end of the year all 36 days may not be used. Unused floating days would not roll over to the next year. It is anticipated that most of the increased tonnage days will fall immediately preceding or following a holiday. The annual average TPD at the Olinda Alpha Landfill will remain at 7,000 TPD.

The landfill is required to comply with numerous landfill regulations from federal, state and local regulatory agencies. The landfill is also subject to regular inspections from the CIWMB and the Board's LEA, the RWQCB and the SCAQMD to assure compliance with applicable regulations. The current closure date for the landfill would be December 2013.



RELOOC Strategic Plan - Olinda Alpha Landfill Implementation

Olinda Alpha Landfill Location Map

Figure 2

Frank R. Bowerman Landfill

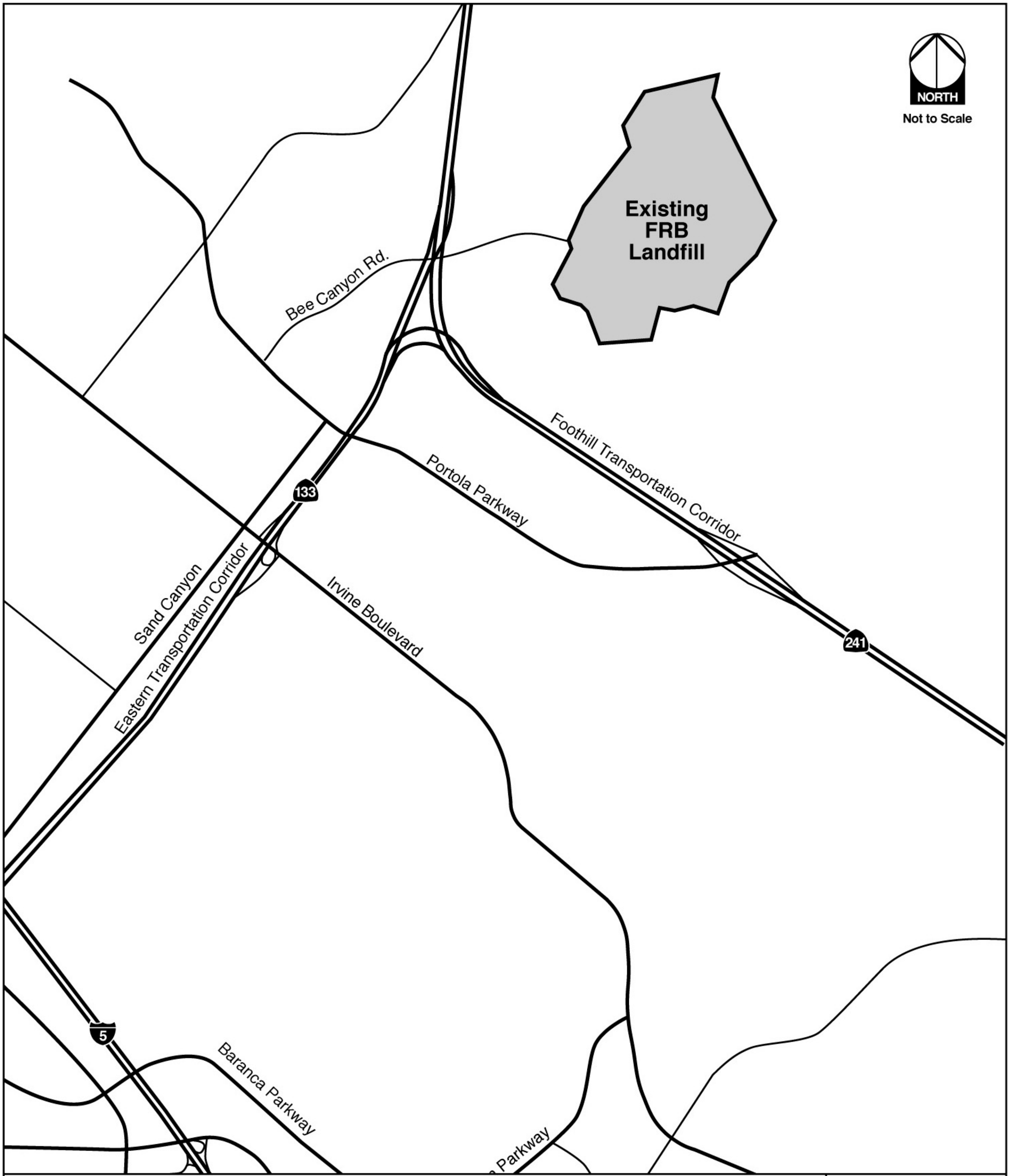
As shown in Figure 3, FRB Landfill is located at 11002 Bee Canyon Access Road in the City of Irvine. Access is available from the Santa Ana Freeway, (Interstate 5, I-5) or the San Diego Freeway (Interstate 405, I-405). The major cross streets are Sand Canyon and Portola Parkway. The facility is open Monday through Saturday, 7:00 A.M. to 4:00 P.M. for all commercial customers. Transfer trucks only are permitted from 4:00 P.M. to 5:00 P.M. Only MSW from commercial haulers and vehicles operating under commercial status are accepted at this landfill. Commercial status is verified by either showing a business license or current tax return to a fee booth attendant or participating in the County's deferred payment account process. Hazardous materials such as asbestos, batteries, chemicals, paints, medical waste and other substances considered hazardous are not accepted at this landfill.

Under the Settlement Agreement with the City of Irvine, the FRB Landfill is currently allowed to accept an annual average of 7,785 TPD (as of December, 2003) and can increase this average daily rate by 1.75 percent per year until it reaches a daily maximum of 8,500 TPD. The current SWFP for the FRB Landfill allows for the maximum daily tonnage limit of 8,500 TPD, but the IWMD is in the process of increasing the SWFP daily tonnage limit to 10,625 TPD to allow for up to 36 days of increased tonnage; similar to that discussed above for the Olinda Alpha Landfill. The landfill is required to comply with numerous landfill regulations from federal, state and local regulatory agencies. The landfill is subject to regular inspections from the CIWMB and the Board's LEA, the RWQCB and the SCAQMD to assure compliance with applicable regulations.

The FRB Landfill comprises approximately 725 acres with 341 acres permitted for refuse disposal. This landfill opened in 1990 and its current permit closure date is 2022 based on current operational assumptions for the future. A recent major landslide at the FRB Landfill affecting future disposal areas has caused IWMD to re-evaluate and re-design the site’s Master Plan for future development. As previously discussed, a separate EIR will be prepared for the new FRB Master Plan so as not to further delay the Olinda Alpha Landfill expansion approval process. Expansion of the FRB Landfill is, therefore, not being evaluated as part of this EIR 588. Existing permit conditions at the FRB Landfill are assumed for this project description. The currently proposed end use after landfill closure is open space.

Prima Deshecha Landfill

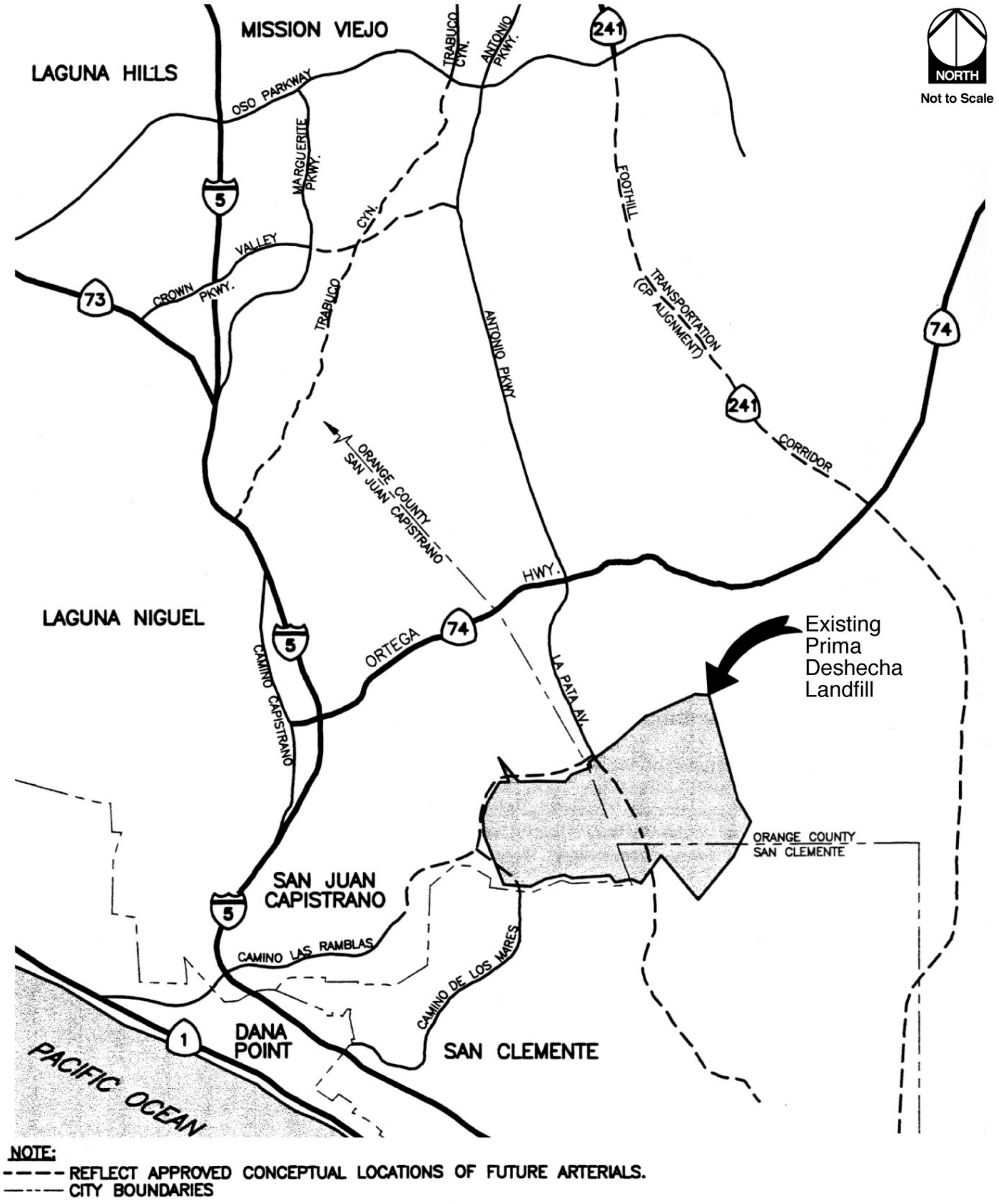
Prima Deshecha Landfill is located at 32250 La Pata Avenue as shown in Figure 4. Portions of the landfill property are in the City of San Juan Capistrano, the City of San Clemente and in County Unincorporated Area. The facility is open Monday through Saturday from 7:00 A.M. to 4:00 P.M. for all customers. However, commercial trucks and dump trucks are exclusively permitted from 4:00 P.M. to 5:00 P.M. MSW from commercial haulers and the public is accepted at this landfill. Public access is for Orange County citizens only while commercial haulers from within and outside the County deliver to the site. Commercial haulers from outside the County can deliver by Importation Agreement only. Commercial and public access is available from Ortega Highway and La Pata Avenue.



RELOOC Strategic Plan - Olinda Alpha Landfill Implementation

Frank R. Bowerman Landfill Location Map

Figure 3



RELOOC Strategic Plan - Olinda Alpha Landfill Implementation

Prima Deshecha Landfill Location Map

Figure

4

A limited amount of de-watered sewage sludge also is accepted at the landfill. Prima Deshecha Landfill is permitted to accept up to 4,000 TPD of MSW. The landfill is required to comply with numerous landfill regulations from federal, state and local regulatory agencies. The landfill is subject to regular inspections from the CIWMB and the Board's LEA, the RWQCB and SCAQMD to assure compliance with applicable regulations.

The Prima Deshecha Landfill comprises approximately 1,530 acres with 1,000 acres permitted for refuse disposal operations. The landfill was opened in 1976 and is scheduled to close in approximately 2067 based on the amended 2001 General Development Plan (GDP). The GDP for Prima Deshecha Landfill indicates a County regional park as its end use after landfill closure.

3.0 PROJECT OBJECTIVES

The objectives of the proposed project to expand the Olinda Alpha Landfill were derived from the RELOOC study goals and objectives and the RELOOC planning process and are as follows:

- Define future waste disposal system by 2004 to provide a basis for renegotiation of waste disposal agreements with cities.
- Ensure that the short-term disposal needs of the County’s Solid Waste System are met.
- Maximize capacity of the existing landfill.
- Ensure adequate revenue and maintain local control of waste disposal to provide consistent and reliable public fees/rates.
- Maintain efficient, cost effective and high quality IWMD operations.
- Minimize adverse environmental impacts.

4.0 PROJECT DESCRIPTION

Purpose of the Project

The Regional Landfill Options for Orange County effort is a long-range strategic planning program initiated by the County of Orange’s IWMD. The purpose of RELOOC is to assess the County’s existing disposal system capabilities and develop viable short and long-term solid waste disposal options for the County. As part of that endeavor, the County is considering a number of short-term improvements to existing municipal solid waste landfills operated by the County’s IWMD. The proposed project includes the vertical and horizontal expansion of the Olinda Alpha Landfill to meet the County’s short-term solid waste disposal needs.

The draft EIR will analyze the potential environmental impacts associated with the continued operation of the Olinda Alpha Landfill from 2013 to the estimated horizon year 2021. The potential environmental impacts associated with the current landfill operations through 2013 were analyzed in the Final EIR for the North County Landfill and Alternatives Technology Study (NOCLATS).

Proposed Modifications

The proposed project includes both a vertical and horizontal expansion of Olinda Alpha Landfill disposal prism. No change in the landfill property boundary is proposed. As proposed, the height of Olinda Alpha Landfill would be increased from its current permitted level of 1,300 feet above mean sea level (MSL) to 1,415 feet above MSL or a net vertical increase of 115 feet. The horizontal expansion would include landform modifications to the northeast part of the landfill site. This modification would expand the existing refuse footprint approximately 33 acres within the existing property boundary of the Olinda Alpha Landfill. The horizontal expansion would occur only in areas that have already been disturbed by landfill operations. Figure 5 shows the current permitted vertical and horizontal limits of Olinda Alpha Landfill. Figure 6 shows the proposed limits of the vertical and horizontal expansions at the landfill under the proposed project. The expanded landfill would ultimately accommodate disposal of an additional 12.3 million tons (MT) of MSW (as of 2003) and would extend the life of the landfill from its permitted closure date of 2013 to approximately 2021, based on current population projections, daily tonnage, compaction densities, approved landfill elevations and existing disposal technologies. The proposed project would not result in any increase to either the Maximum Daily Permitted Tonnage or the annual average daily tonnage limits for the landfill.

Phasing

The expansion of the Olinda Alpha Landfill would be implemented in phases and would not disturb all parts of the landfill sites at once. These phased areas of development currently are being evaluated and will be provided in the EIR.

On-site soil to be utilized for daily cover, road construction and other related uses is available at the Olinda Alpha Landfill through closure in 2013; the site currently accepts dirt and continues to stockpile on-site for future cover use beyond 2013. When on-site soil for cover is depleted at the Olinda Alpha Landfill, soil will need to be imported to the site. Truck traffic associated with soil import is anticipated to be less than or equal to import refuse truck traffic, which will cease in 2015. Fill and cover techniques at the landfill would be similar to the methods currently employed. Waste would be deposited, compacted and covered daily using appropriate landfilling methods.

Waste Composition

The waste composition at the Olinda Alpha Landfill under the proposed project would not differ from that currently received at this landfill. Non-hazardous MSW would comprise the waste stream and existing screening safety mechanisms would continue to be employed to ensure that hazardous materials are not accepted. Access to Olinda Alpha Landfill would remain unchanged, with access provided via Valencia Avenue. The total number of trips per day to the landfill for MSW disposal would not increase under the proposed project because the permitted daily tonnage accepted at Olinda Alpha Landfill would not increase compared to existing conditions. The additional traffic associated with soil import for cover use at Olinda Alpha Landfill by the year 2017 would be offset by the cessation of refuse importation.

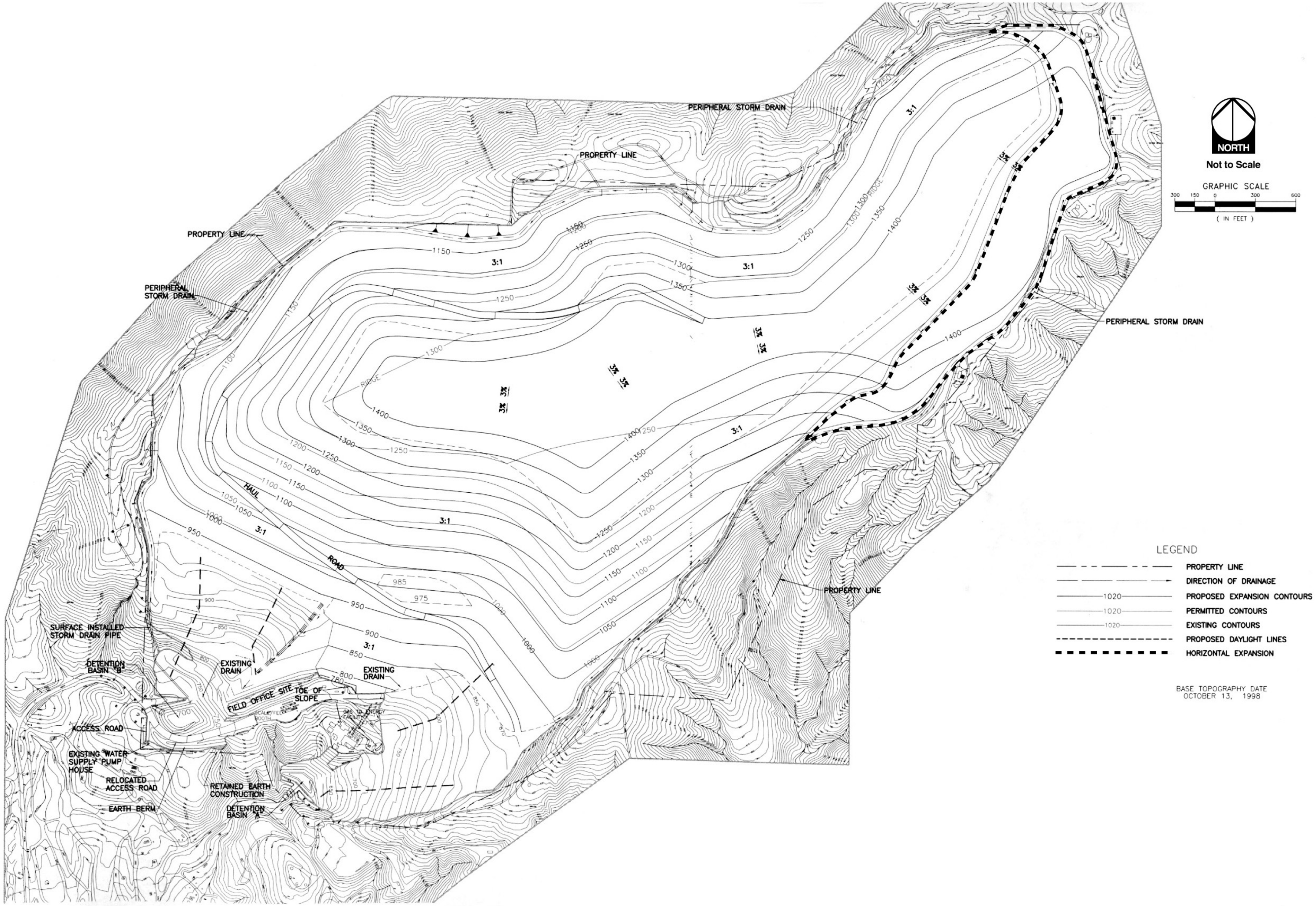
Source: Bryan A. Stirrat & Associates

RELOOC Strategic Plan - Olinda Alpha Landfill Implementation

Final Grading Plan (Permitted - 1996)

Figure

5



RELOOC Strategic Plan - Olinda Alpha Landfill Implementation

Proposed Expansion Plan Map

Figure
6

Other Project Features

The project may require that additional buildings and structures be constructed at the Olinda Alpha Landfill and may include additional gas control facilities. However, the number of employees at the landfill will not change with implementation of the proposed project. Employees would continue to perform landfill operations including administration, landfill cover operations and other landfill-related operations. The number and types of equipment utilized at the Olinda Alpha Landfill also would remain unchanged. The operating schedule at the Olinda Alpha Landfill would remain unchanged after implementation of the proposed project.

Surface water drainage systems, landfill gas collection and control systems, and leachate collection and recovery systems will be expanded, as necessary, to accommodate expansion of the Olinda Alpha Landfill.

5.0 ALTERNATIVES CONSIDERED

Section 15126.6(a) of the CEQA Guidelines indicates that "…an EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." Further, Section 15126(c) of the CEQA Guidelines notes, "…the range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects."

The alternatives to the proposed project, which would meet most of the defined project objectives, are described in the section following the No Project (No Action) Alternative:

5.1 ALTERNATIVE 1 - NO PROJECT (NO ACTION)

The No Project Alternative would include no action by the County of Orange. Under this Alternative, neither the vertical nor horizontal expansion at the Olinda Alpha Landfill would occur. All three County landfills would operate at their existing permitted capacities with no increase in long-term physical capacity or daily tonnage received at each respective landfill. These landfills would continue to operate based on their permitted capacity and closure dates. As such, under this Alternative, the Olinda Alpha Landfill would continue to receive up to an annual average of 7,000 TPD of MSW under an MOU between the City of Brea and IWMD and would operate until its permitted closure date of 2013. Under this Alternative importation of waste into the Orange County disposal system will end in 2013. Upon its closure, approximately 2,500 TPD of MSW, which is in excess of what could be accommodated at the FRB and Prima Deshecha landfills, would have to be accommodated at landfills outside of Orange County, since no increases in daily tonnage at FRB or Prima Deshecha landfills are assumed under the No Project Alternative. The projected excess TPD of MSW to be exported out of County is based on population projections for the system demand by 2021 and allowances for daily peak refuse inflow rates. Out-of-County landfills would have to be permitted to accept the excess tonnage from Orange County and may include El Sobrante Landfill in Riverside County and/or the Mid-Valley Landfill in San Bernardino County.

5.2 ALTERNATIVE 2 – TWO LANDFILL SYSTEM IN 2013 (PRIMA DESCHECHA DAILY TONNAGE INCREASE)

Assumptions

- Increase permitted TPD at Prima Deshecha Landfill to a maximum daily limit of 5,000 tons per day TPD and a daily maximum of 6,250 TPD for 36 increased tonnage days when Olinda Alpha Landfill closes in 2013.
- TPD at FRB Landfill remains at 8,500 TPD, as an annual average and 10,625 TPD as a daily maximum for increased tonnage days.
- No expansion at Olinda Alpha Landfill
- County importation at all landfills ceases in 2013.

This Alternative would include increasing the current maximum TPD at Prima Deshecha Landfill from 4,000 to 5,000 TPD as an annual average when Olinda Alpha Landfill closes at its permitted closure date of 2013. This increase would accommodate projections for the system demand in the EIR estimated horizon year 2021 based on forecasted population growth. A maximum daily TPD of 6,250 also is proposed to allow for up to 36 increased tonnage days anticipated mostly to fall on days immediately preceding or following a holiday. The FRB Landfill's permitted TPD received would remain unchanged at 8,500 TPD as a maximum daily limit and 10,625 TPD for 36 increased tonnage days.

Under this Alternative, no expansion or extension of Olinda Alpha Landfill's closure date would occur. All importation of waste from out of the County would cease in 2013 when there is no longer capacity in the system to accommodate imported waste. Prima Deshecha Landfill's 2001 General Development Plan remaining refuse capacity would remain unchanged at 77.6 MT (as of January 2002). However, the incremental increase of Prima Deshecha's in-flow waste stream from 4,000 to a maximum daily limit of 5,000 TPD and a maximum daily limit of 6,250 TPD for 36 increased tonnage days would accelerate its anticipated closure date from 2067 to approximately 2056 based on current population projections and existing disposal technologies. The accelerated closure date to 2056 results in a net reduction of 11 years.

Under this alternative, the number of truck trips to Prima Deshecha Landfill would increase although the duration of the trips would be reduced since the life of the landfill would be shortened.

Under this Alternative, the County's MOU with the Cities of San Juan Capistrano and San Clemente would need to be amended prior to 2013 to provide for the increase in annual average and maximum daily tonnages. Similarly, permits currently in-place with the CIWMB and other regulatory agencies with jurisdictional oversight for the landfill would need to be amended.

5.3 ALTERNATIVE 3 – TWO LANDFILL SYSTEM IN 2013 (FRANK R. BOWERMAN DAILY TONNAGE INCREASE)

Assumptions

- Increase permitted TPD at FRB Landfill to a maximum daily limit of 9,500 TPD and a daily maximum of 11,875 TPD for 36 increased tonnage days when Olinda Alpha Landfill closes in 2013.
- TPD at Prima Deshecha Landfill remains at a maximum daily limit of 4,000 TPD and is increased to allow for a daily maximum 5,000 TPD for 36 increased tonnage days when Olinda Alpha Landfill closes in 2013.
- No expansion at Olinda Alpha Landfill.
- County importation at all landfills ceases in 2013.

This Alternative would include increasing the current annual average TPD at FRB Landfill from 8,500 TPD to 9,500 TPD when Olinda Alpha Landfill closes on its permitted closure date in 2013. This increase would accommodate projections for the system demand in the EIR horizon year of 2021 based on forecasted population growth. A maximum daily TPD of 11,875 is also proposed to allow for up to 36 increased tonnage days anticipated to fall mostly on days immediately preceding or following a holiday. The Prima Deshecha Landfill's permitted TPD would remain unchanged at 4,000 TPD as an annual average and would be increased to allow for a daily maximum of 5,000 TPD to allow for up to 36 increased tonnage days anticipated to fall mostly on days immediately preceding or following a holiday.

Under this Alternative, no expansion or extension of Olinda Alpha Landfill's closure date would occur. All importation of waste from out of County would cease in 2013 when there no longer is capacity in the system to accommodate imported waste.

At present, the permitted closure date of the FRB Landfill is 2022. This alternative would accelerate the closure date to 2021 based on current population projections and existing disposal technologies. This accelerated closure date for the FRB Landfill just meets the horizon year goal of 2021 for this EIR. The accelerated closure date to 2021 results in a net reduction of one (1) year. Under this alternative, the number of truck trips to the FRB Landfill would increase although the duration of the trips would be reduced since the life of the landfill would be shortened by one year.

Under this Alternative, the County's existing Settlement Agreement with the City of Irvine would need to be amended prior to 2013 to provide for the increased tonnages in annual average and maximum daily tonnages. The County's MOU with the Cities of San Clemente and San Juan Capistrano would also need to be amended for an increase in the maximum daily tonnage. Similarly, permits currently in-place with the CIWMB and other regulatory agencies with jurisdictional oversight for the landfill would need to be amended.

6.0 RESPONSIBLE AGENCIES

The agencies listed below have oversight over the project or may be responsible for issuing permits for the proposed project.

Federal Agencies

- United States Environmental Protection Agency (EPA).

State Agencies

- California Integrated Waste Management Board (CIWMB).
- California Water Resources Control Board (CWRCB).

Regional Agencies

- Regional Water Quality Control Board - Santa Ana Region (RWQCB).
- South Coast Air Quality Management District (SCAQMD).

County Agencies

- Orange County Solid Waste Local Enforcement Agency (LEA).
- Orange County Health Care Agency (OCHCA).
- Orange County Board of Supervisors (OCBS).
- Orange County Fire Authority (OCFA).
- Orange County Planning Department (OCPD).

City Agencies

- City of Brea.

GLOSSARY OF ACRONYMS

ACOE	United States Army Corps of Engineers
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CIP	Community Involvement Program
CIWMB	California Integrated Waste Management Board
EIR	Environmental Impact Report
FRB	Frank R. Bowerman
FSR	Feasibility Study Report
HHW	household hazardous waste
I-5	Santa Ana Freeway, Interstate 5
I-405	San Diego Freeway, Interstate 405
IWMD	Integrated Waste Management Department
LEA	Local Enforcement Agency
LFG	Landfill gas
MCY	million cubic yard
MOU	Memorandum of Understanding
MSL	mean sea level
MSW	municipal solid waste
MT	million tons
NOP	Notice of Preparation
OCBS	Orange County Board of Supervisors
OCFA	Orange County Fire Authority
OCHCA	Orange County Health Care Agency
OCLEA	Orange County Health Care Agency, Environmental Health Division
OCPD	Orange County Planning Department
PFRD	Orange County Public Facilities & Resources Department
RELOOC	Regional Landfill Options for Orange County
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SWFP	Solid Waste Facilities Permit

SWWG	Orange County City Managers Association’s Solid Waste Working Group
TPD	tons per day
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
WDA	Waste Disposal Agreements
WDR	Waste Discharge Requirements

APPENDIX B
NOP DISTRIBUTION LIST

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4490 Von Karman
Newport Beach CA 92660

Casa Blanca Condominiums
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San Clemente CA 92673

Del Cabo Properties, Inc.
Dayton Meyer
30100 Crown Valley Parkway, Suite 18
Laguna Niguel CA 92677

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David Weigand
960 Calle Amanecer
San Clemente CA 92673

Flora Vista Sub Association
Dave Mason
29B Technology Drive, Suite 100
Irvine CA 92618

Forster Ranch Master HOA
Marlene Danielson
960 Calle Amanecer
San Clemente CA 92673

Hidden Mountain Estates HOA
Debbie Stinson
16845 Von Karman, No. 200
Irvine CA 92606

Hidden Mountain HOA
Tina Gustave
2 Corporate Park, Suite 200
Irvine CA 92606

Hunters Creek HOA
Al Smith
647 Camino de los Mares, Suite 226
San Clemente CA 92673

Laing Forster Ranch
Ken Nishikawa
915 Calle Amanecer, #C
San Clemente CA 92673

Los Corrales HOA
Art Staudenbaur
8251 Paseo Corrales
San Juan Capistrano CA 92675

Los Vista HOA
Pat Gummeson
2 Corporate Park, Suite 200
Irvine CA 92606

Marblehead Master
Luann Dawson
P.O. Box 2099
Capistrano Beach CA 92624

Meadowwood Condominiums
P.O. Box 2099
Capistrano Beach CA 92624

Mesa Vista North HOA
Carol Huggins
16845 Von Karman, No. 200
Irvine CA 92606

Ocean Hills HOA
18 Technology Drive, Suite 104
Irvine CA 92618

Rancho Del Rio Master Association
Dave Mason
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Irvine CA 92618

Rancho San Clemente Master HOA
Christine Caraway
2131 Las Palmas Drive, Suite A
Carlsbad CA 92009

Rancho San Juan HOA
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San Clemente CA 92673

San Juan Mesa Verde HOA
Vic Simpson
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Sea Point Estates
18 Technology Drive, Suite 104
Irvine CA 92618

Tacayo Canyon
Eileen Woodward
1396 Felipe
San Clemente CA 92673

Tacayo Hills
647 Camino De Los Mares, Suite 226
San Clemente CA 92672

Tacayo Ridge
960 Calle Amanecer
San Clemente CA 92673

Villamar Association
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San Clemente CA 92672

Amber Hill Homeowners Assoc
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Birchlane Homeowners Assoc
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3711 N. Harbor Blvd., Ste. D
Fullerton, CA 92835

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Bill Green, President
231 W. Ash St.
Brea, CA 92821

Brea Sommerset Homeowners
Jim Foreman, President
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Country Road Homeowners HOA
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Margie Sepulveda, President
North Hills Homeowners
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Park Pasco Homeowners HOA
Lee Jackson, Property Manager
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The Arbors Homeowners Assoc
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Birchlane Homeowners HOA
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Brea Terrace Homeowners HOA
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Community Assoc Country Hills
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Brea, CA 92822-0067

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North Hills Tennis & Swim Club
Ann Tanner, President
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Trans Pacific Management
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Santa Ana CA 92705

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Huntington West Property Management
PO Box 1098
Westminster CA 92684

c/o Parkside Maintenance
Villageway Management
PO Box 4708
Irvine CA 92616

c/o Seaport Maintenance
Villageway Management
PO Box 4708
Irvine CA 92616

Homeowner Association President
c/o Seasons Maintenance
23726 Birtcher
Lake Forest CA 92630-1771

c/o Woodbridge Shores
Association Services
PO Box 4811
Irvine CA 92616

c/o Shoreline Maintenance
TPMS
7400 Center, Suite #205
Huntington Beach CA 92647

c/o Woodbridge Somerset Maintenance
Villageway Property Management
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Irvine CA 92616

Homeowner Association President
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PCM 23726 Birtcher
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Villageway Management
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c/o Willow Creek Maintenance
EMMONS
PO Box 19530
Irvine CA 92623

c/o Willow Grove Maintenance
Progressive Comm. Management
27405 Puerta Real, Suite#300
Mission Viejo CA 92691

c/o Willows Maintenance
Western Property Management
1820 E. Garry, Suite #104
Santa Ana CA 92705

Homeowner Association President
c/o Woodbridge Village Master
31 Creek Road
Irvine CA 92604

c/o Woodbridge Parkway
Action Property
29B Technology B-100
Irvine CA 92618-2374

c/o Yale Estates (East)
Trans Pacific Management
2112 E. Fourth, Suite #200
Santa Ana CA 92705

c/o Yale Maintenance Association
Tritz Professional Management Co.
7400 Center Avenue, Suite #205
Huntington Beach CA 92647

c/o Rancho San Joaquine
Keystone Pacific
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Irvine CA 92606-4920

c/o Villas at Rancho San Joaquin
Lordon Management
1275 Center Court Drive
Covina CA 91724

c/o Vista San Joaquin
Villageway Management
PO Box 4708
Irvine CA 92616

c/o Park Crest Association
Seabreeze Management
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Irvine CA 92612

c/o Terrace Community Association
Villageway Management
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Irvine CA 92616

Homeowner Association President
c/o University Community Association
4530 Sandburg Way
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Homeowner Association President
c/o Parkside Community Association
23726 Birtcher
Lake Forest CA 92630-1771

Homeowner Association President
c/o Village Park Community Association
23726 Birtcher
Lake Forest CA 92630-1771

c/o Broadmoor Campus View
Villageway Management
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c/o Ridgeview Maintenance Association
23726 Birtcher
Lake Forest CA 92630-1771

c/o Sierra Bonita Association
Seabreeze Property Management
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Alisa Viejo CA 92656

c/o Montilla
Action Property Management
29B Technology, Suite #B-100
Irvine CA 92618-2374

c/o The Cricket Club Maintenance Corp
Concord Capital
2900 Bristol, Suite #B-303
Costa Mesa CA 92626-5952

c/o The Cricket Club Maintenance Corp
Concord Capital
2900 Bristol, Suite #B-303
Costa Mesa CA 92626-5952

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Irvine CA 92696

c/o Orange Tree Master
Seabreeze Management
39 Argonaut, Suite #100
Aliso Viejo CA 92656

c/o Orange Tree Patio Homes
Seabreeze Management
39 Argonaut, Suite #100
Aliso Viejo CA 92656

c/o Orangetree Terrace
Seabreeze Management
39 Argonaut, Suite #100
Aliso Viejo CA 92656

c/o Orangetree Villas
Seabreeze Management
39 Argonaut, Suite #100
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Irvine CA 92620-4511

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Progressive Property Management
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Santa Ana CA 92705

c/o Fairfield Maintenance
Western Property Management
1820 E. Garry, Suite #104
Santa Ana CA 92705

c/o Garden Estates Maintenance
Cardinal Property Management
1290 N. Hancock, Suite #103
Anaheim CA 92807

c/o Hollygrove Maintenance
EMMONS
17300 Redhill, Suite #210
Irvine CA 92614

c/o Ivyhill Maintenance
Western Property Management
1820 E. Garry, Suite #104
Santa Ana CA 92705

c/o Lakeglen Maintenance
Western Property Management
1820 E. Garry, Suite #104
Santa Ana CA 92705

c/o Lake-Ridge Association
Trans-Pacific Management
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Santa Ana CA 92705

c/o Lakeshore Maintenance
Golden West Property
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Anaheim CA 92801

c/o Lakeside Maintenance
Western Property Management
1820 E. Garry, Suite #104
Santa Ana CA 92705

c/o Lakeview Maintenance
Western Property Management
1820 E. Garry, Suite #104
Santa Ana CA 92705

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The Arbors HOA
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City of Industry CA 91744

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City of Industry Public Works
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Neuvo Energy Company
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PF&RD/Harbors, Beaches and Parks
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Sacramento CA 94296-0001

Texaco California, Inc.
5201 Truxtun Ave., #100
Bakersfield CA 93309-0640

APPENDIX C
COMMENTS LETTERS RECEIVED ON THE NOP

STATE OF CALIFORNIA
Governor's Office of Planning and Research
State Clearinghouse and Planning Unit

Arnold
Schwarzenegger
Governor

Jan Boel
Acting Deputy
Director

Notice of Preparation

January 13, 2004

To: Reviewing Agencies

Re: Regional Landfill Options for Orange County (RELOOC) Strategic Plan
SCH# 2004011055

Attached for your review and comment is the Notice of Preparation (NOP) for the Regional Landfill Options for Orange County (RELOOC) Strategic Plan draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Ray Hull
Orange County
320 North Flower Steet, Suite 400
Santa Ana, CA 92702-4048

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan

Scott Morgan
Associate Planner, State Clearinghouse

Attachments
cc: Lead Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
(916)445-0613 FAX(916)323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2004011055
Project Title Regional Landfill Options for Orange County (RELOOC) Strategic Plan
Lead Agency Orange County

Type NOP Notice of Preparation

Description Proposed vertical and horizontal expansion of Olinda Alpha Landfill to meet the County's short and long term solid waste disposal needs. Project alternatives may include out-of-county waste export and increasing tons-per-day of municipal solid waste at active Orange County landfills.

Lead Agency Contact

Name Ray Hull
Agency Orange County
Phone 714-834-7202 *Fax*
email
Address 320 North Flower Steet, Suite 400
City Santa Ana *State* CA *Zip* 92702-4048

Project Location

County Orange
City Brea
Region
Cross Streets Lambert Road (South) and Valencia Avenue (Southwest)
Parcel No.
Township 3S *Range* 9W *Section* 8 *Base*

Proximity to:

Highways SR-57
Airports
Railways
Waterways
Schools
Land Use

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Noise; Public Services; Recreation/Parks; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Water Quality; Water Supply; Landuse

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Reviewing Agencies Resources Agency; Department of Conservation; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Game, Region 5; Native American Heritage Commission; California Highway Patrol; Caltrans, District 12; Air Resources Board, Major Industrial Projects; Integrated Waste Management Board; State Water Resources Control Board; Department of Toxic Substances Control; Regional Water Quality Control Board, Region 8

Date Received 01/13/2004 *Start of Review* 01/13/2004 *End of Review* 02/11/2004

NOP Distribution List County: ORANGE SCH# 2004011055

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☒ **Dept. of Conservation**
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Environmental Document Coordinator
San Francisco Bay Region (2)

☐ **RWQCB 3**
Central Coast Region (3)

☐ **RWQCB 4**
Jonathan Bishop
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☐ **RWQCB 5S**
Central Valley Region (5)

- ☐ **RWQCB 5F**
  Central Valley Region (5)
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- ☐ **RWQCB 5R**
  Central Valley Region (5)
  Redding Branch Office

☐ **RWQCB 6**
Lahontan Region (6)

- ☐ **RWQCB 6V**
  Lahontan Region (6)
  Victorville Branch Office

☐ **RWQCB 7**
Colorado River Basin Region (7)

☒ **RWQCB 8**
Santa Ana Region (8)

☐ **RWQCB 9**
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☐ Other ______________
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Last Updated on 01/12/04

·Reference sch# 2002091031·

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SCH# 2004011055

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North Coast Region (1)

☐ **RWQCB 2**
Environmental Document Coordinator
San Francisco Bay Region (2)

☐ **RWQCB 3**
Central Coast Region (3)

☐ **RWQCB 4**
Jonathan Bishop
Los Angeles Region (4)

☐ **RWQCB 5S**
Central Valley Region (5)

- ☐ **RWQCB 5F**
  Central Valley Region (5)
  Fresno Branch Office
- ☐ **RWQCB 5R**
  Central Valley Region (5)
  Redding Branch Office

☐ **RWQCB 6**
Lahontan Region (6)

- ☐ **RWQCB 6V**
  Lahontan Region (6)
  Victorville Branch Office

☐ **RWQCB 7**
Colorado River Basin Region (7)

☒ **RWQCB 8**
Santa Ana Region (8)

☐ **RWQCB 9**
San Diego Region (9)

☐ Other ____________________

____

Last Updated on 01/12/04

HILLS FOR EVERYONE

Southern California comes together at the Puente - Chino Hills

Los Angeles County
Orange County
Riverside County
San Bernardino County

January 21, 2004

Mr. Ray Hull
County of Orange
Integrated Waste Management Department
Office of Public Affairs
320 North Flower Street Suite 400
Santa Ana, CA 92703

RE: Regional Landfill Options for Orange County (RELOOC) Strategic Plan – Olinda Alpha Landfill Implementation – DEIR #588

Dear Mr. Hull,

For over twenty-five years, Hills For Everyone has worked to create and complete Chino Hills State Park. We are now working to connect the remaining open space in the Puente-Chino Hills Wildlife Corridor to ensure the long-term health of this ecosystem (see attached map). We appreciate the opportunity to comment on the aforementioned project.

CEQA requires agencies to prepare a cumulative impact analysis in evaluating the impact of a proposed project. Both federal and state courts have repeatedly underscored the importance of the cumulative impacts analysis. CEQA requires a discussion of the environmental impacts, both direct and indirect, of the proposed project in combination with all "closely related past, present and reasonably foreseeable probable future projects." Guideline Section 15355 (b); see also Cal. Pub. Res. Code 21083 (b); Guidelines Sections 15021 (a) (2), 15130 (a), 15358. The discussion of cumulative impacts must "reflect the severity of the impacts and the likelihood of their occurrence" (Guidelines 15130 (b)), and must document its analysis with references to specific scientific and empirical evidence. Mountain Lion Coalition v. California Fish and Game Commission, 214 Cal. App.3d 1043, 1047,1052 (1989).

Our overarching concern is the continued fragmentation of habitat and the creation of edge effects by the landfill in this region of the hills and the cumulative impacts on the resources on the adjacent Chino Hills State Park. We were surprised to see that biological resource was not going to be addressed in the Draft Environmental Impact Report. We urge that you do so. Not only does Chino Hills State Park now lie next to the landfill on the east but the Habitat Conservation Plan created for the Shell project in Yorba Linda also lies directly across Carbon Canyon Road to the south. In addition, Significant Ecological Area # 15 in the Los Angeles County General Plan lies due north of the project. The Department of Fish and Game has designated the same land as Significant Natural Area # 94. The list of potential impacts on this resource rich landscape is lengthy even though the footprint will remain on land owned by the County. For example, we note the large flock of seagulls and other birds that visit the dump daily. When it is closed on Sunday and they have nowhere to feed, they can have a significant impact on wildlife/bird populations and habitats in neighboring natural lands including the State Park.

The last time the landfill was expanded, the effort to connect the Puente-Chino Wildlife Corridor effort had not yet begun. In the meantime scientists have taught us of the need for connectivity to protect the resources for the long term. This region is a "Hot Spot of Biodiversity," critical habitat for the California gnatcatcher and a "Missing Linkage" according to a report performed by San Diego Zoological Society and others. Now we also know that over $200 million has been invested in saving land in this ecosystem that the Olinda Landfill sits in the midst of (see attachment). Once the landfill is closed and restored to a natural area you can see how it will serve as a link in this region-wide Corridor.

Please keep me informed of any and all contracts, notices, hearings, staff reports, briefings, meetings and other matters related to the proposed project. We are pleased to respond to any questions you may have concerning our comments on the NOP. I can be reached at (714) 996-0502.

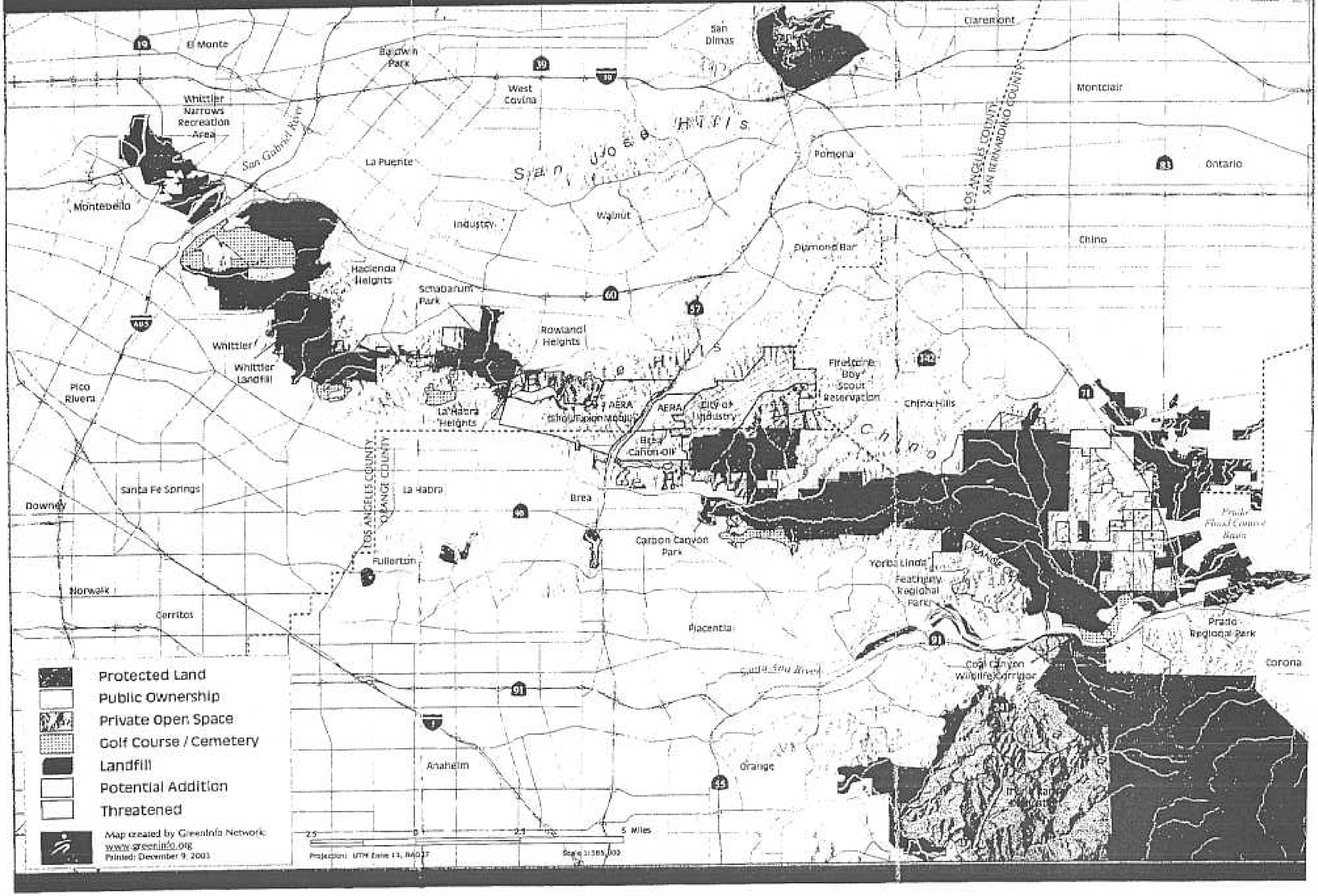
Very Truly Yours,

Claire Schlotterbeck

Claire Schlotterbeck
Executive Director

Enclosures

Open Space in the Puente-Chino Hills Wildlife Corridor



Map created by GreenInfo Network
www.greeninfo.org
Printed: December 9, 2001

PUBLIC INVESTMENTS
IN THE PUENTE-CHINO HILLS WILDLIFE CORRIDOR

Public Agency Acquisition Investments

Public Agency Landowner	Acquisition Date(s)	Total Acreage	Actual Public Investment	Estimated Current Value of Properties
City of Whittier	1994 - 1998	1723	15,086,500	$15,336,500
City of Yorba Linda*	N/A	170*		$2,550,000
County Sanitation Districts of Los Angeles County*	N/A	225*		$2,700,000
Los Angeles County Department of Parks and Recreation	1960-'80	583	3,735,000	$7,000,000
Los Angeles County Department of Public Works	N/A	35		$700,000
Orange County Department of Harbors, Beaches, and Parks	N/A	729		$14,580,000
Puente Hills Landfill Native Habitat Preservation Authority	1996-2002	1811	27,848,954	27,966,454
Mountains Recreation and Conservation Authority	1997	200	2,250,000	$2,250,000
CA Department of Parks and Recreation	1982-'96	11,770	62,443,972	$62,443,972
CA Department of Parks and Recreation & U.S. Fish & Wildlife Service	2000-2001	685	43,500,000	$63,500,000
Army Corps of Engineers	N/A	124		$1,860,000
	TOTAL	17,671 ac.	$154,864,426	$200,886,926

* Property dedicated as public open space as a result of the regulatory process.

3- 5 Year Acquisition Visions:
Potential Open Space to be Acquired by Public Agencies

Public Agency	Funding Source	Total Acreage	Estimated Public Investment
Puente Hills Landfill Native Habitat Preservation Authority	Los Angeles County tipping fees	1,150	$12,500,000
Wildlife Corridor Conservation Authority	Los Angeles County Proposition A	3,000	$10,000,000
City of Brea	Rivers & Mountains Conservancy	527	$3,000,000
CA Department of Parks and Recreation	EEMP, Private land conservancy	160	$1,924,000
	TOTAL	7367	$27,424,000

Restoration Investment by Public Agencies

Public Agency	Years of Active Restoration	Public Investment
CA Department of Parks and Recreation	12	$275,550
Puente Hills Landfill Native Habitat Preservation Authority	2	$92,000
Mountains Recreation and Conservation Authority	2	$107,000
CA Department of Transportation (CalTrans)	2	(minimum)160,000
City of Whittier	2	N/A
Los Angeles County Department of Parks and Recreation	N/A	N/A
Orange County Harbors, Beaches and Parks	N/A	N/A
	TOTAL	$634,550

GRAND TOTAL **$228,945,476**

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road
Carlsbad, California 92009

In Reply Refer To:
FWS-OR-3724.1

JAN 2 3 2004

Linda Hagthrop
County of Orange
Integrated Waste Management Department
Office of Public Affairs
320 North Flower Street, Suite 400
Santa Ana, California 92703

Re: Notice of Preparation of an Environmental Impact Report for Regional Landfill Options for Orange County (RELOOC) Strategic Plan – Olinda Alpha Landfill Implementation, County of Orange, California

Dear Ms. Hagthrop:

We have reviewed the above referenced Notice of Preparation (NOP) for an Environmental Impact Report (EIR) for the expansion of the Olinda Alpha Landfill, as described in the Regional Landfill Options for Orange County (RELOOC) Strategic Plan for the County of Orange, California. This NOP was received on January 12, 2004. The proposed project would involve the vertical and horizontal expansion of the Olinda Alpha Landfill to allow it to operate until 2021 instead of 2013.

We offer the following comments and recommendations regarding project-associated biological impacts based on our review of the NOP and our knowledge of declining habitat types and species within Orange County. We provide these comments in keeping with our agency's mission to work "with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people." Specifically, we administer the Endangered Species Act (Act) of 1973, as amended. We also provide comments on public notices issued for a Federal permit or license affecting the Nation's waters pursuant to the Clean Water Act.

To facilitate the evaluation of the proposed project from the standpoint of fish and wildlife protection, we request that the EIR contain the following specific information:

1. A description of the environment in the vicinity of the project from both a local and regional perspective, including an aerial photograph of the area with the project site outlined.

2. A complete discussion of the purpose and need for the project and each of its alternatives.

3. A complete description of the proposed project, including the limits of development, grading, and fuel modification zones.

4. Quantitative and qualitative assessments of the biological resources and habitat types that will be impacted by the proposed project and its alternatives. An assessment of direct, indirect, and cumulative project impacts to fish and wildlife associated habitats, including growth-accommodating effects of the project (e.g., increased population, increased development, increased traffic). All facets of the project (e.g., construction, implementation, operation, and maintenance) should be included in this assessment. Proposed developments in the surrounding area should be addressed in the analysis of cumulative impacts.

   This assessment should include a list of Federal candidate, proposed, or listed species; State-listed species; and locally sensitive species that are on or near the project site, including a detailed discussion of these species and information pertaining to their local status and distribution. We are particularly interested in any and all information and data pertaining to potential impacts to populations of federally listed species.

   The analysis of impacts to biological resources and habitat types should include detailed maps and tables summarizing specific acreages and locations of all habitat types, as well as the number and distribution of all Federal candidate, proposed, or listed species; State-listed species; and locally sensitive species, on or near the project site that may be affected by the proposed project or project alternatives.

5. A detailed discussion of measures to be taken to avoid, minimize, and offset impacts to biological resources.

6. A detailed analysis of impacts of the proposed project on the movement of wildlife and measures proposed to avoid, minimize, and offset impacts to wildlife movement.

7. An assessment of potential impacts to wetlands and jurisdictional waters of the United States. Section 404 of the Clean Water Act prohibits the unauthorized discharge of dredged or fill material into such waters, including wetlands. This section also provides that the U.S. Army Corps of Engineers (Corps) may issue permits for discharges of dredged or fill material into jurisdictional waters and wetlands. Potential areas of Corps jurisdiction should be evaluated and wetlands should be delineated using the methodology set forth in the Corps' Wetland Delineation Manual (Environmental Laboratory 1987). The EIR should disclose all impacts to jurisdictional waters and wetlands, and proposed measures to be taken to avoid and minimize impacts, and mitigate unavoidable impacts.

We appreciate the opportunity to comment on the referenced NOP. Should you have any questions pertaining to these comments, please contact Jonathan Snyder of my staff at (760) 431-9440.

Sincerely,

For Karen A. Goebel
Assistant Field Supervisor

San Joaquin Hills
Corridor Agency

Chairwoman:
Linda Lindholm
Laguna Niguel

TRANSPORTATION CORRIDOR AGENCIES

Foothill/Eastern
Corridor Agency

Chairman:
Peter Herzog
Lake Forest

January 16, 2004

Ms. Linda Hagthrop
RELOOC Project Manager
County of Orange
Integrated Waste Management Department
Office of Public Affairs
320 North Flower Street, Suite 400
Santa Ana, CA 92703

Subject: Notice of Intent to Prepare Draft Environmental Impact Report #588

Dear Ms. Hagthrop,

The Transportation Corridor Agencies (TCA) wishes to thank you for the opportunity to review and comment on the Notice of Preparation for the Regional Landfill Options for Orange County (RELOOC) Strategic Plan-Olinda Alpha Landfill Implementation project. Please note that the TCA previously provided comments in 2002 on the proposed project and would like to have those as well as the following additional comments incorporated into the Draft EIR.

1. The figures referenced in the January 8, 2004, NOP were not included in the document for review. The TCA previously provided comment regarding some inaccuracies related to the maps contained in the original NOP and would like to verify that the maps have been corrected.

2. The TCA would like to review any future documents related to the proposed project and requests continued coordination on projects near the Toll Roads.

Should you have any questions regarding this letter, please contact me at (949) 754-3475.

Sincerely,

Valarie McFall
Principal Environmental Analyst

Walter D. Kreutzen, Chief Executive Officer

125 PACIFICA, SUITE 100, IRVINE CA 92618-3304 • P.O. BOX 53770, IRVINE CA 92619-3770 • 949/754-3400 FAX 949/754-3467
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San Joaquin Hills
Corridor Agency

Chairwoman:
Linda Lindholm
Laguna Niguel

TRANSPORTATION CORRIDOR AGENCIES

Foothill/Eastern
Corridor Agency

Chairman:
Scott Diehl
San Clemente

November 12, 2002

Ms. Linda Hagthrop
RELOOC Project Manager
County of Orange
Integrated Waste Management Department
Office of Public Affairs
320 North Flower Street, Suite 400
Santa Ana, CA 92703

Subject: Notice of Preparation

Dear Ms. Hagthrop,

The following are comments on the Integrated Waste Management Department NOP regarding the Regional Landfill Options for Orange County (RELOOC) Phase 1:

1. Figure 1, Orange County Landfills. State Routes 241 and 133 are incorrectly shown as "231" on the map. Road identification needs to be corrected.

2. Figure 4, Prima Deshecha Landfill Location Map. The map incorrectly identifies the proposed extension of the Foothill Transportation Corridor -- South (FTC-South), State Route 241 as the "CP Alignment." This alignment is now referred to as the Far East Corridor Complete Alternative. As discussed below there are now also additional alignments that are being studied for the extension of the FTC-South that need to be included in this map and evaluated as part of the Draft Environmental Impact Report for the RELOOC project.

3. The Foothill/Eastern Transportation Corridor Agency (TCA) is currently preparing the Environmental Impact Statement/Subsequent Environmental Impact Report (EIS/SEIR) for the South Orange County Transportation Infrastructure Improvement Project (SOCTIIP), which will study various transportation corridor improvements in southern Orange County. TCA submitted a SOCTIIP Notice of Preparation (NOP) for public and agency review dated June 7, 2002, and a copy is attached for your information. The SOCTIIP NOP shows several proposed alignments to extend the FTC-South, which cross the Prima Deshecha Landfill and have the potential to impact landfill operations. These FTC-South alignments should be included for consideration in the RELOOC EIR #558.

Walter D. Kreutzen, Chief Executive Officer
125 PACIFICA, SUITE 100, IRVINE CA 92618-3304 • P.O. BOX 53770, IRVINE CA 92619-3770 • 949/754-3400 FAX 949/754-3467
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Certain alternatives proposed in the NOP specify an increase in the amount of tons per day (TPD) allowed at the Prima Deshecha Landfill, which would constitute an increase in the amount of vehicle trips as well. The TCA's proposed FTC-South project could easily accommodate this increase. However, the Agency requests the County coordinate with us and supple traffic data for inclusion into your environmental studies currently underway.

Sincerely,

Macie Cleary-Milan

Macie Cleary-Milan
Deputy Director, Environmental and Planning

Enclosures

cc:

BREA
CALIFORNIA

City of Brea

February 3, 2004

Mr. Ray Hull
RELOOC Project Manager
County of Orange
Integrated Waste Management Department
320 N. Flower Street
Suite 400
Santa Ana, CA 92703

SUBJECT: COMMENTS ON NOP FOR RELOOC EIR

Dear Mr. Hull:

I am writing in response to the County's Notice of Preparation for the Environmental Impact Report for the RELOOC project. The City of Brea appreciates the opportunity to comment on the scope of the EIR. Generally, we feel the EIR must provide analysis and mitigation of all potential impacts that may affect the City of Brea, with special emphasis on any anticipated impacts to Brea residents. These include a focus in the following areas:

Traffic – The EIR should provide a comprehensive analysis of traffic impacts associated with the project. Specific emphasis on truck traffic impacts needs to be explored. Associated impacts such as noise, vibration, and air quality (particularly related to diesel trucks) also merit emphasis in the document. Information should include specifics on anticipated daily trips and impacts to intersections and roadways within the City of Brea and the surrounding communities.

Air Quality – Appropriate analysis related to not only vehicle emissions associated with landfill activity, but also of any on-going effects of landfill operation to air quality should be analyzed. A specific discussion on odors is merited, particularly as it relates to new nearby residential land uses and any impact. Air Quality discussion regarding on-site power generation equipment is also desired.

Aesthetics – The EIR should provide a through discussion of aesthetic impacts anticipated with the proposed vertical and horizontal expansion of the landfill. A comprehensive view shed analysis is merited. Appropriate mitigation measures, including landscaping, designed to visually blend the landfill into the natural surrounding landscape should be proposed for implementation.

City Council **John Beauman** *Mayor* **Bill Lentini** *Mayor Pro Tem* **Roy Moore** *Councilmember* **Bev Perry** *Councilmember* **Marty Simonoff** *Councilmember*
Civic & Cultural Center • 1 Civic Center Circle • Brea, California 92821-5732 • 714/990-7600 • FAX 714/990-2258

Noise – In addition to traffic noise, the EIR should analyze other noise issues associated with landfill operations. These include noise from trash moving equipment, graders, etc. which operate on-site. Additionally, a review of COGEN electrical generators and other similar equipment which operate at the site should be included. Appropriate mitigation measures should be proposed wherever significant impacts are anticipated. Mitigation of any anticipated "nuisance noise" (less than significant, but audible to near-by residents) should also be considered within any proposal to modify the landfill.

Hydrology – The EIR should provide discussion of potential impacts to hydrology/drainage/water quality, particularly as they relate to nearby residential uses (e.g. potential for leaching and impact to landscaping on nearby properties).

Hazards – The EIR should provide a comprehensive discussion of the potential for health impacts, particularly as they relate to nearby residential land uses. Specific discussion of the potential for impacts as they may differentiate between adults and children is desired.

Biology—The City's General Plan contains Goals and Policies related to preserving and maintaining wildlife and animal movement corridors as well as preserving open space and natural habitat and vegetation communities. The EIR should review the potential for impacts to these resources and provide mitigation as appropriate.

Thank you for the opportunity to comment on the NOP. Feel free to reach me at (714) 990-7674 if you should have any questions regarding our comments.

Sincerely,

David M. Crabtree, AICP
City Planner

CC Tim O'Donnell, City Manager
Charles View, Development Services Director

ORANGE COUNTY FIRE AUTHORITY
P.O. Box 86, Orange, CA 92856-0086 • 145 South Water St., Orange, CA 92866

Chip Prather, Fire Chief *(714) 744-0400*

February 3, 2004

County of Orange
Integrated Waste Management Division
Attn; Ray Hull
320 N. Flower St. #400
Santa Ana, CA 92703

Re: **Olinda Alpha Landfill NOP**

Dear Mr. Hull,

Thank you for the opportunity to comment on the subject project. The Orange County Fire Authority does not believe this will be of any significant impact to our agency in regards to additional resources. Of concern to our agency is continued emergency access, fire lanes, and egress at the project. Please note the following comments:

Page 16 14.Hazards: Please note that fueling on-site requires UST/AST permits and disclosure from OCFA-Hazardous Materials Service Section.

Page 17, (g) We believe g should be" less than significant".There are impacts to the Orange County Emergency Plan and the OC HazMat Area Plan. The City of Brea emergency plan does not address unincorporated issues.

Page 19 15. Public Services: The nearest Fire Station listed is Brea #4. However they do not respond to that location. The nearest OCFA station that handles calls at the Olinda landfill is FS34 in Placentia. It should be mentioned that the landfill is within the Very High Fire Severity Hazard Zone. All buildings must conform to wildland occupancy standards.

Page 19 (a)(ii) Same is true for police, Brea is closer but does not necessarily respond. Police response is by OC Sheriffs.

While no additional public safety resources are needed as a result of this project, all standard conditions and guidelines will be applied to the project during the normal review process. If you have any additional questions, please contact me at (714) 744-0420.

Sincerely,

Michele Hernandez

Michele Hernandez
Management Analyst, Strategic Services

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RESIDENTIAL SPRINKLERS AND SMOKE DETECTORS SAVE LIVES

DEVELOPMENT SERVICES DEPARTMENT
303 West Commonwealth Avenue, Fullerton, California 92832-1775

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Fax • (714) 738-[illegible]
Web site • www.ci.fullerton.ca.us

February 11, 2004

Linda Hagthrop
County of Orange
Integrated Waste Management Department
Office of Public Affairs
320 North Flower Street, Suite 400
Santa Ana, CA 92703

Via Fax

Subject: Review of Environmental Documents for the Regional Landfill Options for Orange County Strategic Plan – Olinda Alpha Landfill Implementation

Dear Ms. Hagthrop:

The City of Fullerton has reviewed the Notice of Intent to prepare Draft Environmental Impact Report #588 and related documentation for the above mentioned project submitted by your agency for our review and comment. The City of Fullerton requests that the Integrated Waste Management Department continue to work with the city to support our diversion efforts in accordance with AB 939. The City believes that alternative measures should be explored to reduce the amount of waste going directly to the County landfills. Accordingly, an alternative should be considered in the DEIR which incorporates diversion measures and could result in reduced landfill expansion.

Thank you for giving us the opportunity to review the documents and to comment on potential issues that may affect the City of Fullerton. If you should have questions regarding this response, please call me at (714) 738-6884. We look forward to the opportunity to review the DEIR when it is circulated for review.

Sincerely,

Heather Sowers
Assistant Planner

Cc: Joel W. Rosen, AICP, Chief Planner

AERA

February 9, 2004

VIA FACSIMILE & FEDERAL EXPRESS

Linda Hagthrop
Public Information Officer
County of Orange
Integrated Waste Management Department
Office of Public Affairs
320 North Flower Street, Suite 400
Santa Ana, CA 92703

SUBJECT: NOTICE OF PREPARATION FOR THE RELOOC STRATEGIC PLAN – OLINDA ALPHA LANDFILL IMPLEMENTATION

Dear Ms. Hagthrop:

Thank you for the opportunity to provide comment regarding the "Notice of Preparation for the RELOOC Strategic Plan - Olinda Alpha Landfill Implementation" that we received on January 12, 2004. Aera Energy owns or controls 265 acres of property on both sides of Valencia Avenue extending essentially from the intersection of Rose Drive / Birch Street to Lambert Road as well as the land on the west side of Valencia approximately 600 feet north of its intersection with Lambert Road. This property, currently in use for company oil production operations, is designated for future residential development on both the Orange County and City of Brea General Plans. We expect the conversion to residential use will occur sometime during the current operating permit window for the Landfill (i.e. before 2013). Therefore, we are concerned about the potential eight-year extension of the life of landfill operation, the related continuation and possible increase in the level of trash truck traffic along a major frontage of our property.

The EIR should consider the full range of impacts (noise, traffic, safety, air quality, aesthetics, etc.) that an extension and expansion of landfill operations will have on these uses. The proposed landfill extension project will clearly require significant mitigation measures to eliminate impacts to properties along the haul route the entire length of Valencia Avenue. The EIR should specify mitigation measures, and examine alternatives to minimize the impact to the properties along Valencia Avenue.

We understand other property owners and Brea residents have expressed similar concerns and requested the EIR consider alternative access possibilities that could minimize environmental impacts associated with continuing to utilize Valencia Avenue for Landfill access. As you may know, we are currently in the process with both the County of Orange and the County of Los Angeles on a proposed master planned community involving our two county, 3,000-acre ownership north and west of the Landfill. This project is referred to as the Aera Master Planned Community (EIR project number 599). We understand there has been some discussion about evaluating possible new landfill access from the 57 freeway-Tonner Canyon interchange. In deference to our master planning work on our nearby property, we request that any such new access that might be studied should take into consideration two key issues. First, the Tonner Canyon interchange area will represent one of our primary project entry points and any potential landfill traffic should be carefully planned to avoid conflict with our project circulation and existing traffic using Brea Canyon Road. Second, it is critical that any access through Tonner Canyon be carefully designed to respect and minimize any disruption to important habitats and wildlife corridor connectivity. Our master plan incorporates a major open space linkage of several hundred acres through our property linking to

MP404001 - 1

protected lands in the vicinity of the Tonner Canyon freeway interchange and ultimately connecting to other protected open space west of Harbor Boulevard north of La Habra Heights and beyond.

In closing, we appreciate the importance of maintaining efficient landfill operations in Orange County. We are willing to work with the County, and all stakeholders, to address issues associated with the possible eight-year extension of these operations.

Sincerely,

George L. Basye
Vice President

GLB:mep

WILDLIFE CORRIDOR CONSERVATION AUTHORITY
407 W. IMPERIAL HWY, SUITE H, PMB 230, BREA, CALIFORNIA 92821
TELEPHONE: (310) 589-3230
FAX: (310) 589-2408

February 6, 2004

Ray Hull
RELOOC Project Manager
County of Orange Integrated Waste Management Department
320 North Flower Street, Suite 400
Santa Ana, California 92703

Comments on Notice of Preparation for Regional Landfill Options for Orange County Strategic Plan-Olinda Alpha Landfill Implementation

Dear Mr. Hull:

In a letter dated November 6, 2002 (enclosed), the Wildlife Corridor Conservation Authority commented on the Notice of Intent to Prepare (NOP) Draft Environmental Impact Report (DEIR) #588 for Regional Landfill Options for Orange County (RELOOC) Phase I. We request that you incorporate those comments into the DEIR for the revised project, the RELOOC Strategic Plan-Olinda Alpha Landfill Implementation. Please contact Judi Tamasi of our staff at (310) 589-3230 ext. 121 if you have any questions.

Sincerely,

Glenn Parker
Chair

WILDLIFE CORRIDOR CONSERVATION AUTHORITY
407 W. IMPERIAL HWY. SUITE H, PMB 230, BREA, CALIFORNIA 92821
TELEPHONE: (310) 589-3230
FAX: (310) 589-2408

November 6, 2002

Linda Hagthrop
RELOOC Project Manager
County of Orange Integrated Waste Management Department
320 North Flower Street, Suite 400
Santa Ana, California 92703

Comments on Notice of Preparation for Regional Landfill Options for Orange County Phase I

Dear Ms. Hagthrop:

The Wildlife Corridor Conservation Authority (WCCA) has reviewed the Notice of Intent to Prepare (NOP) Draft Environmental Impact Report (DEIR) #588 for Regional Landfill Options for Orange County (RELOOC) Phase I, proposed expansions of Frank R. Bowerman and Olinda Alpha Landfills. WCCA was created to provide for the proper planning, conservation, environmental protection and maintenance of the habitat and wildlife corridor between the Whittier-Puente Hills and the Cleveland National Forest in the Santa Ana Mountains. With respect to the proposed project, WCCA's primary goals are to preserve the wildlife movement areas in addition to other ecological, recreational, and visual resources within the Puente-Chino Hills. In summary, the DEIR should include waste reduction as an integral project component and the establishment of a mitigation fund for land acquisition/preservation.

The proposed project consists of the vertical and horizontal expansion of the Olinda Alpha and Frank R. Bowerman Landfills to meet the County's short-term solid waste disposal needs. Specifically, the Olinda Alpha landfill would be expanded vertically 115 feet and the existing refuse footprint would be expanded approximately 33 acres in the northeast part of the existing property boundary. The project would extend the life of the Olinda Alpha Landfill from its permitted closure date of 2013 to approximately 2021. Implementation of bio-cell technology at the Frank R. Bowerman and Prima Deshecha landfills is also being considered as part of this project. This NOP covers Phase 1 of the RELOOC project. Please note that the following comments are limited to project elements for the Olinda Alpha Landfill which is located within WCCA's jurisdiction.

Need for Emphasis on Waste Reduction

Several strategies for Phase I are proposed, including promoting recycling (NOP, p. 1). The DEIR should also explicitly identify promoting waste reduction as a strategy for Phase 1. The Strategic Plan should be amended to include this strategy and corresponding implementation measures, if it is not already included. Waste reduction would help reduce environmental impacts associated with the landfill expansion.

Need for Mitigation Fund for Land Acquisition/Preservation

Although much of the Olinda Alpha Landfill project site is currently disturbed from existing landfill operations, the Olinda Alpha Landfill essentially abuts Tonner Canyon to the north and west. Tonner Canyon is a critical wildlife movement area that supports numerous sensitive ecological resources. Chino Hills State Park and Carbon Canyon are located to the east of the landfill site. As described below, the Olinda Alpha Landfill expansion and extension of landfill closure date potentially would result in numerous significant adverse ecological, recreational, and visual impacts. To adequately mitigate those impacts, the DEIR must include a mitigation measure that establishes a fund to pay for land acquisition in the concerned portion of the Chino Hills. (Fees are collected for the operation of the Puente Hills Landfill; these fees are used for land acquisition.) The DEIR must provide enough detail to ensure that this fund will be expended for land acquisition and preservation in a timely manner. The mitigation measures should include the requirement to generate sufficient funding to acquire natural land contiguous to or in the near vicinity of the Chino Hills core habitat. This land shall also be available for passive recreational uses such as hiking. The mitigation measures should also require that the land be acquired, and that recreational facilities and/or opportunities be provided, within two years of permitting. The mitigation measures in the DEIR should state that in the event of non-compliance with this timeframe, additional mitigation funds and/or acreage shall be required.

Recreational Impacts

The project potentially would result in significant impacts to recreational resources. The Olinda Alpha Landfill is shown on the County of Orange Master Plan of Regional Recreational Facilities as a proposed regional park (NOP, p. 24). The proposed project would extend the landfill's closure date by providing additional capacity and therefore would delay the use of this site as a recreational facility. This would delay a proposed City of Brea trail on the site, and potentially would delay a Diamond Bar Trail (a proposed regional trail) in the vicinity of the landfill. The NOP states the project will not foreclose the recreational opportunity (NOP, p. 24). The DEIR should clarify the types and locations of proposed recreational uses and other regional park uses on the site, if available, and analyze the impacts to those proposed uses.

Visual Impacts

The project may result in significant adverse visual impacts. The Olinda Alpha Landfill is currently visible from numerous public viewing areas, such as Chino Hills State Park, Carbon Canyon Regional Park, Carbon Canyon Road (which is given special consideration in the Brea General Plan), Lambert Road, State Routes 55, 57, and 91, and the Firestone Boy Scout Reservation (NOP, p. 20). Because the landfill will be expanded vertically, more of the landfill will be visible from these locations. The DEIR should provide line-of-sight pre- and post-project analyses from these public viewing areas. Specifically, the DEIR should address the visual impacts from the portion of the Firestone Boy Scout Reservation purchased by the City of Industry land to the north, should it become public parkland in the future.

Furthermore, the DEIR should acknowledge that if the landfill closure date is extended, then the creation of a regional park on the landfill site will be delayed, prolonging the adverse views of the active landfill from these parks and other public viewing areas.

Impacts to Biological Resources

Given its key location in the Puente-Chino Hills wildlife corridor, the DEIR should fully disclose the extent of known or potential wildlife movement and utilization adjacent to and in the vicinity of the site, and on the site (if any).

Per the NOP (p. 19), the proposed horizontal expansion at the Olinda Alpha Landfill is not expected to impact an existing wildlife movement corridor on the ridgeline east of the horizontal expansion because disturbance for this expansion will not extend into this ridgeline. However, the NOP points out that landfill expansion may generate dust, noise, or light emissions that could potentially disturb animal behavior, including possible shifts in the use of this wildlife corridor (habitat area).

The DEIR must fully analyze these potential effects to this adjoining habitat. There is the potential that lighting will affect wildlife movement and the DEIR must explicitly require that lighting not shine or spillover into natural habitat areas. Although much wildlife movement occurs at night, animals such as deer, bobcat, and coyote are seen during the day and may be impacted by the additional human and vehicle use, noise, and dust during the day. These potential impacts must be disclosed in the DEIR.

According to the NOP (p. 18), the proposed expansions will not extend into any areas not previously disturbed on the site. The DEIR should clarify what plant communities are present, if any, in the area of the proposed horizontal expansion, even if they are disturbed.

To reiterate, the DEIR should include waste reduction as an integral project component and the establishment of a mitigation fund for land acquisition/preservation. Thank you for the opportunity to comment. Please contact Judi Tamasi of our staff at (310) 589-3230 ext. 121 if you have any questions.

Sincerely,

Bob Henderson
Chair

Hull, Ray

From: Amirhosseini, Susan on behalf of info
Sent: Monday, February 09, 2004 1:11 PM
To: Hull, Ray
Subject: FW: Forward to Ray Hull

-----Original Message-----
From: Vivavargas@aol.com [mailto:Vivavargas@aol.com]
Sent: Monday, February 09, 2004 12:54 PM
To: info@iwmd.ocgov.com
Cc: Vivavargas@aol.com
Subject: Forward to Ray Hull

Dear Ray,

When I spoke to you Friday last you stated that the extention for comments on the Alpha Landfill NOP would be today (Monday). You also said that a copy of the NOP and Draft EIR could be found on the www.savebrea.org website. Unfortunately I can not open the PDF files on that website......(probably due to my kids pop up junk that just kills my computer). Anyway, I would like to submit comments on the NOP and will e-mail then here and hope you will find this method acceptable.
Respectfully, Steven C. Vargas

1) At the end of the current MOU, year 2013, the County is obligated to remediate the finished landfill and turn over a 600 acre "natural park". What is the total acreage available or accessable to the people of Brea if the landfill is to close as scheduled?
  a) What is the value of this land?
  b) What are the social and environmental impacts of NOT turning over this land in 2013 as agreed?

1) Prior to the agreements contained in the 1994 MOU, What was the elevation of landfill and what was projected elevation (pre 1994 MOU) to be considered "at capacity"
  a) As a result of the 1994 MOU what was the "verticle expansion" elevation agreed to? How much additional capacity did this allow? What is the current elevation of the landfill (January, 2004)?
  b) What is the proposed elevation should this new extention/expansion be allowed? What is the new capacity that this would allow?
  c) What are the visual impacts to the people of Brea and north orange County residents as a result of the propose elevation increases?

3) The people fo Brea have received conflicting quotes as to the amount of host fee that the City collects. Recent quotes from City Manager Tim O'Donnel state $600,000 per year. The County website states $918,000. How much per year in total revenue (any source) does the city of Brea receive per year from land fill operations?
  a) Is there any restriction on where this money is spent?

b) Is this revenue stream only from "Imported Trash?"

c) If the city currently collects $00.92 per ton, what per ton amount has the County initially proposed for gate fee increase to purchase Open Space or pay for a Sports ParK? What would be the corresponding increase to trash rate to Brea residents?

4) In 2001, the City of Brea did a study to change the speed limit on Valencia Rd. to 35 MPH. What were the traffic counts going to the landfill?

a) If you do not have access this the City's numbers, what are your most recent counts passing the Gates at Alpha landfill?

b) The access route to the landfill where restricted in 1997 to remove truck traffic from Lambert Rd. What is the impact of this local decision to hauling routes, noise and pollution to residents on Imperial Hwy, Kramer and Valencia Rd?

I have more and will forward in a separate memo. Thank you .

Steven C. Vargas
489 Brittany Lane
Brea, Ca 92821
714-990-8847
fax 714-990-6893

Please confirm via e-mail receipt and acceptance of these e-mail comments to the NOP process.

Hull, Ray

From: Amirhosseini, Susan on behalf of info
Sent: Monday, February 09, 2004 1:44 PM
To: Hull, Ray
Subject: FW: Forward to Ray Hull

-----Original Message-----
From: Vivavargas@aol.com [mailto:Vivavargas@aol.com]
Sent: Monday, February 09, 2004 1:29 PM
To: info@iwmd.ocgov.com
Subject: Forward to Ray Hull

Dear Ray,

Additional comments and question regarding the NOP for the Apha Landfill in Brea:

1) The Alpha Landfill was established in 1963. The people fo Brea have shouldered the burden of landfill operations and traffic for over 40 years. With the projected closure in 2013, this will be nearly 50 years of operation. The county has to plan for 50 years out regarding landfill operations, Is the county current on planning projection for the next 50 years of landfill operations?

a) Where is the proposed site for future landfill operations in Orange County?

b) The Board of Supervisors are attempting to postpone a tough decision regarding the "siteing" of a new landfill, what are the projected costs associated with land aquisition by allowing the Board of Supervisors to get away with this breech of responsiblity?

1) After the 1994 County bankrupcy, numerous meetings where held with county officials and IMWD Board Memebers regarding the privitization of landfill operations, specifically at the Alpha Landfill in Brea. Where can the public access information regarding these meetings?

a) One of the proposals considered concerned Taromina Industries, who now holds the importation contract with LA trash haulers to access the Alpha Landfill in Brea. What are the financial advantages of these type of "transfer station" agreements with local trash operators? How does the County benefit? and how do these agreements benefit the people of Brea?

b) A recent proposal by IWMD Board Member Bev Perry is to increase the use of "transfer stations" to consolidate trash prior to travel to local landfills, thereby lessening truck trips per day. What are the economic costs to local business owners (gardeners, home repairmen, ect.) and to average consumers if access to the Alpha Landfill was restricted to 20- ton double loader trucks?

3) The people fo Brea have compained for years about increases to traffic on arterial roads. What is the feasibility of building an access road off Tonner Canyon for direct access to the dump?

a) Tonner Canyon is currently abondoned oil property in need of remediation, who is respondible for this remediation if an access road where to be built?

b) How does the cost of building an access road compare to paying increased gate fee's for local road improvements and soundwalls?

4) Local Councilman Marty Simonoff is employed by, and his family owns a major LA trash hauler that imports trash to the Alpha Landfill through an intermediary transfer company. Has the county looked into this relationship to determine if a conflict of interest exists?
a) If so, when? what were the results?
b) After the 2000 elections in Brea, Taromina Industry (sold to Republic) gave up its transfer station agreement to its Anaheim facility to a facility in Stanton (I believe it is in Stanton??), did this have anything to do with conflict of interest issues arising from votes taken in Brea? Has the County ever looked into this coincidence?

Unfortunately due to the lack of access to NOP process and information, these are the only question I have on the top of my head. I would have liked more time to study the material and look forward to continued commmunications. Thank you for your assistance in this matter.

Steven C. Vargas
489 Brittany Lane
Brea, Ca 92821
714-990-8847
fax 714-990-6893

Please confirm via e-mail receipt and acceptance of these e-mail comments to the NOP process.

COUNTY OF ORANGE
HEALTH CARE AGENCY

REGULATORY HEALTH SERVICES
ENVIRONMENTAL HEALTH

Excellence
Integrity
Service

JULIETTE A. POULSON, RN, MN
DIRECTOR

MIKE SPURGEON
DEPUTY AGENCY DIRECTOR
REGULATORY HEALTH SERVICES

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SANTA ANA, CA 92705-4720

TELEPHONE: (714) 667-3600
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E-MAIL: environhealth@hca.co.orange.ca.us

February 9, 2004

Ray Hull
RELOOC Project Manager
County of Orange IWMD
320 North Flower Street, Suite 400
Santa Ana, CA 92703

Subject: **Notice of Preparation and Environmental Analysis Checklist for Draft EIR 588 Olinda Alpha Landfill (SWIS No. 30-AB 0035), Brea**

Dear Mr. Hull:

On January 12, 2004, the Solid Waste Local Enforcement Agency (LEA) received a Notice of Preparation (NOP) for Draft EIR 588 and Environmental Analysis Checklist for implementation of strategic plan of Regional Landfill Options for Orange County (RELOOC) at Olinda Alpha (OA) sanitary landfill. Orange County Integrated Waste Management Department (OCIWMD) prepared this CEQA document. After review, the LEA has the following comments:

I. NOP

1. Section 2.2 – County of Orange Solid Waste Disposal System, page 4: "*Importation of MSW from Los Angeles, San Bernardino and Riverside Counties will cease in 2015. At about that time, Olinda Alpha Landfill will need to import cover material if the landfill closure date is extended*". The LEA understands, however, that existing soil stockpiles at OA will be depleted (therefore the site will be dependent on imported soil) by 2013.

2. Section 2.2 – County of Orange Solid Waste Disposal System, page 7, Olinda Alpha Landfill: "*The IWMD is in the process of increasing the daily tonnage limit to 10,000 TPD for up to 36 days per year to allow for increased tonnage days.*" When preparing the EIR, discussion of this proposed daily tonnage increase should be updated as OCIWMD withdrew the application for OA's SWFP revision for this change.

3. Section 2.2 – County of Orange Solid Waste Disposal System, page 9, Prima Deshecha Landfill: OCIWMD should consider including a brief discussion of the SWFP revision process (along with the changes in both design and operations) currently underway.

II. Environmental Analysis Checklist

1. Section 7 – Air Quality, page 10: *"No substantial modifications to existing support structures at the landfill are anticipated under the proposed project"*. In order to maintain control of lateral and vertical migration of landfill gas, it is very likely that additional flare(s) will need to be installed, as a result of OA expanding horizontally and vertically.
2. Section 14 – Hazards, page 16: When preparing the EIR, OCIWMD should consider analyzing the potential of subsurface off-site migration of landfill gas.
3. Section 14 – Hazards, page 16: *"This includes visual inspection of loads at the fee booths and the active face of the landfill and the rejection of loads containing hazardous wastes"*. When preparing the EIR, OCIWMD may want to include discussion of radioactive waste and the fact that fee booths at OA are equipped with radiation sensors.
4. Section 14 – Hazards, page 18: *"Current practices at this landfill to reduce the potential for fire and for rapid control of fires, should they occur, include keeping fire extinguishers on-site, frequent site watering for dust control, on-site water storage, prohibiting smoking on-site, clearing vegetation and fire breaks"*. OA landfill is also equipped with a fire hydrant located near the flare station and wharf valves.

We look forward on cooperatively working with you on this project. If you have any questions, please contact me at (714) 667-2026.

Sincerely,

Ossama "Sam" Abu-Shaban, PE, DEE
Senior Civil Engineer
Solid Waste Local Enforcement Agency
Environmental Health

cc: Tad Gebre-Hawariat, CIWMB
Raymond Seamans, CIWMB

Department of Toxic Substances Control

Terry Tamminen
Agency Secretary
Cal/EPA

Edwin F. Lowry, Director
5796 Corporate Avenue
Cypress, California 90630

Arnold Schwarzenegger
Governor

February 6, 2004

Mr. Ray Hull
County of Orange Integrated Waste Management Department
320 North Flower Street, Suite 400
Santa Ana, California 92702-4048

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE REGIONAL LANDFILL OPTIONS FOR ORANGE COUNTY (RELOOC) STRATEGIC PLAN - SCH # 2004011055

Dear Mr. Hull:

The Department of Toxic Substances Control (DTSC) has received your Notice of Preparation (NOP) of a draft Environmental Impact Report (EIR) for the above-mentioned Project.

Based on the review of the document, DTSC's comments are as follows:

1) The draft EIR needs to identify and determine whether current or historic uses have resulted in any release of hazardous wastes/substances at the site.

2) The draft EIR needs to identify any known or potentially contaminated sites within the proposed Project area. For all identified sites, the draft EIR needs to evaluate whether conditions at the site pose a threat to human health or the environment.

3) The draft EIR should identify the mechanism to initiate any required investigation and/or remediation for any site that may require remediation and the government agency to provide appropriate regulatory oversight.

4) If during construction of the project, soil and/or groundwater contamination is suspected, suspend construction in the area and implement appropriate Health and Safety procedures. If it is determined that contaminated soil and/or groundwater exist, the draft EIR should identify how any required investigation and/or remediation will be conducted and which government agency will provide appropriate regulatory oversight.

DTSC provides guidance for preparation of a Preliminary Endangerment Assessment (PEA), and cleanup oversight through, the Voluntary Cleanup Program (VCP). For additional information on the VCP, please visit DTSC's web site at www.dtsc.ca.gov.

If you have any questions regarding this letter, please contact Ms. Rania A. Zabaneh, Project Manager, at (714) 484-5479.

Sincerely,

Greg Holmes

Greg Holmes
Unit Chief
Southern California Cleanup Operations Branch
Cypress Office

cc: Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044

Mr. Guenther W. Moskat, Chief
Planning and Environmental Analysis Section
CEQA Tracking Center
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

Unocal Land & Development Company
A Unocal Company
376 South Valencia Avenue
Brea, California 92823
Telephone (714) 577-3504
Facsimile (714) 577-1717
E-mail JAMartin@unocal.com

UNOCAL 76

James A. Martinez
Project Manager

February 6, 2004

Integrated Waste Management Department
320 N. Flower Street, Suite 400
Santa Ana, CA 92703

Attn: Ray Hull, RELOOC Project Manager

RE: Olinda Alpha Landfill

Dear Mr. Hull:

Unocal would like to request that it be placed on the mailing list and be notified of any meetings related to the Olinda Alpha Landfill. Mail all correspondence to the undersigned at the above address.

We would also like to express our disappointment that we were not notified directly, since Unocal property is on the direct route to the landfill. Unfortunately we did not attend the January 22, 2004 meeting at City Hall because we were not notified.

With regard to the NOP, the scope and content of the EIR should include the impacts of truck traffic on Imperial Highway and Valencia Avenue. Consideration should be given to providing alternate access routes to the landfill which should include Tonner Canyon, North of the landfill.

For many years Unocal's facility on Valencia has been burdened with the traffic to the landfill. We would like to be actively involved in the approval process.

Sincerely,

James A. Martinez

JAM:anl

Concerns regarding the Olinda Alpha Landfill and the extension to 2021
January 22, 2004

Erik and Tina Johnson
660 Partridge Drive
Brea, CA 92823
(714) 961-1707
ejand22@sbcglobal.net

1. Traffic danger
    a. Large trucks at high speeds on Valencia Avenue
        i. Children riding bikes, skateboards, scooters are at risk from being hit and injured or killed by a large, speeding truck
        ii. The horse trail on Valencia Avenue is also vulnerable to accidents due to the high volume of trucks
    b. Driver competency
        i. There is no place for a safe crash on Valencia Avenue; houses are in close proximity to the east side of the street.
        ii. If there is a crash on the west side, there is a high fire danger area in the ravine
2. Thoroughfare for new school
    a. Children (ages 11-14) will be walking up and down Valencia (school hours coincide with landfill hours)
    b. Even if bus service offered to affected children, after school hours activities (sports, drama club, etc.) would prevent some of them from using the bus
3. Traffic adjacent to new sports park
    a. People will be parking on Valencia Avenue (especially Saturdays)
    b. Children will be present in area on Saturdays and they will be all over the property and on the street (see a.)
4. Noise
    a. Trucks create high volume noise from approx. 5:30 a.m. to 5:30 p.m., even when the landfill has closed for the day there is still traffic from those arrived too late.
    b. Birds are constantly flying overhead and are loud and leave droppings all over the place.
    c. The generating station at the landfill causes constant noise.
5. Pollution
    a. Trucks spew fumes and exhaust. They also sometimes drop debris from their loads on the road.
    b. Landfill may have a negative impact on groundwater and air quality.
6. Break-downs
    a. Traffic is often blocked on Valencia Avenue due to breakdowns or violation stops by Brea Police Department. Valencia Avenue is supposed to be a no-stopping zone
    b. Trucks, weekly, park on Sandpiper Way to either receive vehicle repairs or wait for a tow truck
7. Incursions into neighborhood
    a. There have been numerous wrong turns onto Sandpiper Way.

   b. Requests to park loads overnight on Sandpiper and Partridge, this has happened twice in less than one year's time.

8. Smell
   a. Diesel fumes from the truck traffic are a constant.
   b. The landfill on occasion when the winds blow just right produces an unpleasant smell.
9. Hours
   a. Trucks often arrive early and late, before 6 a.m. and after 5 p.m.
   b. The sign posting the landfill hours in on Lambert Road, but trucks are prohibited from Lambert. There should be signs on both Imperial Highway and Valencia Avenue.

Flores, Jerry

From: Ruiz, Gilberto
Sent: Tuesday, January 13, 2004 1:04 PM
To: Flores, Jerry
Subject: FW: Public inquiry re: RELOOC NOP & Public Meeting

Importance: High

FYI.

Let's prepare a response folder for the NOP/IS. Thanks.

-----Original Message-----
From: Christine Arbogast [mailto:carbogast@bas.com]
Sent: Monday, January 12, 2004 11:46 AM
To: Ruiz, Gilberto; Benner, Michael; Doug MacPherson
Subject: FW: Public inquiry re: RELOOC NOP & Public Meeting
Importance: High

The fun begins....

-----Original Message-----
From: Hagthrop, Linda [mailto:Linda.Hagthrop@iwmd.ocgov.com]
Sent: Monday, January 12, 2004 10:56 AM
To: Hull, Ray
Cc: IWMD-PUBLIC AFFAIRS; Richmond, Bob; Arnau, John; Stirrat, Bryan; Arbogast, Christine
Subject: Public inquiry re: RELOOC NOP & Public Meeting
Importance: High

I received the first call this morning on this subject from Tina Johnson, a resident of Olinda Ranch. Her home is on the northern-most street right next to Valencia Ave. Her comments/issues included:

* She is a stay at home mother with 3 small children.
* Her issue is with traffic, traffic and traffic - noise, emissions, frequency hours (they start at 5 am) and safety.
* She pointed out that the exhibit in the NOP was from several years ago and did not show the development.
* She will be at the 1/22 Public Meeting with as many neighbors as she can get to join her.
* She is going door to door circulating a petition to prevent the landfill closure date from being extended past 2013.
* She was aware of the landfill and traffic from the disclosure statement and thought she could handle the traffic until 2013.
* There will be a Jr. High School at Birch and Valencia with children walking to and from school.
* One person has already been killed on Valencia in that area - not by a truck. She stated that a jogger was hit by a van (the driver was reaching for a cell phone).
* She will present a written document with all her issues to both IWMD at the meeting and to the City of Brea.
* She will push to get the City to oppose an extension of the closure date.
* She said it would be OK to increase the tonnage amount received at the site if the 2013 closure date could be retained.

Linda Hagthrop
Public Information Officer
Integrated Waste Management Department
Office: (714) 834-4176
Fax: (714) 834-4057
www.oclandfills.com

State of California - The Resources Agency
ARNOLD SCHWARZENEGGER, *Governor*

DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4201

February 11, 2004

Mr. Ray Hull
Orange County
320 North Flower Street, Suite 400
Santa Ana, California 92702-4048

Notice of Preparation for the Regional Landfill Options for Orange County (RELOOC)
Strategic Plan – Olinda Alpha Landfill Implementation
Draft Environmental Impact Report (DEIR),
Orange County, California (SCH #2004011055)

Dear Mr. Hull:

The Department of Fish and Game (Department) appreciates this opportunity to comment on the above-referenced project, relative to impacts to biological resources. To enable Department staff to adequately review and comment on the proposed project, we recommend the following information be included in the Draft Environmental Impact Report (DEIR), as applicable:

1. A complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats.

    a. A thorough assessment of rare plants and rare natural communities, following the Department's May 1984 Guidelines (revised May 2000) for Assessing Impacts to Rare Plants and Rare Natural Communities (Attachment 1).

    b. A complete assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the project area should also be addressed. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service.

    c. Rare, threatened, and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, § 15380).

d. The Department's California Natural Diversity Data Base in Sacramento should be contacted at (916) 327-5960 to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code.

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts, should be included.

   a. CEQA Guidelines, § 15125(c), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

   b. Project impacts should be analyzed relative to their effects on off-site habitats. Specifically, this should include nearby public lands, open space, adjacent natural habitats, riparian ecosystems, and any designated and/or proposed Natural Communities Conservation Planning (NCCP) reserve lands. Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas, should be fully evaluated and provided.

   c. A discussion of impacts associated with increased lighting, noise, human activity, changes in drainage patterns, changes in water volume, velocity, and quality, soil erosion, and /or sedimentation in streams and water courses on or near the project site, with mitigation measures proposed to alleviate such impacts should be included.

   d. The zoning of areas for development projects or other uses that are nearby or adjacent to natural areas may inadvertently contribute to wildlife-human interactions. A discussion of possible conflicts and mitigation measures to reduce these conflicts should be included in the environmental document.

   e. A cumulative effects analysis should be developed as described under CEQA Guidelines, § 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

   a. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts (Attachment 2).

4. Mitigation measures for adverse project-related impacts to sensitive plants, animals, and habitats should be discussed. Mitigation measures should emphasize avoidance and reduction of project impacts. For unavoidable impacts, on-site habitat restoration or enhancement should be discussed in detail. If on-site mitigation is not feasible, off-site mitigation through habitat creation and/or acquisition and preservation in perpetuity should be addressed.

    a. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Studies have shown that these efforts are experimental in nature and largely unsuccessful.

    b. Areas reserved as mitigation for project impacts should be protected from future direct and indirect impacts. Potential issues to be considered include limitation of access, conservation easements, monitoring and management programs, control of illegal dumping, water pollution, and fire.

    c. Plans for restoration and revegetation should be prepared by persons with expertise in southern California ecosystems and native plant revegetation techniques. Each plan should include, at a minimum: (a) the location of the mitigation site; (b) the plant species to be used, container sizes, and seeding rates; (c) a schematic depicting the mitigation area; (d) planting schedule; (e) a description of the irrigation methodology; (f) measures to control exotic vegetation on site; (g) specific success criteria; (h) a detailed monitoring program; (i) contingency measures should the success criteria not be met; and (j) identification of the party responsible for meeting the success criteria and providing for conservation of the mitigation site in perpetuity.

5. A California Endangered Species Act (CESA) Permit must be obtained, if the project has the potential to result in "take" of species of plants or animals listed under CESA, either during construction or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to a project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, may require that the Department issue a separate CEQA document for the issuance of a 2081 permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a 2081 permit. For these reasons, the following information is requested:

    a. Biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA Permit.

    b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.

6. The Department has responsibility for wetland and riparian habitats. It is the policy of the Department to strongly discourage development in wetlands or conversion of wetlands to uplands. We oppose any development or conversion which would result in a reduction of wetland acreage or wetland habitat values, unless, at a minimum, project mitigation assures there will be "no net loss" of either wetland habitat values or acreage. Development and conversion include but are not limited to conversion to subsurface drains, placement of fill or building of structures within the wetland, and channelization or removal of materials from the streambed. All wetlands and watercourses, whether intermittent or perennial, should be retained and provided with substantial setbacks which preserve the riparian and aquatic values and maintain their value to on-site and off-site wildlife populations.

   a. If the site has the potential to support aquatic, riparian, or wetland habitat, a jurisdictional delineation of lakes, streams, and associated riparian habitats should be included in the DEIR, including a delineation of wetlands pursuant to the U. S. Fish and Wildlife Service wetland definition adopted by the Department[1]. Please note that some wetland and riparian habitats subject to the Department's authority may extend beyond the jurisdictional limits of the U.S. Army Corps of Engineers.

   b. The project may require a Lake or Streambed Alteration Agreement, pursuant to Section 1600 *et seq.* of the Fish and Game Code, with the applicant prior to the applicant's commencement of any activity that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank (which may include associated riparian resources) of a river, stream or lake, or use material from a streambed. The Department's issuance of a Lake or Streambed Alteration Agreement for a project that is subject to CEQA will require CEQA compliance actions by the Department as a responsible agency. The Department as a responsible agency under CEQA may consider the local jurisdiction's (lead agency) Negative Declaration or Environmental Impact Report for the project. To minimize additional requirements by the Department pursuant to Section 1600 *et seq.* and/or under CEQA, the document should fully identify the potential impacts to the lake, stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the agreement[2].

The Department holds regularly scheduled pre-project planning/early consultation meetings. To make an appointment, please call our office at (858) 636-3160.

---

[1] Cowardin, Lewis M., et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service.

[2] A Streambed Alteration Agreement form may be obtained by writing to: Department of Fish and Game, 4949 Viewridge Avenue, San Diego, CA 92123, by calling (858) 636-3160, or by accessing the Department's web site at www.dfg.ca.gov/1600 .

Thank you for this opportunity to comment. Questions regarding this letter and further coordination on these issues should be directed to Meredith Osborne at (858) 636-3163.

Sincerely,

For

William E. Tippets
Deputy Regional Manager
California Department of Fish & Game

Attachments

cc: Department of Fish and Game
File
San Diego

State Clearinghouse
Sacramento

mao/mao

DEVELOPMENT SERVICES DEPARTMENT
303 West Commonwealth Avenue, Fullerton, California 92832-1775

Telephone • (714) 738-6540
Fax • (714) 738-3110
Web site • www.ci.fullerton.ca.us

February 11, 2004

Linda Hagthrop
County of Orange
Integrated Waste Management Department
Office of Public Affairs
320 North Flower Street, Suite 400
Santa Ana, CA 92703

Via Fax

Subject: Review of Environmental Documents for the Regional Landfill Options for Orange County Strategic Plan – Olinda Alpha Landfill Implementation

Dear Ms. Hagthrop:

The City of Fullerton has reviewed the Notice of Intent to prepare Draft Environmental Impact Report #588 and related documentation for the above mentioned project submitted by your agency for our review and comment. The City of Fullerton requests that the Integrated Waste Management Department continue to work with the city to support our diversion efforts in accordance with AB 939. The City believes that alternative measures should be explored to reduce the amount of waste going directly to the County landfills. Accordingly, an alternative should be considered in the DEIR which incorporates diversion measures and could result in reduced landfill expansion.

Thank you for giving us the opportunity to review the documents and to comment on potential issues that may affect the City of Fullerton. If you should have questions regarding this response, please call me at (714) 738-6884. We look forward to the opportunity to review the DEIR when it is circulated for review.

Sincerely,

Heather Sowers

Heather Sowers
Assistant Planner

Cc: Joel W. Rosen, AICP, Chief Planner

California Integrated Waste Management Board

Terry Tamminen
Secretary for Environmental Protection

Linda Moulton-Patterson, Chair
1001 I Street • Sacramento, California 95814 • (916) 341-6000
Mailing Address: P. O. Box 4025, Sacramento, CA 95812-4025
www.ciwmb.ca.gov

Arnold Schwarzenegger
Governor

RECEIVED
FEB 11 2004
STATE CLEARING HOUSE

February 11, 2004

Mr. Ray Hull
Orange County
320 North Flower Street, Suite 400
Santa Ana, CA 92702-4048

Subject: SCH No. 2004011055: Notice of Preparation of a Draft Environmental Impact Report for Regional Landfill Option for Orange County (RELOOC) Strategic Plan – Olinda Alpha Landfill Implementation (Solid Waste Facilities Permit No. 30-AB-0035) Orange County

Dear Mr. Hull:

Thank you for allowing the California Integrated Waste Management Board (CIWMB or Board) staff to provide comments for this proposed project and for your agency's consideration of these comments as part of the California Environmental Quality Act (CEQA) process.

Board staff has reviewed the environmental document cited above and the previous Notice of Preparation circulated under State Clearinghouse No. 2002091031 which described a similar project that included horizontal and vertical expansions of Frank R. Bowerman Landfill and Olinda Alpha Landfill. The current document only includes the expansion of Olinda Alpha Landfill.

Please refer to Board staff comment letter of October 21, 2002 (attached). We have no additional comments at this time. Board staff recommends that you refer to http://www.ciwmb.ca.gov/LEACentral/CEQA/disposal.htm and http://www.ciwmb.ca.gov/LEACentral/CEQA/compost.htm for guidelines on what information Board staff are looking for in their analysis of environmental documents for landfill operation and facilities that may handle compostable material.

If you have any questions regarding this letter or need a copy of our October 21, 2002, letter, please contact me at 916.341.6728 or email me at rseamans@ciwmb.ca.gov.

Sincerely,

Raymond M. Seamans
Permitting and Inspection Branch, Region 4
Environmental Review
Permitting and Enforcement Division
California Integrated Waste Management Board

Attachment

cc: Tadese Gebre-Hawariat
Permitting and Inspection Branch, Region 4
Permitting and Enforcement Division
California Integrated Waste Management Board

Suzanne Hambleton, Supervisor
Permitting and Inspection Branch, Region 4
Permitting and Enforcement Division
California Integrated Waste Management Board

Patty Henshaw
County of Orange Health Care Agency
Environmental Health Division
2009 E Edinger Avenue
Santa Ana, CA 92705

California Integrated Waste Management Board

Linda Moulton-Patterson, Chair
1001 I Street • Sacramento, California 95814 • (916) 341-6000
Mailing Address: P. O. Box 4025, Sacramento, CA 95812-4025
www.ciwmb.ca.gov

Gray Davis
Governor

Winston H. Hickox
Secretary for Environmental Protection

October 21, 2002

Linda Hagthrop, RELOOC Project Manager
County of Orange
Integrated Waste Management Department
320 North Flower Street, Suite 400
Santa Ana, California 92703

Subject: **SCH #2002091031** – Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for Phase I of the Regional Landfill Options for Orange County and consider potential environmental impacts from its proposed vertical and horizontal expansions of the Frank R. Bowerman (FRBLF), SWIS No. 30-AB-0360, and Olinda Alpha Landfills (OALF), SWIS No. 30-AB-0035, Orange County.

Dear Ms. Hagthrop:

Environmental Review Section (ERS) staff of the California Integrated Waste Management Board (IWMB or Board) have reviewed the document cited above. Following is a description of the proposed project based on ERS staff's understanding of the project as described in the NOP; IWMB agency background information; and comments as to the scope and content of the draft EIR. If the proposed *Project Description* below varies substantially from the project as understood by the lead agency, ERS staff requests that any significant differences be clarified and included in the draft EIR.

PROPOSED PROJECT DESCRIPTION

Strategic planning for municipal solid waste (MSW) needs in Orange County is the responsibility of the County of Orange's (County) Integrated Waste Management Department (IWMD). Regional Landfill Options for Orange County (RELOOC) is a short- and long-term strategic planning project initiated by the IWMD in 1998 to address existing disposal system capabilities and future needs, and to develop viable short- and long-term solid waste disposal options. The IWMD provided the RELOOC Strategic Plan to provide solid waste planning options over the next 40 years. The RELOOC Strategic Plan includes a two phase approach to accomplish this goal.

Phase I strategies to be analyzed in the draft EIR include fully utilizing existing landfill system capacity by:

- Maximizing operational efficiency at existing landfills.
- Expanding FRBLF and OALF.
- Promoting diversion, recycling and market development with the public and haulers.
- Seeking to resolve community concerns related to the extended use of the existing landfills.
- Annually reviewing the RELOOC Strategic Plan and modifying it as appropriate in response to disposal industry trends and advances in technology.

Phase II strategies are considered long-term RELOOC program components and if determined to be feasible as a result of future studies will be analyzed for CEQA compliance at a later date during the 40-year planning timeframe.

The proposed project includes the vertical and horizontal expansions of the FRBLF and OALF to meet the County's short-term solid waste disposal needs. Implementation of bio-cell technology at the FRBLF [and Prima Deshecha landfills (SWIS No. 30-AB-0019)] is also being considered. The expansions of the FRBLF and OALF would be implemented in phases and would not disturb all parts of the landfill sites at once. These phased areas of development are currently being evaluated and will be provided in the draft EIR.

ROLE OF THE IWMB

The IWMB must ensure that solid waste facilities (SWFs) meet required state standards for the protection of public health, safety, and the environment. The Board implements this goal through programs such as: permit oversight for solid waste facilities; certification and evaluation of Local Enforcement Agencies (LEA) which administer specific provisions of Assembly Bill (AB) 939, otherwise known as the Integrated Waste Management Act of 1989; review of environmental documents for proposed, new or expanded solid waste facilities for compliance with CEQA; enforcement of state standards for SWFs; corrective action programs for facilities out of compliance with state standards; and research and development for special waste management issues.

California Environmental Quality Act Review

CEQA compliance is required for the establishment, expansion, or change in operation(s) of a SWF requiring the issuance or revision of a Solid Waste Facility Permit (SWFP). IWMB staff's review of the Draft EIR is to help decision-makers (1) identify potential impacts from proposed projects, (2) determine whether any such impacts are significant, and (3) ascertain whether significant impacts can be mitigated to a level of insignificance in compliance with the CEQA statute and guidelines. In order for IWMB staff to ascertain that the draft EIR is complete and adequate for our use in the SWFP permitting process, the proposed project should be described in sufficient detail and the potential environmental impacts must be identified clearly in the environmental assessment/Initial Study Section of the draft EIR. Mitigating measures to reduce potentially significant environmental impacts should be incorporated into the project, when feasible, in order to avoid potentially significant effects upon project implementation. When a potential significant environmental effect is identified and an argument is made as to why no mitigation is necessary, the discussion/analysis should be in sufficient detail that the reviewer/decision-maker can understand the lead agency's reasoning for their determination. In order to expedite document preparation and minimize redundancy - supporting documentation and/or studies would be helpful and should be incorporated by referenced in the draft EIR.

ERS STAFF'S COMMENTS

Since the IWMB would be a responsible agency involved in the discretionary approval process for the SWF design and operational aspects of the project proposals, ERS staff will need to perform an environmental review and analysis for this project using the EIR developed by the lead agency as required in CEQA Guidelines, California Code of Regulations (CCR) Section 15096. To assist ERS staff's analysis and evaluation of this project, and aid ERS staff in the determination of the adequacy of the EIR and related CEQA document(s) for IWMB SWFP concurrence purposes, we request that the following comments and questions be addressed in the draft EIR under preparation by the lead agency prior to circulation of the document. If these have already been addressed in an existing document (e.g. Report of Facility Information, Closure Plans, previous environmental documents), please indicate the document, page number(s) and section(s), and provide copies to the State Clearinghouse and IWMB along with the draft EIR.

Typical Considerations for Landfill SWFPs

The following is a list of typical considerations that ERS staff recommends for inclusion in the draft EIR in order to help evaluate the scope and content of the EIR for consideration in the issuance of revised SWFPs and proposed changes at the RELOOC facilities:

- Describe in detail the excavation plans for the proposed landfill expansions of the subject facilities. Exactly what areas of the landfill expansion will be directly over buried refuse that does not have the benefit of a composite liner system and/or a leachate collection and removal system (LCRS)? How will the additional overburden of waste materials affect the LCRS's ability to manage leachate?

- What is the proposed acreages for the solid waste/landfill facilities, landfill 'footprints', material processing and material storage areas, as well as the combined acreage for the entire facility? What are the minimum and maximum proposed landfill heights?

- What is the proposed average and peak daily tonnage of waste materials to be permitted for acceptance at the landfill facilities?

- What are the types and numbers of vehicles that will access the landfill facilities on a daily basis?

- What are the proposed hours and days of operation for the landfill facilities?

- What are the proposed types of waste (e.g. residential : MSW; industrial : ash, asbestos; etc.) to be disposed at the RELOOC facilities?

- What provisions are made in the design or operations of the facility to prevent project related impacts from litter, odor, dust, noise, glare, vectors, vehicle queuing, drainage, and health and safety?

- What special circumstance provisions will be required for the handling, processing, transport and storage of special wastes, if any?

The draft EIR must detail all provisions for landfill design and operation in order to indicate the ability of the facility to meet State Minimum Standards for environmental protection (see CCR Title 27, §§ 20005, et. seq.). The following internet link accesses checklists developed by Board staff as a guide to lead agencies in the preparation of EIR for landfills, transfer stations, material recovery facilities, and composting facilities:
http://www.ciwmb.ca.gov/PermitToolbox/CheckItems/CEQA/default.htm#Guidelines.

Much of the information needed for a clear and detailed project description is normally included in a facility's Report of Facility Information (RFI) for a SWF. If an RFI has been developed that incorporates RELOOC project descriptions and proposals, that RFI may be incorporated or referenced in the draft EIR.

Operation of Modules as Bioreactor Landfill Cells

It is not clear in the project description in the NOP what all the proposed phases of this project proposal will be. The draft EIR should have a complete and detailed description for each phase of this proposed project. This should include the number of landfill modules/cells at the site that will be operated as bioreactor cells, when each of these will be under operation, whether all landfill modules will be utilized for this purpose (or only future modules), and if current/existing modules will ever be utilized as bioreactor cells. Please describe the proposed design(s) of leachate containment and removal systems (LCRS) for the bioreactor cells? How do bioreactor cell LCRS designs differ from Class II landfill LCRS systems? How will the bioreactor cells be managed in order to prevent injury from equipment and vehicle use on the landfill mass during active decomposition of the landfilled materials? Where will the bioreactor's water supply come from and will it contain any dissolved solids, contaminants, or microorganisms?

Increase in Final Fill Elevation

Please provide a detailed description of the proposed final grading plan configuration for each landfill expansion site. Describe how the landfill grade contours will be maintained for the bioreactor cells when significant differential settlement creates pockets where rainwater can collect. Describe the final elevation, slopes and contours of the landfill, and if the highest vista of the landfill (including final cap) will be at or above any existing ridgelines or in direct line-of-sight from a scenic viewpoint. Please provide photos showing views of the area from the east, south, west and north prior to, and digital representations of the views after the proposed increase in elevation.

As required by CCR Title 14, §§ 15126.2, 15126.4 and 15126.6, ERS staff requests that the draft EIR contain detailed considerations and discussions of the significant effects, mitigation measures and alternatives for the proposed project. This should include an analysis of the significant aesthetic effects on the surrounding community from the proposed increase in landfill heights within the existing and expansion 'footprints'. ERS staff request that one of the project alternative project proposals include an assessment as to whether the County's basic objectives would be feasibly attained, and significant effects avoided or lessened by the implementation of the proposed projects, without the vertical expansion of the landfill sites.

Expanded Landfill Gas (LFG) Management and Utilization

Please provide a detailed description of proposed LFG collection and combustion systems and the location of each. What will be the expected LFG volumes for the bioreactor cells? What provisions are in place to deal with the possibility of system failure? The draft EIR should include specific information on the proposed systems for use and management of LFG.

Expansion of Salvaging Operations

Please provide detailed analysis of the following:

- Who will be allowed to salvage waste?
- Will waste be salvaged at the landfill face or in alternate location?
- What training workers will salvage workers receive?
- Provisions for the security, protection, and safety of salvage workers such as measures that will ensure stability of working face, eliminate exposure to hazardous waste and materials, and any other human health and safety issues relating to the proposed salvaging operation.
- Will salvaging be performed in non-daylight hours, and if so, how will lighting be provided and positioned?
- Where will salvaged materials be stored?
- Will salvaged materials storage areas be covered to minimize contact water from storm events?
- How will salvaged material be distributed to the public or organizations as proposed?
- Identify whether or not the salvaged goods will be sold.
- Is a public buy-back area planned, and if so, where this area will be located on-site?
- Identify if there will be workers manning salvage material storage area(s).
- Will the public have access during all operating hours?

Household Hazardous Waste (HHW) Storage/Collection Facility

The draft EIR should describe in detail the design and operational features of the HHW facilities, especially those features that will allow the facility to comply with all local, state, and federal requirements for the transportation, storage, and disposal of HHW material. Furthermore, the following issues should be addressed in the draft EIR:

- Please provide a complete description of the operation of the proposed HHW facilities including a description of the operations immediately adjacent to the HHW facility.
- Describe any potential impacts of on-site and off-site traffic generated from the HHW materials facility with the operations immediately adjacent to the HHW facility. Will the traffic from each facility be kept separate? If so, what methods will be used? Please provide any supporting traffic study information prepared for the proposed project.
- Estimate the volume and weight during a specified time frame (month, quarterly, annually) for the various types of HHW anticipated or proposed to be collected at the HHW facilities. Discussion should include the proposed facility's capability to accept, temporarily store, and transport off-site the quantities accepted as well as any associated environmental impacts.

Composting Facility (CF)

If composting is proposed at any of the Phase I facilities, the draft EIR should contain a complete and detailed description of the composting facility information and operations. This should include, but not be limited to, detailed descriptions of the proposed composting processes such as:

- Types of feedstocks.
- Composting methods (i.e., windrows, static pile, in vessel, etc.).
- Average and maximum quantity of individual types of feedstock to be received daily (in tons and cubic yards).
- Maximum volume of feedstocks and active compost on-site at any time, etc.

The draft EIR must detail all provisions in order to indicate the ability of the facility to meet State Minimum Standards for environmental protection (see CCR Title 14, §§ 17850 et. seq.). The following internet link accesses checklists developed by Board staff as a guide to lead agencies in the preparation of EIR for landfills, transfer stations, material recovery facilities, and composting facilities:
http://www.ciwmb.ca.gov/PermitToolbox/CheckItems/CEQA/default.htm#Guidelines.

When and if a composting facility is considered for development and operation by the Orange County IWMD the checklist for compost facilities would be a very helpful tool in the CEQA process.

SWFP for Construction and Demolition (C&D) Projects

Please be advised that C & D regulations are currently in the rule-making process. The LEA will need to make a determination regarding the level of regulatory authority required for the C & D projects if, and when, they are proposed by the Orange County IWMD. For information related to the development of these regulations, please see the Proposed Regulations page of the Board's web site, http://www.ciwmb.ca.gov/Rulemaking/CDMater/.

Prime Agricultural Land

Some undeveloped land at the RELOOC landfills lateral expansion areas may be considered prime agricultural land. The draft EIR should identify any areas of prime agricultural or

Williamson Act contract lands that would be taken out of agricultural production or consideration thereof.

ERS STAFF'S IMPACT ASSESSMENT RECOMMENDATIONS

Potentially Significant Environmental Impacts

ERS staff has identified potentially significant project related impacts in the areas of **Land Use and Compatibility**; **Aesthetics**; **Ground Water Quality**; regional and localized **Air Quality**; regional and localized **Traffic**; site **Biology**; localized **Noise**; and **Health and Safety**. Most potentially significant project related impacts may be reduced to less than significant levels by project features and designs and/or mitigation measures. It may be that one or more potentially significant environmental impacts cannot be avoided if the project as proposed in this NOP is implemented.

Cumulative Impacts

It is important that the draft EIR address the cumulative impacts resulting from the individual/proposed project(s) and the combined projects as well as those incremental impacts resulting from the proposed projects' implementation.

Land Use Compatibility

The draft EIR should identify the proposed facilities' surrounding land use with a description of the density of the occupancy for commercial and residential areas. The draft EIR should be specific regarding the distance to the nearest sensitive receptor(s).

The project's surrounding land use must be designated as compatible with the proposed/current land uses at the project sites. The local government, in whose jurisdiction the facilities will be located, must make a finding that the facility is consistent with the General Plan (Public Resources Code Section 50000) and is identified in the most recent County Integrated/Solid Waste Management Plan (Public Resources Code Section 50001).

Traffic and Related Transportation System Impacts

Traffic volumes (the proposed projects separate and total daily vehicle counts) should be projected over a minimum of five years for the project at peak tonnages considering both short haul and possible long haul aspects of the project proposals. Discuss the cumulative effect of traffic for all of the projects proposed for analysis in the draft EIR. The issuance of revised SWFPs will require that peak daily tonnage and corresponding vehicle counts be proposed and analyzed in the draft EIR. On site traffic circulation for all project proposals should be discussed in detail in the draft EIR.

A traffic study may be necessary to determine whether the existing infrastructure can handle the projected vehicular movement, and whether improvements may be necessary to accommodate increased traffic; including the repair of, and maintenance of, existing roads, additional lighting, turn lanes, and pedestrian walk-ways; as well as cumulative impacts on the circulation within the landfill vicinity (i.e. ingress and egress). The regional district of CalTrans should be contacted regarding potential issues related to an increase in traffic volumes around the RELOOC SWFs.

Air Quality

Local and regional impacts on air quality from vehicles, trucks, and equipment emission sources accessing the facility should be analyzed in detail, including emissions from equipment handling waste materials and potential dust generation during operations at the RELOOC facilities. Dust particulates (PM_{10}) and ozone precursors may be of particular concern if the regional air basin is 'non-attainment' for PM_{10} and ozone precursors. If the proposed projects are located within a 'non-attainment' air basin, cumulative impacts affecting the projected federal 'attainment' dates may be significant and unavoidable.

The distance to the nearest residential and/or commercial odor receptors, as well as the direction of the prevailing wind should be identified in the draft EIR. Mitigation measures, which will be employed to address impacts for the proposed facility, should be incorporated into the draft EIR with a description of the 'attainment' plan for the air basin(s) air quality. The local Air Pollution Control District should be contacted regarding air pollution discharge permits, which may be required to ensure compliance with ambient air quality standards.

Noise

Activities associated with vehicular transport of waste materials and the use of heavy equipment (e.g. large vehicles, rock crusher, tub grinder, trommel screen, etc.) to process materials may result in significant on-site and off-site noise levels. A noise study may be necessary if local receptors are impacted, and should be included in the draft EIR. Appropriate noise-attenuating mitigation measures, which can be implemented to reduce noise levels, should be incorporated into the draft EIR. Short-term and cumulative impacts should be assessed as well as operations related noise.

Risk of Upset/Human Health

In the event of an accident, explosion, fire, or the release of hazardous substances due to upset conditions or mechanical malfunctions, an Emergency Response Preparedness Plan should be prepared and available at the proposed RELOOC facilities. Personnel should be properly trained to handle emergency situations, including identification, location and use of fire suppression equipment, procedures for evacuation of the premises, and noticing for contacting the appropriate authorities in the event of such an occurrence. What is the response time for the nearest City/County Fire Department location? ERS staff request that such a plan be briefly described or referenced in the draft EIR with the appropriate mitigation measures in the event of such an occurrence. The plan should include such information as: existing and/or proposed hygienic facilities on site as well as first aid equipment accessibility and employee training. What is the distance to the nearest hospital? What will be the provisions for the permanent water supply? This information can be referenced in supporting documentation.

Please include in the draft EIR a map drawn to scale with a description of the security on and around the RELOOC facilities' locations, including fencing, lighting, gates and access roads.

Please be aware that the CCR Title 8, §§ CCR Section 3203 requires all employers in the State to implement and maintain an effective Injury Prevention Program (IPP). The Labor and Penal Codes have been amended to provide administrative, civil, and criminal penalties for failure to comply and/or for injuries or deaths occurring due to the absence of an effective IPP.

Surface Drainage

The draft EIR should include drainage plans along with the proposed final grading plans for the separate facilities. Site plans should identify the paved and exposed surfaces where the projects' proposed operations may take place. The plans should identify surface water runoff, including, but not limited to creeks, rivers, and/or diversion channels in areas adjacent to the project area. Indicate on a map drawn to scale the location of all project proposals to be carried out over buried landfill refuse. Identify on this site map any diversion berm(s) that will redirect flow away from/around the facility proposals and any drainage basins to keep drainage on-site. Will the proposed facilities be able to handle a 100-year, 24-hour storm event? IWMB staff recommends that the Regional Water Quality Control Board (RWQCB) be contacted to determine if a Report of Waste Discharge (ROWD) or National Pollution Discharge Elimination System (NPDES) permits are required for the RELOOC facilities.

Earthquake Faulting and Seismic Stress

Identify in the draft EIR any known earthquake faults in the vicinity of the proposed facility and the frequency of seismic activity as well as a range of most probable earthquake (MPE) magnitudes and maximum ground acceleration (MGA). How will the MPE MGA(s) affect the proposed slope stabilities at the RELOOC landfills? How will the proposed RELOOC facilities landfill design structures stand up to the MPE MGA(s) considering that the facility structures and/or landfill equipment may be located over buried landfill refuse? Please include a map of historic epicenters within a radius of ten miles of the facility.

Mitigation Reporting or Monitoring Program (MRMP)

As required by Public Resources Code (PRC) Section 21081.6, the Lead Agency should submit a MRMP at the time of local certification of the EIR. This should identify the environmental impacts associated with the proposed project, identify mitigation measures to reduce impacts to a less than significant level, identify agencies responsible for ensuring the implementation of the proposed mitigations, and specify a monitoring/tracking mechanism. PRC Section 21080 (c)(2) requires that mitigation measures "...avoid the effects or mitigate the effects to the point where clearly no significant effects on the environment would occur." The MRMP is also required to be made a condition of project approval. Changes to this Section 21081.6(b) also requires that "A public Agency shall provide that measures to mitigate or avoid significant effects on the environment are fully enforceable through permit conditions, agreements, or other measures." The MRMP should also indicate that agencies designated to enforce mitigation measures in the draft EIR have reviewed the MRMP and agreed that they have the authority and means to accomplish the designated enforcement responsibilities.

REGULATIONS which MAY AFFECT ASPECTS of the PROJECT PROPOSAL

Consideration for Construction and Location of Ancillary Buildings at a Landfill

Please be aware of the following regulations which may apply to the project proposal:

Title 27, CCR, Section 21190 – Postclosure Land Use.

(a) Proposed postclosure land uses shall be designed and maintained to:

> (3) prevent landfill gas explosions.

(g) All on site construction within 1,000 feet of the boundary of any disposal area shall be designed and constructed in accordance with the following, or in accordance with an equivalent design which will prevent gas migration into the building, unless an exemption has been issued:

> (1) a geomembrane or equivalent system with low permeability to landfill gas shall be installed between the concrete floor slab of the building and subgrade;
>
> (2) a permeable layer of open graded material of clean aggregate with a minimum thickness of 12 inches shall be installed between the geomembrane and the subgrade or slab;
>
> (3) a geotextile filter shall be utilized to prevent the introduction of fines into the permeable layer;
>
> (4) perforated venting pipes shall be installed within the permeable layer, and shall be designed to operate without clogging;
>
> (5) the venting pipe shall be constructed with the ability to be connected to an induced draft exhaust system;
>
> (6) automatic methane gas sensors shall be installed within the permeable gas layer, and inside the building to trigger an audible alarm when methane gas concentrations are detected; and
>
> (7) periodic methane gas monitoring shall be conducted inside all buildings and underground utilities in accordance with Article 6, of Subchapter 4 of this chapter (section 20920 et seq.).

You may contact Scott Walker of the Remediation, Closure, and Technical Services Branch at (916) 341-6319, or e-mail at swalker@ciwmb.ca.gov for technical assistance on the regulatory requirements for post closure land use at the RELOOC facilities.

Title 14, CCR, Section 17407.5. Hazardous, Liquid, and Special Wastes.

(a) An operation or facility shall not intentionally accept or store hazardous wastes, including batteries, oil, paint, and special wastes, unless it has been approved to handle the particular waste by the appropriate regulatory agencies. Such approvals shall be placed in the operating record.

(b) At operations and facilities where unauthorized hazardous wastes are discovered, control measures as are necessary to protect public health, safety and the environment, such as elimination or control of dusts, fumes, mists, vapors or gases shall be taken prior to isolation or removal from the operation or facility,

(c) Liquid wastes and sludges shall not be accepted or stored at an operation or facility unless the operator has written approval to accept such wastes from the appropriate agencies and the EA. The EA shall authorize acceptance of these wastes only if the operation, facility, and the transfer vehicles are properly equipped to handle such wastes in a manner to protect public health, safety, and the environment.

Note:

Authority cited:
Sections 40502, 43020, and 43021 of the Public Resources Code.

Reference:
Sections 40053, 43020 and 43021 of the Public Resources Code.

CONCLUSION

ERS staff requests copies of any subsequent or revised environmental documents (EDs) in addition to the draft and final EIRs. Any subsequent or revised EDs should be circulated through the State Clearinghouse as required in Section 15205(a) of the CEQA Guidelines. The IWMB be noticed of the date, time and location of any public hearings regarding the project proposal at least ten days in advance.

ERS staff have no further comments on the project as proposed at this time. Thank you for the opportunity to comment on this project in the early planning stages. If you have any questions regarding these comments, please contact me at (916) 341-6327 or e-mail me at jloane@ciwmb.ca.gov

Sincerely,

John Loane, Integrated Waste Management Specialist (IWMS)
Permitting and Inspection Branch
Permitting and Enforcement Division
California Integrated Waste Management Board

cc: Tadese Gebre-Hawariat, IWMS
Permitting and Inspection Branch, Region 3
Permitting and Enforcement Division
IWMB

Suzanne Hambleton, Supervisor
Permitting and Inspection Branch, Region 3
Permitting and Enforcement Division
CIWMB

Sue O'Leary, Supervisor
Environmental Review Section
Permitting and Inspection Branch
Permitting and Enforcement Division
CIWMB

County of Orange LEAHealth Care Agency
Environmental Health Division
2009 E Edinger Ave
Santa Ana, CA 92705

Becky Frank
State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812-3044

APPENDIX D
WRITTEN COMMENTS/VERBAL COMMENTS FROM THE SCOPING MEETINGS

RELOOC
Regional Landfill Options for Orange County

Draft EIR No. 588 Scoping Meeting

WRITTEN COMMENT FORM

To make a written comment, question, or concern to be addressed in the RELOOC Draft EIR No. 588, please PRINT the comment, question or concern on this form and hand it to a staff member *AT THE INFORMATION TABLE* prior to leaving this meeting. If you would like to receive notification via the US mail of when the RELOOC Draft EIR No. 588 is available for review, a sign-up sheet for mailed notification is at the information table.

PLEASE PRINT

1) Will it be safe to eat fruits from trees in Olinda ranch?

2) How much trash smell & Bioburden particulates am I going to breathe in Olinda Ranch?

3) Can you direct traffic through tonner Canyon?

4) Can you change the truck hours till after 9:00 after people went to work & children in schools? until Tonner Canyon open?

Sami Abunadi
489 Hummingbird Dr.
Brea, Ca. 92823

RELOOC Information Line: (714) 834-3562
Orange County Integrated Waste Management Department: www.oclandfills.com

http://www.bas.com:3000/WorldClient.dll/Public Comment Forms.doc?Session=DTRIPCL&View=Attachment&Part=3.0&Filename=Public Comment Forms.doc

fax 834 4057

RELOOC

Regional Landfill Options for Orange County

Draft EIR No. 588 Scoping Meeting

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PLEASE PRINT

Would like to see the landfill trucks routed to Tonner Canyon Rd. It is unecessary to have these trucks rooted through newly built residential areas. The noise & pollution are becoming intolerable.

Roger A. Haanpaa
477 Hommingbird Dr
Brea, CA 92823

RELOOC Information Line: (714) 834-3562 Linda Hagthrop

Orange County Integrated Waste Management Department: www.oclandfills.com

RELOOC
Regional Landfill Options for Orange County

Draft EIR No. 588 Scoping Meeting

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PLEASE PRINT

The EIR should look at the landfills impact on bird habitat due to the importation of foreign bird species into the area. (i.e. seagulls or raven

To the extent that this can't be mitigated there should be an exploration of mitigation fees for purchase of bird habitat in nearby areas.

The impact of landfill odors should be studied

The impact on the wildlife corridor should be studied.

Full environmental review of any road building should be studied, which would include all non-landfill usage of the potential road.

RELOOC Information Line: (714) 834-3562
Orange County Integrated Waste Management Department: www.oclandfills.com

http://www.bas.com:3000/WorldClient.dll/Public Comment Forms.doc?Session=DTRIPCL&View=Attachment&Part=3.0&Filename=Public Comment Forms.doc

RELOOC
Regional Landfill Options for Orange County

Draft EIR No. 588 Scoping Meeting

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PLEASE PRINT

The EIR should check impact of Air polution due to expansion. Soil quality, ↑ land slide +Soil errosion possiblity due to ↑ heigth of landfill. What type of moving equipment is used in landfill - How much pollution do they generate? I am not in favor of a alternate route through Tonner Canyon that would divert more traffic from adjacent Cities to Brea. The impact on the wildlife Corridor should be studied. The areas that cannot be mitigated, there should be an exploration of mitigation fees to Compensate for the damage done to wildlife to purchase other open space areas. Like the landfill in Whittier did. Open space and wildlife is important to the Citizens of the city of Brea

Thank You for your time!

RELOOC Information Line: (714) 834-3562
Orange County Integrated Waste Management Department: __www.oclandfills.com__

http://www.bas.com:3000/WorldClient.dll/Public Comment Forms.doc?Session=DTRIPCL&View=Attachment&Part=3.0&Filename=Public Comment Forms.doc

RELOOC
Regional Landfill Options for Orange County

Draft EIR No. 588 Scoping Meeting

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PLEASE PRINT

The Olinda Alpha landfill's designated truck route desperately needs to be rerouted. Currently the landfill trucks use Imperial Highway and Valencia Avenue as its designated route. Resident's homes, parks and shopping centers are situated right along this route. Our bedroom windows and our kids play areas are within only a few feet of these trucks. There is no consideration for the resident's quality of life that live along Imperial Highway and Valencia Avenue. The horrible noise and ground shaking vibration wakes us up every morning and goes on throughout the entire day Monday through Saturday. Sound walls are of no use in solving the problems these landfill trucks bring. The blaring exhaust stacks of the landfill trucks stick up and over the useless sound walls. Toxic particles fly out of the trucks cargo bins and fly up and over the sound walls into our backyards and playgrounds. A large amount of black dust particles accumulate within a few days in our yards. The vibrations from the trucks idling engines while there sitting at the stop light at Imperial and Placentia Avenue pass right through the sound walls and rattle the dishes, pictures and fixtures in our homes. Or the heavy cargo bins pounding against the road when the trucks hit a bump, sewer cap, or pothole in the road.

We ask that air quality test be taken at the Artisan Walk homes along Imperial Highway. The large amount of black dust particles that settle in our yards need to be investigated if it is toxic and related to the landfill's activities.

We also ask that the landfill truck route be designated to Tonner Canyon Road. This would solve the unbearable problems of the horrendous truck noise, vibrations, toxic particulates, and road safety (pedestrians, kids playing in nearby areas, road wear and tear, city street congestion, exhaust pollutants, city aesthetics, etc., etc., etc.). All these concerns need to be investigated and addressed. The solution would be to use Tonner Canyon Road.

Phil

RELOOC Information Line: (714) 834-3562
Orange County Integrated Waste Management Department: www.oclandfills.com

http://www.bas.com:3000/WorldClient.dll/Public Comment Forms.doc?Session=DTRIPCL&View=Attachment&Part=3.0&Filename=Public Comment Forms.doc

RELOOC
Regional Landfill Options for Orange County

Draft EIR No. 588 Scoping Meeting

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PLEASE PRINT

I RESIDE IN THE CITY OF BREA
AND WOULD LIKE TO HAVE
THE TRASH TRUCKS RE-ROUTED
TO TONNER CANYON.

David
DAVID SMITH

RELOOC Information Line: (714) 834-3562
Orange County Integrated Waste Management Department: www.oclandfills.com

RELOOC
Regional Landfill Options for Orange County

Draft EIR No. 588 Scoping Meeting

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PLEASE PRINT

I LIVE IN BREA. I AM FINE WITH THE LANDFILL AND THE WAY IT IS OPERATED. I AM UNHAPPY WITH THE TRUCKS AND THE GreenWASTE SITE. I WOULD LIKE THE TRUCKS TO BE REROUTED TO TONNER CYN. AND CLOSE THE Green WASTE SITE. THANK YOU.

ROBERT LAWTON
3624 SKYLARK WAY
Brea CA. 92823

RELOOC Information Line: (714) 834-3562
Orange County Integrated Waste Management Department: www.oclandfills.com

RELOOC
Regional Landfill Options for Orange County

Draft EIR No. 588 Scoping Meeting

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PLEASE PRINT

Although Orange County has a responsibility to use existing landfill capacity, Olinda Alpha landfill has a responsibility to be a good neighbor.

As a homeowner in Olinda Ranch, I would only agree to continued operations at the landfill if traffic to the landfill were re-routed to tonner canyon and the lower faces of the landfill facing Orange County were landscaped to blend in with remaining native vegetation.

Thank you,

ERIC BETTELHEIM
3667 [illegible] STARLING WAY
BREA, CA 92823

RELOOC Information Line: (714) 834-3562
Orange County Integrated Waste Management Department: www.oclandfills.com

http://www.bas.com:3000/WorldClient.dll/Public Comment
Forms.doc?Session: DTRIPCL&View: Attachment&Part: 3/0&Filename: Public Comment Forms.doc

RELOOC
Regional Landfill Options for Orange County

Draft EIR No. 588 Scoping Meeting

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PLEASE PRINT

My family and I oppose the expansion and extension of the Brea Land fill for the following reasons

1. Safety - the trucks pose a very serious danger to our children and to other drivers on the Brea area roads
2. Health: My son is asthematic. The smell produced by the landfill irritates his lungs and those of many kids and adults.
3. Quality of Life - Trucks are very noisy and unpleasant looking.
4. No entity (County, city or Land fill) should enjoy an economic gain at the expense of the residents of the city of Brea.

Thank you

Dr. Majed Muhtaseb

3619 Skylark Way, Brea, CA 92823
(714) 996-3800

RELOOC Information Line: (714) 834-3562
Orange County Integrated Waste Management Department: www.oclandfills.com

mmuhtaseb@csupomona.edu

RELOOC
Regional Landfill Options for Orange County

Draft EIR No. 588 Scoping Meeting

WRITTEN COMMENT FORM

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PLEASE PRINT

MY WIFE AND I RECENTLY PURCHASED A NEW HOME IN BREA - OLINDA. IN SO DOING, WE WERE ASSURED THAT THE LANDFILL WOULD BE CLOSING IN 2013. WE ARE CONCERNED ABOUT THE NEW PROPOSAL TO EXTEND THIS ANOTHER EIGHT YEARS. THE TRAFFIC ALONG VALENCIA WITH SO MANY LARGE TRUCK IS ONE ISSUE. THE OTHER ISSUE IS THE OFFENSIVE ODOR THAT PERVADES OUR COMMUNITY.

WE FEEL BREA IS A BEAUTIFUL CITY TO LIVE IN THAT CARES ABOUT ITS RESIDENTS. BY APPROVING ADDITIONAL TIME FOR THE LANDFILL TO REMAIN OPEN, WE FEEL BREA WILL BE VIOLATING TRUST WITH ITS RESIDENTS. BREA SHOULD STAND UP FOR ITS COMMUNITY AND ITS RESIDENTS AND DENY THIS PROPOSAL.

RELOOC Information Line: (714) 834-3562
Orange County Integrated Waste Management Department: www.oclandfills.com

RELOOC Strategic Plan - Olinda Alpha Landfill Implementation

Thursday, January 22, 2004
7:30 PM to 9:00 PM

City of Brea Council Chambers
1 Civic Center Circle

Scoping Meeting Comments

- Joyce Larson – Lived in Brea since 1987. Shortly after I moved to Brea the County was crying we are going to fill up, we've got to lengthen it and not long after that happened after all the approvals, then the County started imported trash. So the County betrayed us before how can we believe them this time?

- Warren Couler – Couple of things to point out. The power plants at the landfill do make excessive noise. Request a noise impact be studied. Lives in homes below the power plant. Never was known to him that there were power plants until he met with the director, who showed him the facility. Talked about reducing noise by putting up sound walls but has not heard from anyone in 1 ½ years, so he does not think anything has been done. He would like the noise to be addressed. No more power generation. If they do have an expansion there should be sound barriers around the facility or move the pad farther north. Also, he would like traffic to be studied. Not opposed to it being extended but would like the traffic re-routed through Tonner Canyon for two reasons: reduce noise in the neighborhood and to reduce traffic on Imperial Highway which is quite heavy getting on to Freeway.

- Tina Johnson – These issues concern her and here neighbors. She resides in Olinda Ranch at 660 Partridge. Concerns with noise, traffic and pollution and the impacts they have on the children growing up in Olinda Ranch. Studies done affected them differently. There are dangers that are present by the large trucks. She would like it studied and put in the EIR for the writing section. She did make a map of her neighborhood and drew a map of the children in her area under 18. Noise from trucks definitely needs to be studied. Aesthetically, if the landfill will be higher and over looks us it is important. Questioned where the catch basins are located when the Landfill is complete.

    - Answer: 2 catch basins and explains on a map where those candidates are.

  She replied that the catch basin to the left, sit right over her neighborhood and has concerns about getting into groundwater.

  Was there an EIR done since people have been living in the Olinda Ranch Development?

    - Answer: No.

- Phil Tonioka – Proud residents of Imperial and Placentia Avenue. Was shown maps of two other landfills (FRB & San Diego) which had there own road going in and out of the landfill. Concerned because the main road going in to Olinda Alpha is a main road and is concerned with the noise. People in Glenview built a 15 foot sound wall and did not solve the problem. Also concerned with the exhaust and the vibration of these trucks. The large amount of truck traffic on Imperial Highway. Complains that the truck wake him up at 5:15 in the am due to vibration, blaring past bedroom window. Says soundwall is not the solution and it will not fix the problem. With the affects of what the concern with the children growing up close to landfills, he explains that his wife grew up near Whittier landfill and says there is settlement due to cases with people who have cancer due to living next to landfills. Truck problem and truck noise is the main problem. Suggests Tonner Canyon.

- Keith Pallton – 41 Pepper tree. Air quality is the most important concern. Trucks going through Valencia and Imperial Highway. He is also concerned regarding the children in school or athletic field. Safety issue with trucks traveling on the community roads near school children. EIR should address Lambert and Carbon Canyon Road and the impact of the traffic. How many trips or round trips go to the landfill? Specific number of trips. Suggests making and off-ramp from the 57 just purposely for trash trucks so it would not negatively impact the wildlife.

- Unknown – Asked about the checklist and if the questions are the same that will be addressed in the EIR or are there more questions. Also asked if the checklist will be changed and notice that one question that was marked "No impact" was incorrect.

- Unknown – What levels are used regarding potential significant impacts, less than significant impact of mitigation and asked if there is a scoring system used.

- Unknown – Does not understand why they said they were going to close the landfill in 2013 and now planning to extend it again, is that going to be final and if you plan to have it open 8 years longer wouldn't it make more sense to go through Tonner Canyon?

- Unknown – Regarding my concern with the power plants can you address how long the life expectancy and also the pollution of the power plants.

- Unknown – When was the designated road chosen to the Landfill?

- Unknown – How is the EIR going to address the water quality in the landfill situation? The groundwater in the agriculture.

- Unknown – What happens to all the chemicals in the groundwater and wants to know if the plastic lining will protect it from leakage? Life of the lining.

- Unknown – Trucks are traveling through the streets where there are children. What about the pollution? Will the traffic go in the same direction?

- Unknown – Wants to know if we have people going out and testing the water, soil and air? Counting the trucks? Knocking on doors of residents in the area? Wants people in the community to be involved in gathering information.
- Unknown – How particulates will be exposed to in Olinda Ranch? Can you direct traffic through Tonner Canyon? Can the truck hours be changed after people leave for work and children are in school?

- Unknown – EIRs are looked at by many companies and agencies as another hoot that you doctor to get the stamp of approval regardless of the content. Does not want that to happen with this EIR, there is too much at stake. When you raise the parameter of the height that it could be uninviting in terms of aesthetics as you look at in this direction. Do you have something that you could hold up or that would relate to the scale on the height now and what the height would be from the entrance of Carbon Canyon Regional Park?

- Unknown – When will the solutions be addressed after the money for the extension comes through?

- Unknown – If the City does not approve the extension of the Landfill, what is done at that point?

- Unknown – What are the economic impact if the project does not go through?

- Unknown – Residents want to be reflected in the data. Resident offers his backyard for data.

- Unknown – Valencia and Sandpiper is an empty lot for a good set up.

- Unknown – Economic impacts of families living in the area due to illness from the Landfill.

- Unknown – Impact on home values?

- Unknown – Resident was told by homeowner association that the access road to the landfill was going to be moved.

- Unknown – If it were to go to the No Project, how far would they have to go for trash disposal and the cost to trash disposal?

Regional Landfill Options for Orange County (RELOOC)
SCOPING MEETING
BREA, CA
SEPTEMBER 18, 2002
7:30 P.M.

Introductions

- Brief introduction of Integrated Waste Management Department (IWMD) and consultant roles

PowerPoint Presentation (attached)

- Overview of the purpose of the meeting
- Explanation of terms
- Overview of California Environmental Quality Act (CEQA)
- Need for RELOOC
- Explanation of Orange County Landfills under jurisdiction of the IWMD and need to preserve capacity of facilities
- Brief overview of RELOOC Steering Committee planning process including a discussion of agencies/persons involved
- Explanation of the RELOOC Strategic Plan and purpose of Environmental Impact Report (EIR)
- Explanation of RELOOC short (i.e., physical modifications, annual review of Strategic Plan, etc.) and long-term (i.e., studies) Strategic Plan strategies
- Overview of Project Objectives
- Explanation of Project Description (i.e., expansion of Frank R. Bowerman (FRB) and Alpha Olinda Landfills). Discussion of FRB Landfill landslide and issues associated with the site (i.e., horizontal and vertical expansion (250 feet - 1,100 to 1,350) and need for approximately 2 acres of land from the Irvine Company located outside of the property boundary). Project will need permits from regulatory agencies and cities.
- Discussion of Alternatives, including feasibility and evaluation

Public Comments

Steve Vargas, Councilman

Question/Comment: What is the permit limit for Prima? What would the tons per day be increased to for Alternative 2. Isn't the access road (i.e., Ortega Highway) considered hazardous? What would you do to address this issue? The issues in Brea include traffic along Imperial Highway. Caltrans built a sound wall and this has helped lower noise and particulates coming from the trucks but it's still a bit noisy. So, even with 14 foot sound walls, the rumbling of the trucks and particulates is hazardous to my neighborhood. This is also disturbing to me as a resident. My concern is traffic and noise. The City's traffic engineer indicates that we have 2,200 trips per day going to the dump. We also increased a speed limit change along Valencia Road and raised the limit from 35 to 45 miles per hour. I have documentation that now indicates life. I also noticed that each of the newer landfills have their own access. Perhaps we can find some resolution to these maters.

Answer: Thank you. Do we have your address? Yes. Thank you.

Dianne Taylor

Question/Comment: We have a lot of out of county waste being hauled through Carbon Canyon with debris and other material falling out and blocking the road. I was around when the Memorandum of Understanding was originally written and 2013 was the absolute drop dead deadline. We were told that this would never happen again. We have not seen the improvements promised including landscaping and the affects of scaring on the hillside. The mitigation measures we were promised have still not happened. We we're told that we would have a park. That has still not happened and the community is bitter. Both the vertical and horizontal expansion are totally unacceptable. I agree with the previous speaker that the truck traffic is really bad and was not this way back in the 1960s. It's truly unacceptable, including the traffic, noise, vibration, air quality. We also have new residential projects proposed that will be competing with the trash trucks. Tonner Canyon was also studied as an alternative access. Some of us would like to see direct access via Tonner or Valencia. If the landfill was allowed to be extended to 2017 (without the vertical or horizontal expansion) I would accept that and Tonner would be the only viable mitigation. The trucks need to be off of City of Brea roads. Smaller haulers should also not be allowed to use Carbon Canyon Road.

Answer: Thank you.

Norm Wit

Question/Comment: How many tons are being imported into the County landfills and to individual landfills? Why is the cessation of imported material not being addressed?

Answer: Thank you.

Chris Rimer, City of Brea

Question:/Comment: The information provided is difficult to understand, specifically the no increase in daily tonnage. It's obvious that this is inconsistent with the growth we are experiencing. We have 2,000 residential units planned for our City alone. What about the construction debris? More people make more trash. How do you explain that we have no increase in daily tonnage yet we have this explosive growth around us?

Answer: Thank you. Your questions will addressed in the EIR.

Regional Landfill Options for Orange County (RELOOC)
SCOPING MEETING
BREA, CA
SEPTEMBER 18, 2002
10:00 A.M.

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- Discussion of Alternatives, including feasibility and evaluation

Public Comments

Phil Tanioka, Resident of Brea

Question/Comment: Negative consequences from transportation of waste. Operation hours are inconsiderate. They begin transport at 4:00 A.M. and roar past us. The exhaust pipes extend above the height of the sound walls. Vibration is also really bad. The vibration shakes objects in the house. Air quality is also an issue and affects our children and quality of life. The dust that blows out of the waste truck bins is really bad. We welcome you to come to our house to experience the affects. Trucks struggle to access the landfill due to the slope of the hill and create a lot of noise. When trucks leave the landfill with empty cargo bins, the bins vibrate and shake our homes. The screeching brakes are also a really bad situation. We are unable to relax on the weekend due to the activities on the landfill and along the street are ruining our quality of that there are 2,400 trips per day. Some may be from construction vehicles. How many trucks actually pass your gate daily? I need the most recent number you have. Also, at what point did expansion of the landfill come into being? Also, the footprint of the landfill, could you give me the acreage at 2013 and 2017? According to the MOU, the County is to pay for and remediate the plateau of the landfill and turn it into a natural history park or preserve. Could you clarify this? Also, according to the MOU, the plateau was supposed to be comprised of 50 acres. Information from last year indicates that it could be a 150 acre plateau because of the expansion we've already done in 1995 (i.e., the vertical expansion). I would like to have that verified. So, if it closes in 2013, are we getting a 50 or 150-acre park?

You have discussed the injection of fluids to enhance compaction. What are the differences in using this technique on the two landfills that are lined compared to ours which is not lined. What would be the affect on our water table? Would you consider this at the Olinda Alpha Landfill? I want to ensure that the information that is given accurate. For example, you put out a nice brochure on how IWMD protects groundwater, but these apply to lined facilities and not Olinda Alpha (which is not lined). So, when you're rolling out a proposal in north Orange County and your graphics show a lined landfill, its not applicable and you tend to mislead. I want to ensure that if you're planning on introducing liquids, determine if it wouldn't apply to Brea and if not, don't mention it this way.

Please provide an estimate of what the County, in dollars, thinks it would cost extending the landfill to 2017 or 2021. You anticipate having mitigation, tipping and gate fees. I need a number on that. If it's incredibly high, maybe we can get some of that open space. If it's low, it's a mute point. I want to close the landfill as soon as possible. If its not economically feasible to do all of the things we want to do, maybe we should get the best thing we can which is a 150 acre plateau. Having that number would be important.

Response: Thank you.

Claire Schlotterbeck, Hills for Everyone

Question/Comment: The litany of broken promises related to the landfill is just staggering including what Mr. Vargas just said about it being an extension and not expansion. So I was surprised to see the expansion mentioned. The dump causes traffic problems along Imperial Highway for residents of Brea. Particulate mater is also a concern. Also, when you expand the landfill and make it higher you're causing damage to the Puente-Chino Hills wildlife corridor and you need to mitigate that damage if this goes through. Both of the properties located adjacent to the landfill are proposed for acquisition by one agency or another to be added to the Puente-Chino Hills wildlife corridor in Tonner Canyon. The expansion will also cause damage to Chino Hills State Park and will also need to be mitigated. The State Park was there before the dump and is being brought to the very edge of the park. Add language to the project objectives that they be mitigated and not reduced or minimized. We don't have much open space left and Bee and Round Canyons are beautiful canyons. The Plan needs to minimize the amount of trash that is being dumped.

Response: Thank you.

Melody Schlotterbeck, San Gabriel and Lower Los Angeles Rivers Mountains Conservancy

Question/Comment: Encourage people to visit landfills to see what is involved. Encourage mitigation fees that would pay for the purchase of open space in north Orange County or neighboring Los Angeles County. The Puente Hills Landfill has established a tipping fee of 1 dollar per ton that goes into their landfill native habitat preservation authority. Funds are dispersed for projects in the Whittier Hills and other surrounding areas. I would like to see a similar program adopted here. The 1 dollar number is ten years old however, I would like to encourage a study to determine the appropriate fee and the establishment of a habitat conservation authority for dispersing funds. There are 14,000 homes that have been approved or are currently being built. If you multiply that by 10 vehicle trips per day, that's a lot more cars on the road and it takes a lot longer to get anywhere in the City of Brea. The traffic issue really needs to be evaluated closely. I would also encourage the purchase of the Nuevo property adjacent to the landfill. Additional lands are open for sale and these should be purchased.

APPENDIX E
MEMORANDUM OF UNDERSTANDING/CITY OF BREA

MOU -

CITY OF BREA

BREA – MOU

03/10/92

RESOLUTION OF THE BOARD OF SUPERVISORS
ORANGE COUNTY, CALIFORNIA
March 10, 1992

On motion of Supervisor Vasquez, duly recorded and carried, the following resolution was adopted:

WHEREAS, on August 16, 1989, this Board, after consideration of the Phase I planning study for the North Orange County Landfill and Alternative Technologies Study, directed EMA to initiate the EIR process for landfill site selection; and

WHEREAS, on August 8, 1991, the Orange County Waste Management Commission/ Local Task Force recommended north County landfill sites to this Board, which included expansion of the Olinda/Olinda Alpha landfill as the highest priority; and

WHEREAS, on August 20, 1991, the Orange County Planning Commission recommended to this Board that Final EIR 523 is complete and adequate environmental documentation for the North Orange County Landfill and Alternative Technologies Study; and

WHEREAS, EIR 523 has been prepared in accordance with CEQA, the State Guidelines for Implementation of CEQA (CEQA Guidelines, California Code of Regulations 15000 et seq.);

NOW, THEREFORE, BE IT RESOLVED that:

1. Prior to approval of the FEIR (State Clearinghouse #90010470), this Board has reviewed and has considered the above-mentioned EIR and hereby certifies the FEIR for the North Orange County Landfill and Alternative Technologies Study as complete and adequate in that the report addresses all environmental effects of the proposed facility expansion and fully complies with the requirements of CEQA and the guidelines. Said FEIR is composed of the following elements:

a. Draft EIR 523 for the North Orange County Landfill and Alternative Technologies Study.

b. Appendices to the DEIR.

c. Agency staff reports to the Planning Commission dated July 25, August 6, and August 20, 1991.

d. Agency transmittal to this Board of Supervisors dated February 11, 1992.

e. Comments received on the DEIR and responses to those comments.

f. All attachments, incorporations and references delineated in a through e.

All of the above information has been and will be on file with the County of Orange, Environmental Planning Division, 12 Civic Center Plaza, Santa Ana, California.

RESOLUTION OF THE BOARD OF SUPERVISORS
ORANGE COUNTY, CALIFORNIA
March 10, 1992

On motion of Supervisor Vasquez, duly recorded and carried, the following resolution was adopted:

WHEREAS, on August 16, 1989, this Board, after consideration of the Phase I planning study for the North Orange County Landfill and Alternative Technologies Study, directed EMA to initiate the EIR process for landfill site selection; and

WHEREAS, on August 8, 1991, the Orange County Waste Management Commission/Local Task Force recommended north County landfill sites to this Board, which included expansion of the Olinda/Olinda Alpha landfill as the highest priority; and

WHEREAS, on August 20, 1991, the Orange County Planning Commission recommended to this Board that Final EIR 523 is complete and adequate environmental documentation for the North Orange County Landfill and Alternative Technologies Study; and

WHEREAS, EIR 523 has been prepared in accordance with CEQA, the State Guidelines for Implementation of CEQA (CEQA Guidelines, California Code of Regulations 15000 et seq.);

NOW, THEREFORE, BE IT RESOLVED that:

1. Prior to approval of the FEIR (State Clearinghouse #90010470), this Board has reviewed and has considered the above-mentioned EIR and hereby certifies the FEIR for the North Orange County Landfill and Alternative Technologies Study as complete and adequate in that the report addresses all environmental effects of the proposed facility expansion and fully complies with the requirements of CEQA and the guidelines. Said FEIR is composed of the following elements:

a. Draft EIR 523 for the North Orange County Landfill and Alternative Technologies Study.

b. Appendices to the DEIR.

c. Agency staff reports to the Planning Commission dated July 25, August 6, and August 20, 1991.

d. Agency transmittal to this Board of Supervisors dated February 11, 1992.

e. Comments received on the DEIR and responses to those comments.

f. All attachments, incorporations and references delineated in a through e.

All of the above information has been and will be on file with the County of Orange, Environmental Planning Division, 12 Civic Center Plaza, Santa Ana, California.

2. This Board adopts the Findings with respect to each environmental effect identified in the FEIR and the explanation of its rationale with respect to each such Finding set forth in the document entitled "Statement of Findings and Facts" attached hereto and marked as Attachment A and made a part hereof.

3. This Board adopts the Findings with respect to alternatives set forth in the Statement of Findings and Facts.

4. This Board adopts the Findings with respect to overriding considerations set forth in the document entitled "Statement of Overriding Considerations," attached hereto and marked as Attachment B and made a part hereof.

5. This Board finds that the FEIR has identified all significant environmental effects of the project and that there are no known potential environmental impacts not addressed in the FEIR.

6. This Board finds that all significant effects of the project are set forth in the Statement of Findings and Facts and the FEIR.

7. This Board finds that, although the FEIR identifies certain significant environmental effects that will result if the project is approved, all significant effects that can feasibly be mitigated or avoided have been reduced to an acceptable level by the imposition of mitigation measures. All mitigation measures shall be incorporated into the project prior to or concurrent with project implementation. The list of mitigation measures is attached hereto and marked as Attachment C and incorporated herein by this reference.

8. This Board finds that potential mitigation measures or project alternatives not incorporated into the project (including the No-Project alternative) were rejected as infeasible, based upon specific economic, social and other considerations as set forth in Section III of the Statement of Findings and Facts and the FEIR.

9. This Board finds that the Mitigation Monitoring Report establishes a mechanism and procedures for implementing and verifying the mitigations pursuant to Public Resources Code Section 21086.6; the Report is attached hereto and marked as Attachment E.

10. This Board finds that the unavoidable significant impacts of the project, as identified in Attachment A that have not been reduced to a level of insignificance have been substantially lessened in their severity by the imposition of mitigation measures. All mitigation measures shall be incorporated into the project prior to or concurrent with project implementation. This Board finds that the remaining unavoidable significant impacts are clearly outweighed by the economic, social, and other benefits of the project, as set forth in the "Statement of Overriding Considerations."

Roger R Stanton

Chairman of the Board of Supervisors

SIGNED AND CERTIFIED THAT A COPY
OF THIS DOCUMENT HAS BEEN DELIVERED
TO THE CHAIRMAN OF THE BOARD

Linda D Ruth

LINDA D. RUTH
Clerk of the Board of Supervisors
County of Orange, California

AYES: SUPERVISORS GADDI H. VASQUEZ, THOMAS F. RILEY, HARRIETT M. WIEDER, DON R. ROTH, AND ROGER R. STANTON

NOES: SUPERVISORS NONE

ABSENT: SUPERVISORS NONE

STATE OF CALIFORNIA)
) ss.
COUNTY OF ORANGE)

I, LINDA D. RUTH, Clerk of the Board of Supervisors of Orange County, California, hereby certify that the above and foregoing Resolution was duly and regularly adopted by the said Board at a regular meeting thereof held on the 10th day of March, 19 92, and passed by a unanimous vote of said Board.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 10th day of March, 19 92.

Linda D. Ruth

LINDA D. RUTH
Clerk of the Board of Supervisors
of Orange County, California

Roger R Stanton

Chairman of the Board of Supervisors

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NOES:	SUPERVISORS	NONE
ABSENT:	SUPERVISORS	NONE

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) ss.
COUNTY OF ORANGE)

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IN WITNESS WHEREOF, I have hereunto set my hand and seal this 10th day of March, 19 92.

Linda D. Ruth

LINDA D. RUTH
Clerk of the Board of Supervisors
of Orange County, California

RESOLUTION OF THE BOARD OF SUPERVISORS
ORANGE COUNTY, CALIFORNIA
March 10, 1992

On motion of Supervisor Vasquez, duly recorded and carried, the following resolution was adopted:

WHEREAS, less than seven (7) years of solid waste capacity remains at landfills currently serving northern Orange County; and

WHEREAS, the North Orange County Landfill and Alternative Technologies Study has been undertaken to identify and evaluate alternatives for providing additional solid waste disposal capacity for north Orange County; and

WHEREAS, on August 8, 1991, the Orange County Waste Management Commission/Local Task Force recommended north County landfill sites to this Board, which identified expansion of the Olinda/Olinda Alpha landfill as the highest priority; and

WHEREAS, on March 3, 1992, the City of Brea approved a Memorandum of Understanding with the County which establishes duties and procedures regarding the continued operation of the Olinda/Olinda Alpha landfill;

NOW, THEREFORE BE IT RESOLVED that:

1. This Board approves the expansion of the Olinda/Olinda Alpha landfill as described in Final EIR 523 subject to three conditions:

a. The County will not utilize off-site borrow from borrow sites "A" or "B", the Beta parcel, or any property within the proposed or existing Chino Hills State Park (environmentally superior alternative).

b. The landfill will cease to accept solid waste no later than December 31, 2013.

c. The proposed Tonner Canyon access mitigation is not included with this approval.

2. This Board approves the Memorandum of Understanding with the City of Brea.

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Roger R. Stanton
Chairman of the Board of Supervisors

SIGNED AND CERTIFIED THAT A COPY OF THIS DOCUMENT HAS BEEN DELIVERED TO THE CHAIRMAN OF THE BOARD

Linda D. Ruth
LINDA D. RUTH
Clerk of the Board of Supervisors
County of Orange, California

AYES: SUPERVISORS GADDI H. VASQUEZ, THOMAS F. RILEY, HARRIETT M. WIEDER, DON R. ROTH, AND ROGER R. STANTON
NOES: SUPERVISORS NONE
ABSENT: SUPERVISORS NONE

STATE OF CALIFORNIA)
) ss.
COUNTY OF ORANGE)

I, LINDA D. RUTH, Clerk of the Board of Supervisors of Orange County, California, hereby certify that the above and foregoing Resolution was duly and regularly adopted by the said Board at a regular meeting thereof held on the 10th day of March, 19 92, and passed by a unanimous vote of said Board.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 10th day of March, 19 92.

Linda D. Ruth
LINDA D. RUTH
Clerk of the Board of Supervisors
of Orange County, California

Roger R. Stanton

Chairman of the Board of Supervisors

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OF THIS DOCUMENT HAS BEEN DELIVERED
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Linda D. Ruth

LINDA D. RUTH
Clerk of the Board of Supervisors
County of Orange, California

AYES:	SUPERVISORS	GADDI H. VASQUEZ, THOMAS F. RILEY, HARRIETT M. WIEDER, DON R. ROTH, AND ROGER R. STANTON
NOES:	SUPERVISORS	NONE
ABSENT:	SUPERVISORS	NONE

STATE OF CALIFORNIA)
) ss.
COUNTY OF ORANGE)

I, LINDA D. RUTH, Clerk of the Board of Supervisors of Orange County, California, hereby certify that the above and foregoing Resolution was duly and regularly adopted by the said Board at a regular meeting thereof held on the 10th day of March, 19 92, and passed by a unanimous vote of said Board.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 10th day of March, 19 92.

Linda D. Ruth

LINDA D. RUTH
Clerk of the Board of Supervisors
of Orange County, California

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE CITY OF BREA
AND
THE COUNTY OF ORANGE
REGARDING THE OLINDA-OLINDA ALPHA LANDFILL

THIS MEMORANDUM OF UNDERSTANDING is entered into on this 10th day of March, 1992 between the City of Brea ("City") and the County of Orange ("County"), through their respective legislative bodies. The purpose of this Memorandum of Understanding (MOU) regarding the County's proposed expansion of the Olinda/Olinda Alpha is to establish duties and procedures regarding the continued operation of the Olinda/Olinda Alpha landfill and other matters of mutual concern. The City and the County hereby agree that no expansion of the Olinda/Olinda Alpha landfill shall occur until applicable provisions of this MOU are implemented as follows:

A. Public Health and Safety

The potential danger of a landfill operation to public health and safety shall be minimized. Proper operation and monitoring shall be enforced. The following conditions are provided to achieve an environmentally safe operation.

1. Adherence to State Standards:

The Olinda/Olinda Alpha site will be operated in conformity with State requirements for a Class III landfill. Strict adherence to all applicable State standards is the legal responsibility of the landfill operating entity.

2. Surface and Groundwater Quality

a. Desiltation basins, surface water quality sampling, hazardous and toxic materials management procedures will be established to reduce nonpoint source pollution discharges to "the maximum extent practicable". Applicable "Best Management Practices" for the Olinda/Olinda Alpha landfill shall be implemented at the proposed site.

b. The appropriate Surface and Groundwater Hydrology and Water Quality Mitigation Measures per the NOCLATS EIR-523 shall be followed, as outlined in Attachment No. 1.

c. The County shall meet all National Pollutant Discharge Elimination System standards.

d. The County will submit a Groundwater Monitoring and Remediation Plan to the Regional Water Quality Control Board by July, 1992. Upon their approval of the plan, the County will prepare plans and specifications for an appropriate leachate collection and disposal system. The system should be in operation by March, 1993.

3. Methane Collection, Migration and Control Systems

Such activities shall be conducted under South Coast Air Quality Management District (SCAQMD) jurisdiction per Rule 1150.1 and per the regulations contained in the applicable Chapters and Sections of the California Code of Regulations (CCR), Title 14 and Title 23.

4. Hazardous Waste Exclusion Plan

a. The County will continue its load check program to prevent the disposal of hazardous material.

b. Any hazardous material found will be either properly stored and/or removed and properly disposed of.

c. County holds City harmless regarding hazardous materials cleanup to the extent permissible by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

B. Operating Procedures

In addition to meeting State standards, adherence to the following standards, even where they go above and beyond State standards, is a condition for landfill operation.

1. Operating Hours

The operating entity will limit landfill access to the hours of 6:00 AM to 4:00 PM Monday through Saturday.

2. Litter Control

a. The County shall require covers on all trash hauling vehicles.

b. The County shall control on-site windblown debris according to the latest acceptable landfill methods.

c. The County shall routinely clean-up debris from the access road.

d. The County shall establish a litter clean-up program for the following roadways:

The Tonner Canyon landfill access road from the landfill entrance to the 57 Freeway and any other City approved routes to and from the landfill.

3. Odor and Dust Control

a. The County will apply daily cover to the working face at Olinda/Olinda Alpha using appropriate cover material.

b. Grading areas and the access roads shall be watered daily, or as necessary to control dust, except when raining. Dust limits shall comply with SCAQMD standards.

c. Special operating procedures shall be established for Santa Ana wind and wet weather conditions.

4. Landscaping

a. County will develop an operational plan which will minimize the visual impact of the existing landfill as well as the proposed landfill expansion.

b. To further minimize the visual impact of the landfill, the County will obtain the City's approval of landscape and irrigation plans for the existing landfill and proposed expansion.

c. The County will submit landscape and irrigation plans as part of such plans for approval by the appropriate State agencies by September, 1992.

d. Plans will be implemented 90 days after State approval.

5. Closure - Post Closure

a. When the Olinda/Olinda Alpha landfill site is to close it shall be done in conformance with the State standards in effect at the time of closure.

b. The County will seek the City's input regarding Closure and Post Closure plan prior to submitting such plans to the appropriate agencies for approval.

6. Borrow Site

a. The County will not utilize off-site borrow from borrow sites "A" or "B", the Beta parcel, or any property within the proposed or existing Chino Hills State Park. The County may accept other off-site cover material which may become available.

b. The County shall aggressively advocate with appropriate State agencies the use of alternative cover such as shredded green waste.

c. To minimize environmental damage, the County may use alternative cover once approved by the State.

C. Access

1. The County will provide an access road to the landfill entrance via a route mutually agreed upon by City and County.

2. This access road will be designed and landscaped by the County. Road and landscape design plans must be mutually agreed upon by County and City.

3. If Tonner Canyon is used as an access road, a bridge over Valencia Avenue will be included as part of that project.

4. Valencia Avenue, upon City approval, may be used for landfill traffic entering or exiting the Olinda/Olinda Alpha site.

5. The County shall prepare and have ready for distribution from day of the access road completion a statement of restrictions and conditions to be placed upon users of the Olinda/Olinda Alpha facility. These are to be handed to each incoming hauler and shall include a map clearly designating the approved access routes. These routes will be designated as the only permissible landfill truck traffic routes by the jurisdiction in whose boundary the routes lie.

6. If Tonner Canyon is used as an access road, the Tonner Canyon interchange shall be modified consistent with the improvements necessary to handle the landfill trip generation based on an average annual maximum of 6,000 tons per day. If an assessment district or similar funding mechanism is established to cover the cost of full interchange improvements, the County agrees to participate in funding those improvements proportionate to its share of traffic demand. If during the expected lifetime of the landfill, traffic generation at the landfill increases,. then the County will be responsible for full interchange or road improvements necessary to handle the increased demand.

7. No expansion of the landfill will occur until the access road and any landfill related interchange improvements are completed unless mutually agreed upon by the City and County.

D. Road Construction and Maintenance

1. The County will analyze existing structural sections and determine need for reconstruction of all designated landfill routes located in City or its sphere.

2. The City and County may share the cost for road reconstruction as well as maintenance of such streets, proportionate to Olinda/Olinda Alpha landfill-bound truck traffic. Such proportions will be determined via an axle count study to be conducted by County. Improvements made pursuant to this Agreement will not preclude or prejudice further improvements to such streets via Arterial Highway Funding Program.

E. Limitation on Volume

1. The Olinda/Olinda Alpha operation will be limited to a maximum annual average of six thousand (6,000) tons per day of municipal solid waste, excluding asphalt or soil.

2. Any waste discharge permit or the operating permit to be issued by the State of California shall specifically stipulate a maximum tonnage limitation of eight thousand (8,000) tons per day of municipal solid waste, excluding asphalt or soil.

3. Notwithstanding, the actual volume of municipal solid waste which may be accumulated throughout the expansion of Olinda/Olinda Alpha, the

landfill will cease acceptance of such waste no later than December 31, 2013. Any operating permit issued by the State which encompasses this date shall stipulate this limitation.

F. Landfill Park

1. The County shall establish temporary park uses on non-operating areas of the Olinda/Olinda Alpha landfill so long as the safety of the public and landfill operations can be maintained. Any temporary park and recreation facilities shall require the City's concurrence. The development and maintenance of these temporary facilities shall be funded from the Waste Management Enterprise Fund as a mitigation measure.

2. The County will prepare a General Development Plan for ultimate recreational uses to be established on the site following closure of landfill operations. Said plan shall be mutually agreed upon with the City and County. Said Plan shall be completed and approved prior to issuance of the State Operating Permit for the proposed expansion of the Olinda/Olinda Alpha landfill. Further, prior to the issuance of the State Operating Permit, the County shall develop a multi-year financial pro-forma indicating how sufficient funding shall accumulate for post-closure park development. The County shall accumulate, on a yearly basis, monies as indicated by the financial pro-forma.

3. The County shall provide that the closure plan for the Olinda/Olinda Alpha landfill includes a cover design appropriate for the recreational uses outlined in the General Development Plan for post closure uses.

G. Unanticipated Environmental Mitigation Claims

1. If, during the operation of the landfill expansion, unanticipated environmental impacts occur as a result of having the landfill within the City's boundary or sphere of influence, the City may file a claim with the County to offset such a burden. Any program proposal must demonstrate a reasonable relationship with the operation of the landfill.

2. The County shall disburse funds from the existing Environmental Mitigation Fund provided the program described offsets the environmental or infrastructure impacts reasonably associated with the landfill operation. The County shall accumulate sufficient funds on a yearly basis to cover anticipated program costs.

3. The County shall have full review and audit authority over such fund disbursements.

H. Land Use Planning

County shall not approve private development projects within the City's sphere of influence east of the 57 Freeway without verifying the City's ability to provide necessary services. The County will not approve of private services such as septic tanks, individual wells, or retention basins.

I. Pursuit of Alternatives

The County and City agree to collaboratively explore waste recovery and other alternatives to landfill operations, as well as possible joint ventures in sponsoring such facilities.

J. Enforcement

1. The County will conform with all applicable regulations, restrictions and statutes at the Federal, State, and local level, as well as all provisions in this MOU.

2. If the ownership or operating responsibilities of the Olinda landfill are transferred or assigned to any other entity or agency, public or private, the County shall ensure that the obligations identified in this agreement will be reassigned so that the terms of this agreement shall continue to be met.

K. Arbitration

In the event that any dispute should arise between the parties hereto in regard to this MOU, the matter may be submitted to arbitration at the request of either the City or the County.

Said request shall state the matters the City/County considers to be in issue. The City/County shall, within thirty days, notify the requesting party, with its agreement with the listing of issues to be submitted to arbitration. Unless otherwise mutually agreed by the County Administrative Officer and the City Manager of Brea, an arbitrator shall be selected from a panel submitted by the American Arbitration Association and shall be selected from an uneven number listed, each party alternatively striking names from the list submitted until only the name of one arbitrator remains. The foregoing selection of an arbitrator shall be accomplished within 20 days of the submission of a list of arbitrators by AAA. In the event that the original request for arbitration is not answered within thirty days of delivery of notice, the party requesting arbitration may select an arbitrator from the list submitted by the American Arbitration Association and the decision of such an arbitrator shall be binding. If possible, the arbitrator shall conduct the first hearing within thirty days of selection and shall complete the arbitration and make an award in writing within thirty days of the close of an arbitration proceeding. The fees and expenses of the arbitrator, together with other expenses of the arbitration incurred or approved by the arbitrator, not including counsel fees or witness fees or other expenses incurred by a party for his own benefit, shall be borne equally by both parties.

L. Amendments

This memorandum of understanding may be amended at any time by mutual consent of the City and County.

THE CITY OF BREA, a municipal
corporation

Dated: 3-3-92

By:
Ron Isles, Mayor

Attest:

Donna M. Rhine
City Clerk

Dated: 3-3-92

F Benest
Frank Benest, City Manager

Attest:

Donna M. Rhine
City Clerk

"County":

COUNTY OF ORANGE

Dated: 3-10-92

By: Roger R. Stanton
Roger R. Stanton, Chairman
Orange County Board of Supervisors

Attest:

Linda D. Ruth
Linda O. Ruth
Clerk of the Orange County
Board of Supervisors

92-135
3-10-92

are in themselves part of the mitigation with respect to avoiding groundwater quality impacts through appropriate containment structures and monitoring programs in accordance with landfill design requirements outlined in Title 23. Additional mitigation measures are identified below:

1. The set of structural and non-structural Best Management Practices currently under development in response to the County of Orange's NPDES permit for stormwater quality shall be expanded as the new program evolves from an observational status to a specific implementation. The proposed landfill projects shall comply with applicable Best Management Practices for such facilities. Development of the Orange County management plans for such industrial activities should be completed by July 1991 under terms of the existing NPDES.

2. The proposed landfill designs and operational procedures have incorporated facilities which address the Federal NPDES goal of reducing nonpoint source pollution discharges to "the maximum extent practicable." Desiltation basins, surface water quality sampling, hazardous and toxic materials management procedures are proposed with these water quality concerns in mind. Applicable Best Management Practices for landfills shall be implemented at the proposed sites, despite evidence that some local facilities may not be significant contributors of nonpoint source pollutants in surface runoff.

3. If wells are installed at any one of the potential landfill sites for the production of groundwater, each proposed well shall be flow tested to assess sustained production capability and drawdown characteristics. It is anticipated that flow rates would be relatively low (1 to 20 gallons per minute [gpm]) for wells completed in bedrock and potentially somewhat higher (2 to 10 times) for wells in extensive alluvial materials. The production of groundwater shall be maintained at a minimum volume necessary for site construction activities. This will minimize or limit the extent of impacts to the system from groundwater extraction. In addition, groundwater wells, pumping hardware, and water distribution piping shall be maintained on a regular basis by the operator in order to extract groundwater as efficiently as possible, and to minimize pumping costs.

4. Containment structures shall be designed by and construction shall be supervised and certified by a registered civil engineer or a certified engineering geologist, with final inspection and approval by the State or Regional Water Resources Board (Title 23, Section 2540). Materials used in containment structures shall meet the general and specific criteria outlined in Sections 2541 and 2542 of Title 23.

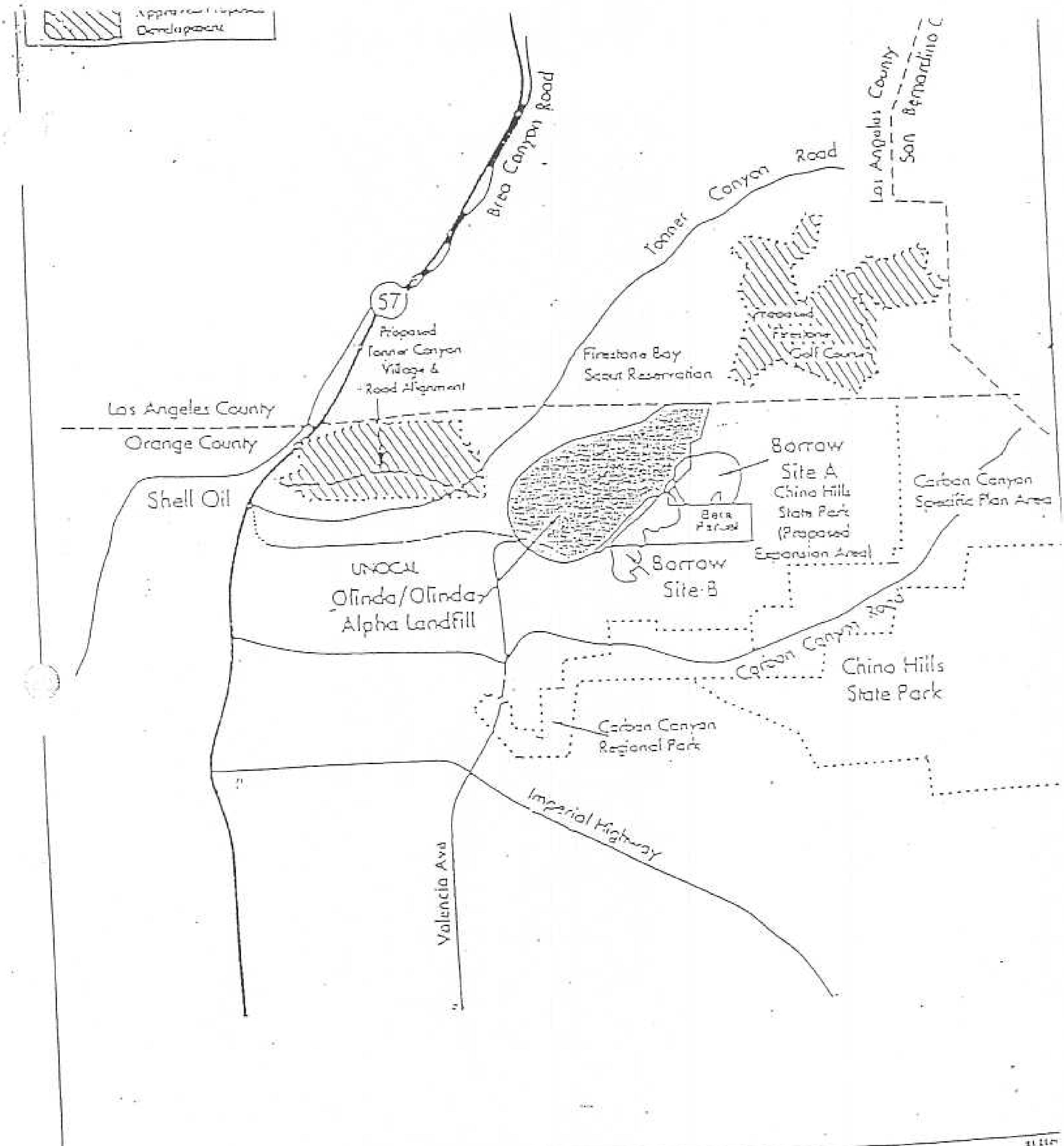
5. The monitoring program shall include consistent and appropriate sampling and analytical procedures that provide a reliable indication of groundwater quality in accordance with Section 2550 of Title 23 - General Groundwater Monitoring Requirements. The Regional Board shall specify in the waste discharge requirements for the Class III landfill permit what the length of the compliance period will be when water quality protection standards apply (Section 2554, Title 23). The compliance period is typically equal to the active life of the landfill, plus the closure period, and plus a post-closure maintenance period. The design, location, and indicator parameter selection for the groundwater monitoring program would be developed when a landfill site(s) is selected.

6. An additional monitoring well located hydraulically down-gradient of the Alpha/Olinda Canyon shall be installed to assess groundwater quality. The additional well would be installed using the same specifications as the previous wells.

7. Continued monitoring of surface and groundwaters and the unsaturated zone is required by the owner according to Title 23 of the California Administrative Code. The compliance period for monitoring is typically equal to the active life of the landfill, plus the closure period, and plus a post-closure maintenance period or as specified by the Regional Board.

8. The water quality protection provisions outlined in Title 23 are intended to detect leaks at landfills and to provide a corrective action program should containment features fail to prevent leakage of wastes. Owners and operators shall conduct required programs in accordance with the provisions of Section 2551 and 2555 of Title 23. These provisions require that the discharger shall institute a sophisticated detection monitoring program approved by the Regional Board. If indicator parameters or waste constituents are detected at the monitoring points as specified by the Regional Board, the discharger shall institute a verification monitoring program. If water quality protection standards have been exceeded at or down gradient of the monitoring points, the discharger shall institute a corrective action plan as approved by the Regional Board and in accordance with the requirements and provisions of Title 23.

9. In evaluating a site and establishing a system for an onsite sewage disposal system, HCA/Environmental Health's "Onsite Sewage Disposal System Guidelines" shall provide the standard measure of acceptability.



Surrounding Land Uses:
Olinda/Olinda-Alpha Landfill

NORTH ORANGE COUNTY LANDFILL AND ALTERNATIVE TECHNOLOGIES STUDY EIR

COUNTY OF ORANGE

1ST AMENDMENT

COUNTY OF ORANGE

VICKI L. WILSON
Assistant Director

INTEGRATED WASTE MANAGEMENT DEPARTMENT
1200 N. Main Street, Suite 201
Santa Ana, California 92701
(714) 568-4160
FAX (714) 834-0754

February 9, 1993

Frank Benest, Ed.D.
City Manager
City of Brea
Number One Civic Center Circle
Brea, California 92621-5758

Dear Mr. Benest:

SUBJECT: First Amendment to Memorandum of Understanding (MOU) Between the City of Brea and the County of Orange Regarding the Olinda/Olinda Alpha Landfill

The purpose of this letter is to request to update the MOU to reflect current actions in response to regulation and scheduling requirements. The changes are in two major areas; Groundwater and Landscaping.

Groundwater:

As indicated in the March 10, 1992 MOU the County was to develop a Groundwater Monitoring and Remediation Plan to be submitted to the Santa Ana Regional Water Quality Control Board (SARWQCB) by July 1992. The County submitted the "Work Plan for Ground Water Investigation and Remediation, Olinda/Olinda Alpha Landfills" within the time frame of the MOU. The work plan approved by the SARWQCB is more complex and longer than was anticipated in the MOU and, as a result, will require that the March 1993 date in the MOU for system operation be changed. The Work Plan, as approved by the SARWQCB consists of two phases prior to commencement of system construction. Phase I is the Groundwater Investigation Component, and Phase II is the Selection, Design and Implementation of the Ground Water Monitoring Plan. The County requests that Paragraph A,2,d of the MOU be amended replacing the March 1993 date for system operation to July 1994.

Landscaping:

The second proposed change to the MOU concerns Paragraphs B,4,c and B,4,d which address operating procedures and landscaping. On January 5, 1993 the Board of Supervisors selected Bryan A. Stirrat and Associates (BAS) as the

1040SH

A/E firm to prepare a Master Plan and Waste Discharge Requirements to obtain a Solid Waste Facility Permit for the Olinda/Olinda Alpha Landfill Vertical Expansion Project. The Integrated Waste Management Department (IWMD) is currently developing a specific scope of work and schedule for this project with BAS which requires an amendment to the schedule of dates listed in the referenced paragraphs.

The County will submit landscape and irrigation plans to the California Integrated Waste Management Board (CIWMB) as part of the Solid Waste Facility Permit Application. That application will be submitted in June 1994 requiring a change to the September 1992 date listed in MOU Paragraph B,4,c.

The County will implement the landscape and irrigation plans upon approval of the CIWMB which is anticipated in March 1996. The existing MOU, Paragraph B,4,d, requires plans to be implemented 90 days after state approval. The County requests that the implementation date for landscape and irrigation plans be modified to read by July 1996.

The County's requested changes to the MOU are indicated in the enclosed First Amendment to the March 10, 1992 Memorandum of Understanding between the City of Brea and the County of Orange. Please sign and date both copies of the First Amendment and return one signed original to me.

Also, enclosed for your information is the updated Brea MOU Compliance Schedule which was presented on September 10, 1992 to the City and Community Advisory Committee. Suzanne McClanahan of my staff will contact Jim Cutts of your staff to schedule the next Community Advisory Committee Meeting shortly after the Board of Supervisors approves the negotiated contract with BAS.

Please call me or Suzanne McClanahan at (714) 568-4866 should you or your staff have any questions or require additional information regarding our request for first amendment changes to the MOU.

Sincerely,

Murry L. Cable, Director
Integrated Waste Management Department

SM:av

Enclosures

cc: Gaddi Vasquez, Third District
Vicki Wilson, IWMD
Suzanne McClanahan, IWMD

1040SH

FIRST AMENDMENT
TO MEMORANDUM OF UNDERSTANDING BETWEEN
THE CITY OF BREA AND
THE COUNTY OF ORANGE REGARDING
THE OLINDA/OLINDA ALPHA LANDFILL

This FIRST AMENDMENT is made and entered into this 6th day of April ,1993, by and between the County of Orange, hereinafter referred to as "COUNTY", and the City of Brea, hereinafter referred to as "CITY", and is made to the Memorandum of Understanding between the parties dated March 10, 1992.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. The Public Health and Safety/Surface and Groundwater Quality Section, is amended by deleting the last sentence in Paragraph A,2,d in its entirety and substituting the following sentence:

   Paragraph A,2,d
   The system should be in operation by July 1994.

2. The Operating Procedures/Landscaping Section, is amended by deleting paragraphs B,4,c and B,4,d in their entirety and substituting the following:

   Paragraph B,4,c
   The County will submit landscape and irrigation plans as part of the Solid Waste Facility Permit (SWFP) application to the California Integrated Waste Management Board (CIWMB) by June 1994.

   Paragraph B,4,d
   The County will implement landscape and irrigation plans, as approved by the CIWMB, by July 1996.

IN WITNESS WHEREOF, the parties hereto have executed this First Amendment to the Memorandum of Understanding on the dates opposite their respective signatures:

Date: 4-6-93

CITY OF BREA
By
City Manager

Date: 2/9/93

COUNTY OF ORANGE
By
County Administrative Officer

APPROVED AS TO FORM:
TERRY ANDRUS, COUNTY COUNSEL
ORANGE COUNTY, CALIFORNIA

By
Deputy

Date 2-10-93

1040SM

2ND AMENDMENT

AGENDA ITEM TRANSMITTAL

CONSENT ☒
DISCUSSION ☐
PUBLIC HEARING ☐

AGENCY/DEPT. USE	CLERK USE ONLY
CAO REVIEW ☒ Concur ☐ Do Not Concur ☐ Exempt	S37J

): BOARD OF SUPERVISORS, COUNTY OF ORANGE

OM: Integrated Waste Management Department

CONTACT FOR INFORMATION
Vicki Wilson 834-4122

EETING DATE	SUBJECT	SUPV. DIST.
June 13, 1995	Amendment to Brea Memorandum of Understanding for the Expansion of the Olinda/Olinda Alpha Landfill	3

UMMARY OF REQUEST (Description for Agenda):

pprove the Second Amendment to the Memorandum of Understanding between the County of Orange and the ity of Brea.

DDITIONAL DATA:

ee attached.

REVIOUS RELEVANT BOARD ACTIONS ON THIS SPECIFIC ITEM:

March 10, 1992, Resolution No. 92-235

UNDING SOURCE(S)	CURRENT YEAR COST	ANNUAL COST	BUDGETED? ☐ YES ☐ NO
Integrated Waste Management Department Enterprise Fund	NA	NA	NA

VILL PROPOSAL REQUIRE ADDITIONAL PERSONNEL?
☒ NO IF YES, STATE NUMBER ____ PERMANENT ____ LIMITED TERM

CONSISTENT WITH BOARD POLICY?
☒ YES ☐ NEW ITEM OR EXCEPTION

ECOMMENDED ACTION:

Approve the Second Amendment to the Memorandum of Understanding between the County of Orange and the City of Brea and authorize the Chief Executive Officer to sign on behalf of the County.

ONCURRENCES (If Applicable)
B y Council

ATTACHMENTS
Memorandum of Understanding

6-9-95 Vicki L. Wilson

Vicki L. Wilson, Assistant Director

ADDITIONAL DATA:

On March 10, 1992, the Board of Supervisors certified the Final EIR 523 as adequate to satisfy the requirements of CEQA for the vertical expansion of the Olinda/Olinda Alpha Landfill and approved a memorandum of Understanding between the County of Orange and the City of Brea which established duties and procedures throughout the expansion process.

On February 9, 1993, The First Amendment to the MOU was approved which updated provisions to reflect current actions required in response to regulation and scheduling requirements. The changes related to the groundwater protection system and landscaping.

A second amendment has been negotiated between the County and the City of Brea in which the City approves the Olinda/Olinda Alpha Landfill Landscape Master Plan and the Project Report for the access road, subject to modifications to the MOU. On November 29, 1995, the Brea City Council approved the Second Amendment (included as the attachment) which serves to adjust the current County requirements. These requirements fall into two broad categories: access road issues and park planning and development.

The Second Amendment follows an extensive effort in cooperation with the City and its advisory bodies during which a thorough review of the vertical expansion of the Olinda/Olinda Alpha landfill was completed. During this process, the continued use of Valencia Avenue as access was affirmed, a naturalized landscaping treatment for the vertical expansion was selected and a shift in focus of the County's previous park commitment was identified. Rather than rely on a trust fund or similar mechanism to ensure full funding of an urban regional park on the landfill site, the amendment focuses on shorter range park planning and limited near term improvements coupled with an on-site natural regional park.

The MOU as revised by the Second Amendment, will serve to acknowledge the City's action to:

1. Approve the Landscape Master Plan.

2. Approve the Project Report for Access Road Alternatives and the use of Valencia Avenue as the sole means of access to and from the Olinda/Olinda Alpha Landfill subject to the following conditions:

   a. Valencia Avenue must be designed and constructed to meet the standards of a primary Arterial Highway from the south side of the Birch Street/Rose Drive intersection to the Alpha Access Road.

   b. The adjacent property owners and Caltrans in conjunction with the County work to widen Valencia Avenue to the ultimate Primary Arterial Highway standards which would be mutually beneficial to all parties concerned.

3. The General Development Plan is approved with the exception that the Plan be revised to incorporate an interim plan that would immediately include:

   a. Develop four lighted ball fields.

   b. Acquire and develop an 18-20 acre park and recreation facility.

   c. Redesign and develop Olinda Regional Park into a Natural Park.

   d. Develop a trail through the Beta parcel of the landfill.

   e. Fund a City of Brea Master Plan Study for Parks, Recreation, and Human Services.

SECOND AMENDMENT
TO MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF BREA AND THE COUNTY OF ORANGE REGARDING THE OLINDA/OLINDA ALPHA LANDFILL

This SECOND AMENDMENT is made and entered into this 29th day of November 1994, by and between the County of Orange, hereinafter referred to as "COUNTY", and the City of Brea, hereinafter referred to as "CITY", and is made to the Memorandum of Understanding between the parties dated March 10, 1992 and amended on April 6, 1993, hereafter collectively referred to as the MOU.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. The Public Health and Safety/Surface and Groundwater Quality Section, is amended by deleting the last sentence in Paragraph A,2,d in its entirety and substituting the following sentence:

   Paragraph A,2,d
   The interim system should be in operation by July 1994. The permanent leachate disposal and collection system should be in operation by June 1995.

2. The Operating Procedures/Landscaping Section, is amended by deleting Paragraphs B,4,c and B,4,d in their entirety and substituting the following:

   Paragraph B,4,c
   The County will submit landscape and irrigation plans as part of the Solid Waste Facility Permit (SWFP) application to the California Integrated Waste Management Board (CIWMB).

   Paragraph B,4,d
   The County will continue to implement landscape and irrigation plans, as approved by the CIWMB.

3. The Access Section, is amended by deleting Paragraph C,7 in its entirety and substituting the following:

   Paragraph C,7
   No expansion of the landfill will occur until a Public Works construction contract has been put out to bid for the access road and any landfill related interchange improvements unless mutually agreed upon by the CITY and COUNTY. County agrees to award bid within 90 days after receipt of bids.

4. The Landfill Park Section, is amended by deleting Paragraphs F,1 and F,2 in their entirety and substituting the following:

Paragraph F,1
Because of potential interference of landfill operations resulting from the development of temporary park facilities on non-operating areas of the Olinda/Olinda Alpha Landfill, the COUNTY agrees to the following permanent facilities in lieu of the

development of temporary facilities. These permanent facilities will be developed by the COUNTY over the life of the landfill operation.

a. Development of recreational facilities within the next two years based on the findings of the Master Plan for Parks and Recreation for the City of Brea. ($1.5 million)

b. Obtain additional property adjacent to, or within reasonable proximity to, the landfill and develop a park and recreational complex on approximately 18-20 acres of land within the next five years. ($3.9 million and land acquisition)

c. Redesign the Olinda Regional Park to be a Natural Regional Park. Park development will commence in 2015 upon completion of landfill closure activities and will be phased over ten year period. ($3.4 million)

d. Develop and construct the trail through the Beta Parcel within two years as discussed in the conceptual General Development Plan. ($75,000)

e. All funding amounts identified above are indicated in 1994 dollars, as of November 1994. Since the above referenced park and recreation improvements will be made in subsequent years, these funding amounts will be adjusted annually referencing the November Consumer Price Index (Los Angeles, Anaheim, Riverside), All Urban Consumers Index [1967 = 100], published by the United States Department of Labor Bureau of Labor Statistics.

Should the development of these facilities be infeasible due to technical, environmental, or legal concerns, the CITY and COUNTY agree to negotiate in good faith and implement other feasible and financially comparable alternatives.

Paragraph F,2
The CITY and COUNTY will cooperate in the preparation of a Master Plan of Parks and Recreation for the CITY. Scope of said Master Plan shall be mutually agreed upon by the CITY and COUNTY. The Master Plan will address a variety of issues, including but not limited to, maintenance levels, scheduling, and user fees at COUNTY facilities within the CITY or its sphere of influence. COUNTY EMA/Harbors, Beaches & Parks will allocate $65,000 for development of the Master Plan. Said Master Plan shall be completed and approved by the CITY and COUNTY prior to issuance of the State Operating Permit for the proposed expansion of the Olinda/Olinda Alpha Landfill.

All other terms and conditions of the agreement remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this Second Amendment to the Memorandum of Understanding on the dates opposite their respective signatures:

Date: 12/6/94

CITY OF BREA

By:____________________
City Manager

COUNTY OF ORANGE

Date:____________________

By:____________________
County Administrative Officer

[illegible]

By____________________
Deputy

Date: 6/9/95

a:\Landfill\Amend#2

[illegible] / IWMD

BOARD OF SUPERVISORS
ORANGE COUNTY, CALIFORNIA
MINUTES

JUNE 13, 1995

AMENDMENT TO BREA MEMORANDUM OF UNDERSTANDING FOR THE EXPANSION OF THE OLINDA/OLINDA ALPHA LANDFILL: The Integrated Waste Management Department requests approval of the Second Amendment to the Memorandum of Understanding between the County of Orange and the City of Brea.

MOTION: On motion by Supervisor Bergeson, seconded by Supervisor Steiner, the Board approved the Second Amendment to the Memorandum of Understanding between the County of Orange and the City of Brea and authorized the Chief Executive Officer to sign on behalf of the County. MOTION UNANIMOUSLY CARRIED.

3RD AMENDMENT

AGENDA ITEM TRANSMITTAL

CONSENT ☐
DISCUSSION ☒
PUBLIC HEARING ☐

AGENCY/DEPT. USE

CEO REVIEW

☒ Concur
☐ Do Not Concur
☐ Exempt

CLERK USE ONLY

TO: BOARD OF SUPERVISORS, COUNTY OF ORANGE

FROM: Integrated Waste Management Department

CONTACT FOR INFORMATION

Vicki Wilson	834-4122
Ken R. Smith	834-3601

MEETING DATE	SUBJECT	SUPV. DIST.
August 19, 1997	Amendment to the Memorandum of Understanding Between the City of Brea and the County of Orange Regarding the Olinda Alpha Landfill	3

SUMMARY OF REQUEST (Description for Agenda):

Approve the Third Amendment to the Memorandum of Understanding between the County of Orange and the City of Brea.

ADDITIONAL DATA:

See page 2.

PREVIOUS RELEVANT BOARD ACTIONS ON THIS SPECIFIC ITEM:

March 10, 1992, Resolution No. 92-235; June 13, 1995, Minute Order

FUNDING SOURCE(S)	CURRENT YEAR COST	ANNUAL COST	BUDGETED? ☒ YES ☐ NO
Integrated Waste Management Department Enterprise Fund	$4,000,000	NA	NA

WILL PROPOSAL REQUIRE ADDITIONAL PERSONNEL?

☒ NO IF YES, STATE NUMBER ___ PERMANENT ___ LIMITED TERM

CONSISTENT WITH BOARD POLICY?

☒ YES ☐ NEW ITEM OR EXCEPTION

RECOMMENDED ACTION:

1. Find that the proposed project is covered by Final EIR No. 550, previously approved on August 5, 1997.
2. Approve the Third Amendment to the Memorandum of Understanding between the County of Orange and the City of Brea and authorize the Clerk of the Board to sign on behalf of the Chairman of the Board of Supervisors.

CONCURRENCES (If Applicable)

City of Brea

ATTACHMENTS

Memorandum of Understanding

7/30/97 Vicki L. Wilson

Vicki L. Wilson, Director
Integrated Waste Management Department

ADDITIONAL DATA:

Background:

On March 10, 1992, the Board of Supervisors certified EIR No. 523 as adequate to satisfy the requirements of CEQA for the vertical expansion of the Olinda Alpha Landfill and approved a Memorandum of Understanding (MOU) between the County of Orange and the City of Brea which established obligations for the expansion process and other matters of mutual concern.

On April 6, 1993, the First Amendment to the MOU was approved which updated provisions to reflect actions required in response to regulations and scheduling requirements. The changes related to the ground water protection system and landscaping.

On June 13, 1995, the Second Amendment was approved which adjusted County requirements related to access road issues and park planning and development. The changes included approval of the Landscape Master Plan, approval of the project report designating the use of Valencia Avenue as the sole access road to and from the Olinda Alpha Landfill, and approval of the General Development Plan with revisions to incorporate interim park planning.

Third Amendment To The MOU Between the County of Orange and the City of Brea

A Third Amendment has been negotiated with the City which follows a cooperative effort to update the MOU based on current conditions. The use of Valencia Avenue as the principal access road to the Olinda Alpha Landfill was evaluated in Final EIR No. 550 and in accord with that EIR the MOU is revised to designate Valencia Avenue as the landfill access route, deleting all references to the Tonner Canyon alternative. It also identifies City and County responsibilities for access road design, implementation, and construction. The agreement authorizes an increase in the landfill daily tonnage limit to 7,000 tons per day, effective August 1, 1997 which is consistent with the County's current permit for Olinda Alpha. The MOU also specifies City and County responsibilities for park and recreation facilities planning and development.

The MOU as revised by the Third Amendment, serves to acknowledge the City and the County's agreement to:

Access
a. Designate Valencia Avenue as the landfill access road.
b Design and construct Valencia Avenue as a four lane ultimate-width roadway from Birch Street to Lambert Road and as a four lane interim-width roadway from Lambert Road to the northern most Olinda Heights access road.
c. Set March 1998 as the date for County to publish an Invitation for Bid for road construction and October 1999 as the date for County completion of construction.
d. Designate City responsibility for access road landscaping.
e. Authorize landfill expansion effective July 1, 1997.

Limitation of Volume
a. Increase the refuse volume limitation to a maximum annual average of 7,000 tons per day effective August 1, 1997.

Landfill Park
a. Authorize $1.5 million for planning and design of City sports park facilities.
b. Authorize $4 million for City acquisition of sports park property.
c. Authorize $3.9 million for City sports park facilities improvements.

ADDITIONAL DATA:

e. Set the construction date for the Beta Parcel Trail six months after Monterey Resources, Inc. installation of a traffic light on Carbon Canyon Road.
f. Designate funding amounts as 1997 dollars adjusted annually referencing the Consumer Price Index.

IWMD has submitted a $4 million budget adjustment for sports park acquisition expenditures which is subject to Board of Supervisors' approval of the fiscal year 1997-98 budget.

CEQA Compliance:

The proposed project is covered by Final EIR 550, previously approved on August 5, 1997.

THIRD AMENDMENT
TO MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF BREA AND THE COUNTY OF ORANGE REGARDING THE OLINDA ALPHA LANDFILL

This THIRD AMENDMENT is made and entered into this 5th day of August, 1997, by and between the County of Orange, hereinafter referred to as "COUNTY", and the City of Brea, hereinafter referred to as "CITY", and is made to the Memorandum of Understanding (MOU) between the parties dated March 10, 1992 and amended on April 6, 1993 and November 29, 1994, hereinafter collectively referred to as the MOU.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. **Operating Procedures**

The Operating Procedures Section is amended by deleting Paragraph B.2.d. in its entirety and substituting the following:

Paragraph B.2.d.

The County shall establish a litter clean-up program for the Valencia Avenue landfill access road and any other City approved routes to and from the landfill.

2. **Access**

The Access Section is amended by deleting Paragraphs C.1 through C.7 in their entirety and substituting the following:

Paragraph C.1

Valencia Avenue is the designated landfill access road for the Olinda Alpha Landfill.

Paragraph C.2

The County will design and construct Valencia Avenue as a four lane divided ultimate-width Primary Arterial Highway from Birch Street to Lambert Road and as a four lane undivided interim-width roadway within existing right of way westerly of centerline and ultimate one half width right of way easterly of centerline from Lambert Road to the northern most Olinda Heights access road.

Paragraph C.3

The County will begin design on Valencia Avenue widening by July 1997 and advertise for construction on or before March 1998 with construction to be completed by October 1999 unless otherwise mutually agreed by City Manager and County Director of IWMD.

Paragraph C.4

With respect to Valencia Avenue widening, the City's only responsibility shall be within the median. The City shall design and install all landscaping, irrigation, and appurtenant facilities at no cost to the County. The County shall be responsible for installing PVC sleeves under the street pavement for future installation of irrigation lines by City. The locations shall be determined by the City upon review of the County's final design.

Paragraph C.5

The County shall prepare and have ready for distribution from day of the access road completion a statement of restrictions and conditions to be placed upon users of the Olinda Alpha Landfill. These are to be handed to each incoming hauler and shall include a map clearly designating the approved access routes. These routes will be designated as the only permissible landfill truck traffic routes by the jurisdiction in whose boundary the routes lie.

Paragraph C.6

Expansion of the landfill as described in EIR #523 may proceed effective July 1, 1997.

3. **Road Construction and Maintenance**

The Road Construction and Maintenance Section is amended by deleting Paragraphs D.1 and D.2 in their entirety and substituting the following:

Paragraph D.1

The County's only responsibility for road construction and maintenance is as described in the Access Section, Paragraphs C1. through C.6. Any obligations or other requirements in previous versions of this MOU are rescinded.

4. **Limitation on Volume**

The Limitation on Volume Section, is amended by deleting Paragraph E.1 in its entirety and substituting the following:

Paragraph E.1

Effective August 1, 1997, the Olinda Alpha Landfill operation will be limited to a maximum annual average of seven thousand (7,000) tons per day of municipal solid waste, excluding asphalt and soil.

5. **Landfill Park**

The Landfill Park Section, is amended by deleting Paragraph F.1 in its entirety and substituting the following:

Paragraph F.1.a.

Because of potential interference of landfill operations resulting from the development of temporary park and recreation facilities on non-operating areas of the Olinda Alpha Landfill, the County agrees to allocate funds for specified permanent facilities in lieu of the development of temporary facilities. These permanent park and recreation facilities will be planned, designed, acquired, and constructed by the City. The County will allocate funds for the park and recreation facilities listed below provided the following funding allocation procedures have been followed:

Funding Allocation Procedure

(A) City will provide an annual certification that it has adopted an expenditure schedule for a Sports Park project (as referenced in the 1997 Parks, Recreation, Human Services, and Open Space Master Plan—see page 27 3-7 of the Master Plan) and project accounts in its current fiscal year budget.

(B) City will provide to County an annual Sports Park expenditure report for each account within 60 days of the close of each fiscal year.

(C) County will pay to City allocation specified below within 30 days of receipt of City certification, but no sooner than January of the specified fiscal year:

County Funding Allocation Schedule

1. FY 1997-1998 Property Acquisition - $4 Million January 1998
2. FY 1999-2000 Planning and Design - $1.5 Million January 2000.
3. FY 2000-2001 Construction - $3.9 Million January 2001

Funds not spent as allocated in FY 1999-2000 for Planning and Design may be reallocated for construction of the Sports Park project in FY 2000-2001

The County may, at any time, conduct an audit of the City's specified Sports Park accounts and expenditures. In no event will the County funding allocation be made earlier than January of the designated fiscal year. If City's project expenditures are not in accordance with the certified schedule, City and County will meet and confer to agree on a revised expenditure and allocation schedule. Subsequent County funding allocations will be delayed pending a mutually agreed upon expenditure schedule. This Memorandum of Understanding may be updated on an annual basis to reflect these schedule adjustments. City agrees to refund County payments if these funds are used for any activity other than for planning, design, acquisition, and construction of Sports Park facilities.

Paragraph F.1.b.

The County will redesign the Olinda Regional Park as a Natural Regional Park. Park development will commence in 2015 upon completion of landfill closure activities and will be phased over a ten year period. The County will allocate $3.4 million for this park project.

Paragraph F.1.c.

The County will construct the Beta Parcel trail within six months (6) after Monterey Resources, Inc. constructs and energizes the necessary traffic signal on Carbon Canyon Road which will provide a safe crossing for trail users.

Paragraph F.1.d.

All funding amounts identified in above Paragraphs F.1.a and F.1.b are indicated in 1997 dollars, as of June, 1997. Since the above referenced park and recreation improvements will be made in subsequent years, these funding amounts will be adjusted annually referencing the June consumer Price Index (Los Angeles, Anaheim, Riverside), All Urban Consumers Index [1997 = 100], published by the United States Department of Labor Statistics.

6. **Land Use Planning**

The Land Use Planning Section, is amended by adding the following to the end of paragraph H.:

In recognition of the City's long range planning in its Sphere of Influence, the County will continue to be sensitive and responsive to the City's comments on proposed land uses in that area.

7. **General Provisions**

Section L, Amendments, is amended by replacing the title with General Provisions and inserting the following paragraphs:

Paragraph L.1
Any discretionary actions by County set forth in this MOU which are not covered by EIR No. 523 and EIR No. 550 are subject to future California Environmental Quality Act (CEQA) compliance.

Paragraph L.2
This MOU may be amended at any time by mutual consent of the City and County.

All other terms and conditions of the agreement remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this THIRD AMENDMENT to the Memorandum of Understanding on the dates opposite their respective signatures:

COUNTY OF ORANGE

Date: AUG 1 9 1997

By: William G. Steiner
Chairman, Board of Supervisors

SIGNED AND CERTIFIED THAT A COPY OF
THIS THIRD AMENDMENT HAS BEEN
DELIVERED TO THE CHAIRMAN OF THE BOARD

Date: AUG 1 9 1997

By: ATTEST Darlene J. Bloom
Darlene J. Bloom
Clerk of the Board of Supervisors of
Orange County, California

CITY OF BREA

Date: 8/5/97

By:
Mayor, City of Brea

APPROVED AS TO FORM
Laurence M. Watson
County Counsel

By:

Date: 7/30/97

4TH AMENDMENT

AGENDA ITEM TRANSMITTAL

CONSENT ☒
DISCUSSION ☐
PUBLIC HEARING ☐

AGENCY/DEPT.USE

CEO REVIEW

☒ Concur
☐ Do Not Concur
☐ Exempt

CLERK USE ONLY

TO: BOARD OF SUPERVISORS, COUNTY OF ORANGE

FROM: Integrated Waste Management Department

CONTACT FOR INFORMATION

Vicki Wilson	834-4122
Suzanne McClanahan	834-4114

MEETING DATE	SUBJECT	SUPV. DIST.
June 29, 1999	Amendment to the Memorandum of Understanding Between the City of Brea and the County of Orange Regarding Olinda Alpha Landfill	3

SUMMARY OF REQUEST (Description for Agenda):

Approve the Fourth Amendment to the Memorandum of Understanding between the County of Orange and the City of Brea.

ADDITIONAL DATA:

See Page 2.

PREVIOUS RELEVANT BOARD ACTIONS ON THIS SPECIFIC ITEM:

Mar[illegible]0,1992, Resolution No. 92-235; April 6, 1993, Minute Order(MO); June 13, 1995, MO; August 19, 1997, MO.

F[illegible]G SOURCE(S) Integrated Waste Management Department Enterprise Fund	CURRENT YEAR COST	ANNUAL COST	BUDGETED? ☐ YES ☐ NO
	N/A	N/A	N/A

WILL PROPOSAL REQUIRE ADDITIONAL PERSONNEL?

☒ NO IF YES, STATE NUMBER ___ PERMANENT ___ LIMITED TERM

CONSISTENT WITH BOARD POLICY?

☒ YES ☐ NEW ITEM OR EXCEPTION

RECOMMENDED ACTION:

1. Find that the proposed project is Categorically Exempt (Class 1) from the provisions of CEQA.
2. Approve the Fourth Amendment to the Memorandum of Understanding between City of Brea and County of Orange.
3. Authorize the Director of the IWMD to sign extension requests in accordance with the terms of the MOU on behalf of the County.

CONCURRENCE (If Applicable)

City of Brea

ATTACHMENTS

Amendment #4

6-9-99
DATE

Vicki L. Wilson
AGENCY OR DEPARTMENT AUTHORIZED REPRESENTATIVE

Vicki L. Wilson, Director
Integrated Waste Management Department

AIT\369DK

ADDITIONAL DATA:

Background:

On March 10, 1992, the Board of Supervisors certified EIR No. 523 as adequate to satisfy the requirements of CEQA for the vertical expansion of the Olinda Alpha Landfill and approved a Memorandum of Understanding (MOU) between the County of Orange and the City of Brea which established obligations for the expansion process and other matters of mutual concern.

On April 6, 1993, the First Amendment to the MOU was approved which updated provisions to reflect actions required in response to regulations and scheduling requirements. The changes related to the ground water protection system and landscaping.

On June 13, 1995, the Second Amendment was approved which adjusted County requirements related to access road issues and park planning and development. The changes included approval of the Landscape Master Plan, approval of the project report designating the use of Valencia Avenue as the sole access road to and from the Olinda Alpha Landfill, and approval of the General Development Plan with revisions to incorporate interim park planning.

On August 19, 1997, the Third Amendment was approved which updated the MOU based on the Final EIR 550. The MOU was revised to designate Valencia Avenue as the landfill access route, deleting all references to the Tonner Canyon alternative. It also identified City and County responsibilities for access road design, implementation, and construction. The agreement authorized an increase in the landfill daily tonnage limit to an annual average of 7,000 tons per day, effective August 1, 1997, which is consistent with the County's current operating permit for the Olinda Alpha Landfill. The MOU also specifies City and County responsibilities for park and recreation facilities planning and development.

Fourth Amendment to the MOU between City of Brea and County of Orange

A Fourth Amendment has been negotiated with the City that addresses the accumulation of solid waste following landfill closures on the six scheduled County holidays (New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas) and emergencies. Transfer stations and haulers experience increased collection on those days requiring the flexibility to increase the daily tonnage limits in order to meet the demand.

The MOU as revised by the Fourth Amendment, serves to acknowledge the City's agreement to:

1. Extend operating hours by one additional hour in the evening for one working day following a scheduled holiday or an emergency.
2. Increase the allowable daily tonnage limit to 10,000 tons per day for one working day following a scheduled holiday or an emergency.
3. Authorize the City Manager to extend these accommodations on a day to day basis, upon the request of the County.

CEQA Compliance:

The proposed project is Categorically Exempt (Class 1) from the provisions of CEQA. Class 1 (CEQA Guidelines Section 15301) provides for the exemption of projects involving operational changes to an existing facility where there is negligible or no expansion of use beyond that previously existing.

FOURTH AMENDMENT
TO THE MEMORANDUM OF UNDERSTANDING BETWEEN
CITY OF BREA AND COUNTY OF ORANGE
FOR OLINDA ALPHA LANDFILL

This FOURTH AMENDMENT is made and entered into this _____day of ___________, 1999, by and between the County Of Orange, hereinafter referred to as "COUNTY" and the City of Brea, hereinafter referred to as "'CITY", and is made to the Memorandum of Understanding (MOU) between the parties dated March 10, 1992 and amended on April 6, 1993, June 13, 1995 and August 19, 1997, hereinafter collectively referred to as the MOU.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

The Operating Procedures Section is amended by deleting Section B., Paragraph 1 and Section E., Paragraph 2 in their entirety and substituting the following:

Section B. Operating Procedures, Paragraph 1 - Operating Hours

Operating hours shall be limited to 6:00 a.m. to 4:00 p.m. Monday through Saturday. However, operating hours shall be extended one additional hour to 5:00 p.m. for one working day following New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas Day and for one working day following emergencies requiring landfill shutdown.

The City Manager is authorized to extend this accommodation on a day to day basis upon the request of the Director, IWMD. The City Manager agrees he will not unreasonably withhold consent.

Section E. Limitation on Volume, Paragraph 2

The maximum tonnage per day of municipal solid waste discharged shall be limited to 8,000 tons per day. Operator shall be allowed to increase daily tonnage limit to 10,000 tons per day for one working day following Thanksgiving, Christmas, New Year's Day, Memorial Day, Independence Day, and Labor Day and for one working day following emergencies requiring landfill shutdown.

The City Manager is authorized to extend this accommodation on a day to day basis upon the request of the Director, IWMD. The City Manager agrees he will not unreasonably withhold consent.

The annual average tonnage limit of 7,000 tons per day of municipal solid waste will not increase (Section E. Limitation on Volume, Paragraph 2).

All other terms and conditions of the agreement remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this FOURTH AMENDMENT to the Memorandum of Understanding on the dates opposite their respective signatures:

Date: 4/23/99

CITY OF BREA

By

City Manager

Date:

COUNTY OF ORANGE

By

Director, Integrated Waste
Management Department

APPROVED AS TO FORM:
Laurence M. Watson
COUNTY COUNSEL

By

Date: 4/16/99

5TH AMENDMENT

AGENDA ITEM TRANSMITTAL

CONSENT ☐
DISCUSSION ☒
PUBLIC HEARING ☐

AGENCY/DEPT. USE

CEO REVIEW

☒ Concur
☐ Do Not Concur
☐ Exempt

CLERK USE ONLY

TO: BOARD OF SUPERVISORS, COUNTY OF ORANGE

FROM: Integrated Waste Management Department

CONTACT FOR INFORMATION:

John W. Sibley	834-4122
Gil Scofield	834-2065

MEETING DATE:	SUBJECT:	SUPV. DIST
AUG 15 2000	Amendment to the Memorandum of Understanding Between the City of Brea and the County of Orange Regarding the Olinda Alpha Landfill.	3

SUMMARY OF REQUEST (Description for Agenda):

Approve the Fifth Amendment to the Memorandum of Understanding Between the County of Orange and the City of Brea.

ADDITIONAL DATA:

See Attached Pages.

PREVIOUS RELEVANT BOARD ACTIONS ON THIS SPECIFIC ITEM:

h 10, 1992, Resolution No. 92-235, Minute Orders: April 6, 1993, June 13, 1995, August 19, 1997 and June 29, 1999.

UNDING SOURCE (S):	CURRENT YEAR COST	ANNUAL COST	BUDGETED?
Integrated Waste Management Department Enterprise	$3,900,000	N/A	☒ YES ☐ NO

WILL PROPOSAL REQUIRE ADDITIONAL PERSONNEL?
☒ NO IF YES, STATE NUMBER PERMANENT LIMITED TERM

CONSISTENT WITH BOARD POLICY?
☒ YES ☐ NEW ITEM OR EXCEPTION

RECOMMENDED ACTIONS:

1. Approve the Fifth Amendment to the Memorandum of Understanding between the County of Orange and the City of Brea.
2. Authorize the Director, Integrated Waste Management Department to sign on behalf of the Chairman of the Board of Supervisors.

CONCURRENCES (If Applicable)

City of Brea

ATTACHMENTS

Proposed Fifth Amendment

7/25/00
DATE

for
AGENCY OR DEPARTMENT AUTHORIZED REPRESENTATIVE

John W. Sibley, Director
Integrated Waste Management Department

ADDITIONAL DATA:

Background:

On March 10, 1992, your Honorable Board certified EIR No. 523 as adequate to satisfy the requirement of CEQA for the vertical expansion of the Olinda Alpha Landfill. You also approved a Memorandum of Understanding (MOU) between the County of Orange and the City of Brea that established obligations for the expansion process and other matters of mutual concern.

Subsequent to certification of EIR No. 523 and approval of the related resolutions, the MOU underwent the following:

The First Amendment to the MOU was approved on April 6, 1993. This updated provisions related to the landfill's ground water protection and landscaping systems.

The Second Amendment was approved on June 13, 1995. This adjusted County requirements related to road access issues and park planning and development. The changes included approval of the Landscape Master Plan, approval of the project report designating the use of Valencia Avenue as the sole access road to and from the Olinda Alpha Landfill, and approval of the General Development Plan with revisions to incorporate interim park planning.

The Third Amendment was approved on August 19, 1997. This updated the MOU in accordance with Final EIR No. 550 designating Valencia Avenue as the Olinda Alpha Landfill access route and deleting all references to the Tonner Canyon alternative. The Third Amendment also included the following: City and County responsibilities for access road design, implementation, and construction; authorized an increase in the landfill daily tonnage limit to 7,000 tons per day; and specified City and County responsibilities for park and recreation facilities planning and development.

The Fourth Amendment was approved on June 29, 1999. This updated the MOU to address the accumulation of solid waste following landfill closures on any of the six scheduled County holidays. The Amendment allowed the following: the landfill to remain open one additional hour in the evening following a scheduled holiday or an emergency, to increase daily tonnage to 10,000 tons per day for one working day following a scheduled holiday or emergency and allowed the City Manager to extend these accommodations on a day to day basis, upon the request of the County.

FIFTH Amendment To The MOU Between the County and the City of Brea

The City of Brea submitted letters to IWMD on February 29 and March 20, 2000. They requested early release of $3.9 million payment referenced in the Third Amendment to the MOU. The requested funds are required to supplement existing land acquisition funds set aside for the Sport Park Facility identified in the MOU. The City has made an offer on the land, established a final price, and anticipates closing escrow within six months. The City's land purchase actions and advance funding request are also being made to avoid any increase in land value due to imminent development of available land in the immediate area of the Sport Park Facility site.

The proposed Fifth Amendment has been negotiated with the City. The MOU, as revised, modifies the Funding Allocation Procedure and Schedule.

CEQA Compliance

The recommended action is not a project as defined by CEQA.

FIFTH AMENDMENT

TO MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF BREA AND THE COUNTY OF ORANGE REGARDING THE OLINDA ALPHA LANDFILL

The FIFTH AMENDMENT is made and entered into this________ day of _____________, 2000, by and between the County of Orange, hereinafter referred to as "COUNTY", and the City of Brea, hereinafter referred to as "CITY", and is made to the Memorandum of Understanding (MOU) between the parties dated March 10, 1992 and amended on April 6, 1993, June 13, 1995, August 19, 1997, and June 29, 1999, hereinafter collectively referred to as the MOU.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. Landfill Park – Funding Allocation Procedure and Schedule

The Landfill Park Section, is amended by deleting Paragraph F.1.a in its entirety and substituting the following:

Paragraph F.1.a. (1)

COUNTY agrees to allocate funds in the amount of $3.9 million for land acquisition, whereon permanent park and recreation facilities are to be constructed. These permanent park and recreational facilities will be planned, designed, acquired, and constructed by the CITY. The COUNTY will allocate funds for the land acquisition provided the following funding allocation procedures have been followed:

Funding Allocation Procedure

(A) COUNTY will pay to the CITY allocation specified below within 30 days of receipt of CITY certification.

Funding Allocation Schedule

1. FY 2000-2001 Property Acquisition - $3.9 Million

//

//

Funds not spend as allocated in FY 2000-2001 for land acquisition may be reallocated for planning and construction of the Sports Park Facilities Project.

The COUNTY may, at any time, conduct an audit of the CITY's specified Sports Park Facilities accounts and expenditures.

If CITY's project expenditures are not in accordance with the certified schedule, CITY and COUNTY will meet and confer to agree on a revised expenditure schedule. CITY agrees to refund COUNTY payments if these funds are used for any activity other than planning, design, acquisition, and construction of Sports Park Facilities.

2. All other term and conditions of the MOU shall remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this FIFTH AMENDMENT to the Memorandum of Understanding on the dates opposite their respective signatures:

CITY OF BREA

Date: 7-6-00

By: Tim O'Donnell
CITY Manager

COUNTY OF ORANGE, a political subdivision
of the State of California

Date: 7/17/00

By: for
John W. Sibley, Director
Integrated Waste
Management Department

APPROVED AS TO FORM:
LAURENCE M. WATSON
COUNTY COUNSEL

By:
Geoffrey K. Hunt, Deputy

Date: 6/20/00

ORANGE COUNTY BOARD OF SUPERVISORS

MINUTE ORDER

August 22, 2000

Submitting Agency/Department: INTEGRATED WASTE MANAGEMENT DEPARTMENT

Approve amendment 5 to Memorandum of Understanding with City of Brea regarding Olinda Alpha Landfill to advance funding payment for Sport Park Facility- District 3 (Continued from 8/15/00, Item 48)

The following is action taken by the Board of Supervisors:

APPROVED AS RECOMMENDED ☒ OTHER ☐

Unanimous ☒ (1) SMITH: **Y** (2) SILVA: **Y** (3) SPITZER: **Y** (4) COAD: **Y** (5) WILSON: **Y**

Vote Key: Y=Yes; N=No; A=Abstain; X=Excused; B.O.=Board Order

Documents accompanying this matter:

- ☐ Resolution(s)
- ☐ Ordinances(s)
- ☐ Contract(s)

Item No. 75

Special Notes:

Copies sent to:

CEO
IWMD/John Sibley
Auditor

I certify that the foregoing is a true and correct copy of the Minute Order adopted by the Board of Supervisors , Orange County, State of California.
DARLENE J. BLOOM, Clerk of the Board

By: Sandy Champine
Deputy

FIFTH AMENDMENT

TO MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF BREA AND THE COUNTY OF ORANGE REGARDING THE OLINDA ALPHA LANDFILL

The FIFTH AMENDMENT is made and entered into this 22 day of Aug 2000, 2000, by and between the County of Orange, hereinafter referred to as "COUNTY", and the City of Brea, hereinafter referred to as "CITY", and is made to the Memorandum of Understanding (MOU) between the parties dated March 10, 1992 and amended on April 6, 1993, June 13, 1995, August 19, 1997, and June 29, 1999, hereinafter collectively referred to as the MOU.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. Landfill Park – Funding Allocation Procedure and Schedule

The Landfill Park Section, is amended by deleting Paragraph F.1.a in its entirety and substituting the following:

Paragraph F.1.a. (1)

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(A) COUNTY will pay to the CITY allocation specified below within 30 days of receipt of CITY certification.

Funding Allocation Schedule

1. FY 2000-2001 Property Acquisition - $3.9 Million

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Funds not spend as allocated in FY 2000-2001 for land acquisition may be reallocated for planning and construction of the Sports Park Facilities Project.

The COUNTY may, at any time, conduct an audit of the CITY's specified Sports Park Facilities accounts and expenditures.

If CITY's project expenditures are not in accordance with the certified schedule, CITY and COUNTY will meet and confer to agree on a revised expenditure schedule. CITY agrees to refund COUNTY payments if these funds are used for any activity other than planning, design, acquisition, and construction of Sports Park Facilities.

2. All other term and conditions of the MOU shall remain unchanged.

IN WITNESS WHEREOF, the parties hereto have executed this FIFTH AMENDMENT to the Memorandum of Understanding on the dates opposite their respective signatures:

CITY OF BREA

Date: 7-6-00

By: Tim O'Donnell
CITY Manager

COUNTY OF ORANGE, a political subdivision
of the State of California

Date: 7/17/00

By: for
John W. Sibley, Director
Integrated Waste
Management Department

APPROVED AS TO FORM:
LAURENCE M. WATSON
COUNTY COUNSEL

By:
Geoffrey K. Hunt, Deputy

Date: 6/20/00

AGENDA ITEM TRANSMITTAL

CONSENT ☐
DISCUSSION ☒
PUBLIC HEARING ☐

AGENCY/DEPT. USE	CLERK USE ONLY
CEO REVIEW ☒ Concur ☐ Do Not Concur ☐ Exempt	Received AUG 25 2000 Auditor-Controller IWMD Accounting

TO: BOARD OF SUPERVISORS, COUNTY OF ORANGE

FROM: Integrated Waste Management Department

CONTACT FOR INFORMATION:
John W. Sibley 834-4122
Gil Scofield 834-2065

MEETING DATE:	SUBJECT:	SUPV. DIST
AUG 15 2000	Amendment to the Memorandum of Understanding Between the City of Brea and the County of Orange Regarding the Olinda Alpha Landfill.	3

SUMMARY OF REQUEST (Description for Agenda):

Approve the Fifth Amendment to the Memorandum of Understanding Between the County of Orange and the City of Brea.

ADDITIONAL DATA:

See Attached Pages.

PREVIOUS RELEVANT BOARD ACTIONS ON THIS SPECIFIC ITEM:
March 10, 1992, Resolution No. 92-235, Minute Orders: April 6, 1993, June 13, 1995, August 19, 1997 and June 29, 1999.

FUNDING SOURCE (S):	CURRENT YEAR COST	ANNUAL COST	BUDGETED?
Integrated Waste Management Department Enterprise	$3,900,000	N/A	☒ YES ☐ NO

WILL PROPOSAL REQUIRE ADDITIONAL PERSONNEL?
☒ NO IF YES, STATE NUMBER PERMANENT LIMITED TERM

CONSISTENT WITH BOARD POLICY?
☒ YES ☐ NEW ITEM OR EXCEPTION

RECOMMENDED ACTIONS:

1. Approve the Fifth Amendment to the Memorandum of Understanding between the County of Orange and the City of Brea.
2. Authorize the Director, Integrated Waste Management Department to sign on behalf of the Chairman of the Board of Supervisors.

CONCURRENCES (If Applicable)	ATTACHMENTS
City of Brea	Proposed Fifth Amendment

7/25/00
DATE

for
AGENCY OR DEPARTMENT AUTHORIZED REPRESENTATIVE

John W. Sibley, Director
Integrated Waste Management Department

DDITIONAL DATA:

Background:

On March 10, 1992, your Honorable Board certified EIR No. 523 as adequate to satisfy the requirement of CEQA for the vertical expansion of the Olinda Alpha Landfill. You also approved a Memorandum of Understanding (MOU) between the County of Orange and the City of Brea that established obligations for the expansion process and other matters of mutual concern.

Subsequent to certification of EIR No. 523 and approval of the related resolutions, the MOU underwent the following:

The First Amendment to the MOU was approved on April 6, 1993. This updated provisions related to the landfill's ground water protection and landscaping systems.

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The Third Amendment was approved on August 19, 1997. This updated the MOU in accordance with Final EIR No. 550 designating Valencia Avenue as the Olinda Alpha Landfill access route and deleting all references to the Tonner Canyon alternative. The Third Amendment also included the following: City and County responsibilities for access road design, implementation, and construction; authorized an increase in the landfill daily tonnage limit to 7,000 tons per day; and specified City and County responsibilities for park and recreation facilities planning and development.

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FIFTH Amendment To The MOU Between the County and the City of Brea

The City of Brea submitted letters to IWMD on February 29 and March 20, 2000. They requested early release of $3.9 million payment referenced in the Third Amendment to the MOU. The requested funds are required to supplement existing land acquisition funds set aside for the Sport Park Facility identified in the MOU. The City has made an offer on the land, established a final price, and anticipates closing escrow within six months. The City's land purchase actions and advance funding request are also being made to avoid any increase in land value due to imminent development of available land in the immediate area of the Sport Park Facility site.

The proposed Fifth Amendment has been negotiated with the City. The MOU, as revised, modifies the Funding Allocation Procedure and Schedule.

CEQA Compliance

The recommended action is not a project as defined by CEQA.

BREA
CALIFORNIA
City of Brea

March 20, 2000

John Sibley
Director IWMD
County of Orange
320 N. Flower Street, Suite 400
Santa Ana, CA 92703

Dear John:

The attached billing is to request the early release of the final $3.9 Million payment referenced in the Third Amendment to the MOU between the City of Brea and the County of Orange re: Olinda Alpha landfill.

The funds are being used to acquire land to build a Sports Park Facility. The need for the Sports Park Facility has previously been well documented.

As previously mentioned in the City Manager's correspondence dated February 29, 2000, the City of Brea is about to make an offer to acquire the Sports Park property and needs the additional funds to be able close escrow.

As you may be aware, the cost of land in the area has skyrocketed since the MOU was signed just two and a half years ago. The original estimate of land costs was $4 Million and was based on available comps at the time. However, the value of this type of property has more than doubled in that short time. Further development of available land in the immediate area is imminent, which will only make land even more costly for the City to acquire. Therefore, the City cannot afford to delay the purchase any longer by waiting until the original scheduled date (January 1, 2001) for the release of the final payment.

If you need any further information, please don't hesitate to call me at (714) 990-7675.

Yours truly,

Lawrence D. Hurst

Lawrence D. Hurst
Financial Services Director

Cc: Ron Pierre, Manager of Budget and Finance, IWMD
Frank Benest, City Manager
Sue Georgino, Redevelopment Services Director

LDH:ng/s:larry/sports park land acquisition

March 20, 2000
Date of Request

County of Orange
Customer Name

320 N. Flower St., #400
Mailing Address

Santa Ana, CA 92703
City State Zip

John Sibley – Director IWMB
To the Attention of

BREA
CALIFORNIA

CITY OF BREA

INVOICE

Please send this form to:
Finance Department
Accounts Receivable

For Finance Use Only
6074
Customer Number

Invoice Number

Offset Account

Offset Account

A/R Type Code

A/R Type Code

Item #	Quantity	Description	Unit Price	Total Price
		3rd Billing – City of Brea Sports Park Property Acquisition PR #7847 See attached for detail		$3,900,000.00

Subtotal	$3,900,000.00
Tax	
Total	**$3,900,000.00**

510-70-7847-3539	$3,900,000.00	
Credit Account	Amount	Credit Account Amount

Lawrence D. Hurst	1411	Lawrence D Hurst
Requested by	Dept./Div./Prgm.	Approved By

BREA
CALIFORNIA
City of Brea

February 29, 2000

Mr. John Sibley
Director, IWMD
County of Orange
320 N. Flower Street, Ste. 400
Santa Ana, CA 92703

Dear John:

The City's Memorandum of Understanding (MOU) with the County regarding the extension of the Olinda/Olinda-Alpha Landfill provides a final payment of $3.9million to be paid by the County on January 1, 2001. The City of Brea is requesting that the County of Orange advance this money within the next six months since we are about to make an offer to acquire the land for the Sports Park and need this final payment to help fund the acquisition. The City is requesting that this final payment of $3.9 million be payable at the close of escrow for the land. Again, we anticipate that escrow will close within six months.

Thank you for considering this amendment to the MOU.

Sincerely,

Frank Benest

Frank Benest
City Manager

FB:kts

corres\olinda landfill mou final paymt

cc: Mayor and Members of City Council
Larry Hurst, Financial Services Director
Sue Georgino, Redevelopment Services Director

From: Linda Hagthrop
To: Suzanne McClanahan
Date: 3/14/00 8:58AM
Subject: Brea MOU change

Hi Suzanne. Ron Pierre is working on a revision to the Brea MOU at JWS's request. The change has to do with providing funds to the City prior to the specified date. Ron realizes that we usually do this type of thing but must proceed because it was directed that way. Anyway, he needs to know the contact person to work with at the City.

He's sending down a copy of the letter directing this and he will keep us posted.

CC: Ron Pierre

3/14/00

Suzanne McClanahan

Attached is a copy of the letter received from the City of Brea requesting an early advance of $3.9 million.

Ron

AIT/CONTRACT ROUTING SLIP

FROM: Ron Pierre DATE: 4/19/00

☒ AIT ☐ AGREEMENT ☒ AMENDMENT

BOARD MEETING DATE: June 27, 2000

SUBJECT: Fifth Amendment to Memorandum of Understanding Between the City of Brea and the County of Orange Regarding the Olinda Alpha Landfill

ROUTING	INITIAL	DATE
1. Send e-mail to Patty Arreola with subject/hearing date and to obtain a footer number. S :\432		
2. Suzanne McClanahan, Program Office	SMc	4/20/00
3. Frank Kim, Finance/Budget Control		
4. Jim Pfaff * (QA/QC Review)		
5. Gil Scofield, Division Manager		
6. Patty Arreola		
7. John Sibley, Director		

- If AIT is not acceptable, AIT will be returned to Division Manager.

☒ Send to:
☐

☒ County Counsel
☐ CEO (Rosemary Dey)
☐ Clerk of the Board (Sandy Champine)

AGENDA ITEM TRANSMITTAL

CONSENT ☒

DISCUSSION ☐

PUBLIC HEARING ☐

AGENCY/DEPT. USE

CEO REVIEW

☐ Concur

☐ Do Not Concur

☐ Exempt

CLERK USE ONLY

TO: BOARD OF SUPERVISORS, COUNTY OF ORANGE

FROM: Integrated Waste Management Department

CONTACT FOR INFORMATION:

John W. Sibley	834-4122
Gil Scofield	834-2065

MEETING DATE:	SUBJECT:	SUPV. DIST
June 27, 2000	Amendment to the Memorandum of Understanding Between the City of Brea and the County of Orange Regarding the Olinda Alpha Landfill.	3

SUMMARY OF REQUEST (Description for Agenda):

Approve the Fifth Amendment to the Memorandum of Understanding Between the County of Orange and the City of Brea.

ADDITIONAL DATA:

See Attached Pages .

PREVIOUS RELEVANT BOARD ACTIONS ON THIS SPECIFIC ITEM:

ch 10, 1992, Resolution No. 92-235, Minute Orders: April 6, 1993, June 13, 1995, August 19, 1997 and June 29, 1999.

DING SOURCE(S): Integrated Waste Management Department Enterprise Fund	CURRENT YEAR COST $3,900,000	ANNUAL COST N/A	BUDGETED? ☒ YES ☐ NO

WILL PROPOSAL REQUIRE ADDITIONAL PERSONNEL?

☒ NO IF YES, STATE NUMBER PERMANENT LIMITED TERM

CONSISTENT WITH BOARD POLICY?

☒ YES ☐ NEW ITEM OR EXCEPTION

RECOMMENDED ACTIONS:

1. CEQA Finding?
2. Approve execution of the Fifth amendment to the Memorandum of Understanding between the County of Orange and the City of Brea .
3. Authorize the Director of the IWMD to sign on behalf of the chairman of the Board of Supervisors.

CONCURRENCES (If Applicable)

Brea City Council

ATTACHMENTS

Fifth Amendment

DATE

AGENCY OR DEPARTMENT AUTHORIZED REPRESENTATIVE

John W. Sibley, Director
Integrated Waste Management Department

(will you attach the action taken by the City council or just defer

Does John want to not sign on behalf of the [illegible] authori[illegible] B

ADDITIONAL DATA:

Background:

On March 10, 1992, your Honorable Board certified EIR No. 523 as adequate to satisfy the requirement of CEQA for the vertical expansion of the Olinda Alpha Landfill. You also approved a Memorandum of Understanding (MOU) between the County of Orange and the City of Brea that established obligations for the expansion process and other matters of mutual concern. On April 6, 1993, the First Amendment to the MOU was approved. This updated provisions to reflect actions required in response to regulations and scheduling related to the landfill's ground water protection and landscaping systems.

On June 13, 1995, the Second Amendment was approved. This adjusted County requirements related to road access issues and park planning and development. The changes included approval of the Landscape Master Plan, approval of the project report designating the use of Valencia Avenue as the sole access road to and from the Olinda Alpha Landfill, and approval of the General Development Plan with revisions to incorporate interim park planning.

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On June 29, 1999, the Fourth Amendment was approved which updated the MOU to address the accumulation of solid waste following landfill closures on any of the six scheduled County holidays. The amendment allowed the following: the landfill to remain open one additional hour in the evening following a scheduled holiday or an emergency, to increase daily tonnage to 10,000 tons per day for one working day following a scheduled holiday or emergency and allowed the City Manager to extend these accommodations on a day to day basis, upon the request of the County.

FIFTH Amendment To The MOU Between the County and the City of Brea

On February 29 and March 20, 2000, the City of Brea submitted letters to IWMD requesting early release of the $3.9 million payment referenced in the Third Amendment. The request for an early release of funds is being made because the value of land for the Sports Park Facility has increased. According to the City, the value of land has nearly doubled since the Third Amendment was signed in 1997. The City has made an offer on the land, established a final price, and anticipates closing escrow within six months. The advance of $3.9 million is required to fund the land acquisition costs. Additionally, the City's land purchase action and advance funding request are made to avoid any additional increase in land value due to imminent development of available land in the immediate area of the Sports Park Facility site.

The Fifth Amendment has been negotiated with the City in a cooperative effort to update the MOU based on changed conditions reported in the City's letters to IWMD dated February 29 and March 20, 2000. The MOU, as revised, modifies the Funding Allocation Procedure and Schedule.

The MOU as revised by the Fifth Amendment, serves to acknowledge the City and the County's agreement to:

Landfill Park

1. Authorize the advance of $3.9 million by the County to the City for Sports Park Facilities property acquisition prior to the January 1, 2001.

FIFTH AMENDMENT

TO MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF BREA AND THE COUNTY OG ORANGE REGARDING THE OLINDA ALPHA LANDFILL

The FIFTH AMENDMENT is made and entered into this________ day of _______ 2000, by and between the County of Orange, hereinafter referred to as "COUNTY", and the City of Brea, hereinafter referred to as "CITY", and is made to the Memorandum of Understanding (MOU) between the parties dated March 10, 1992 and amended on April 6, 1993, November 29, 1994, June 13, 1995, August 19, 1997, and June 29, 1999 hereinafter collectively referred to as the MOU.

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. Landfill Park – Funding Allocation Procedure and Schedule

The Landfill Park Section, is amended by deleting Paragraph F.1.a in its entirety and substituting the following:

Paragraph F.1.a. (1)
County agrees to allocate funds in the amount of $3.9 million for land acquisition, whereon permanent park and recreation facilities are to be constructed. These permanent park and recreational facilities will be planned, designed, acquired, and constructed by the City. The County will allocate funds for the land acquisition provided the following funding allocation procedures have been followed:

Funding Allocation Procedure
(A) County will pay to the City allocation specified below within 30 days of receipt of City certification.

Funding Allocation Schedule
1. FY 1999-2000 Property Acquisition - $3.9 Million

Funds not spend as allocated in FY 1999-2000 for land acquisition may be reallocated for planning and construction of the Sports Park Facilities project.

The County may, at any time, conduct an audit of the City's specified Sports Park Facilities accounts and expenditures. If City's project expenditures are not in accordance with the certified schedule, City and County will meet and confer to agree on a revised expenditure schedule. City agrees to refund County payments if these funds are used for any activity other than planning, design, acquisition, and construction of Sports Park Facilities.

IN WITNESS WHEREOF, the parties hereto have executed this FIFTH AMENDMENT to the Memorandum of Understanding on the dates opposite their respective signatures:

Date: ________________ By: ________________________

Chairman, Board of Supervisors John Sibley

SIGNED AND CERTIFIED THAT A COPY OF THIS
OFURTH AMENDMENT HAS BEEN DELIVERED
TO THE CHAIRMAN OF THE BOARD

Date: ________________ By: ________________________

Darlene J. Bloom
Clerk of the Board of Supervisors of Orange
County, California

CITY OF BREA

Date: ________________ By: ________________________

Mayor, City of Brea

APPROVED AS TO FORM
Laurence M. Watson
County Counsel

By: ________________________

Date: ________________________

ANNOTATED AGREEMENT

04/09/99

ANNOTATED AGREEMENT

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE CITY OF BREA
AND
THE COUNTY OF ORANGE
REGARDING THE OLINDA-OLINDA ALPHA LANDFILL

THIS MEMORANDUM OF UNDERSTANDING is entered into on this 10th day of March, 1992 between the City of Brea ("City") and the County Of Orange ("County"), through their respective legislative bodies. The purpose of this Memorandum of Understanding (MOU) regarding the County's proposed expansion of the Olinda/Olinda Alpha is to establish duties the procedures regarding the continued operation of the Olinda/Olinda landfill and other matters of mutual concern. The City and the County hereby agree that no expansion of the Olinda/Olinda Alpha landfill shall occur until applicable provisions of this MOU are implemented as follows:

A. Public Health and Safety

The potential danger of a landfill operation to public health and safety shall be minimized. Proper operation and monitoring shall be enforced. The following conditions are provided to achieve an environmentally safe operation.

1. Adherence to State Standards:
The Olinda/Olinda Alpha site will be operated in conformity with State requirements for a Class III landfill. Strict adherence to all applicable State standards is the legal responsibility of the landfill operating entity.

2. Surface and Groundwater Quality

   a. Desiltation basins, surface water quality sampling, hazardous and toxic materials management procedures will be established to reduce nonpoint source pollution discharges to "the maximum extent practicable". Applicable "Best Management Practices" for the Olinda/Olinda Alpha landfill shall be implemented at the proposed site.

   b. The appropriate Surface and Groundwater Hydrology and Water Quality Mitigation Measures per the NOCLATS EIR-523 shall be followed, as outlined in Attachment No. 1.

   c. The County shall meet all National Pollutant Discharge Elimination System standards.

   d. The County will submit a Groundwater Monitoring and Remediation Plan to the Regional Water Quality Control Board by July 1992. Upon their approval of the plan, the County will prepare plans and specifications for an appropriate leachate collection and disposal system. ~~The system should be in operation by March 1993~~. **Amendment #1, Paragraph A.2.d. – 4/6/93.** ~~*The system should be in operation by July 1994.*~~

   Amendment #2, Paragraph A.2.d. 11/29/94 (struck out "last sentence of Paragraph A.2d in its entirety and substituting"): *The interim system should be in operation by July 1994. The permanent leachate disposal and collection system should be in operation by June 1995.*

3. Methane Collection, Migration and Control Systems

Such activities shall be conducted under South Coast Air Quality Management District (SCAQMD) jurisdiction per Rule 1150.1 and per the regulations contained in the applicable Chapters and Sections of the California Code of Regulations (CCR), Title 14 and Title 23.

4. Hazardous Waste Exclusion Plan

a. The County will continue its load check program to prevent the disposal of hazardous material.

b. Any hazardous material found will be either properly stored and/or removed and properly disposed of.

c. County holds City harmless regarding hazardous materials cleanup to the extent permissible by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

B. Operating Procedures

In addition to meeting State standards, adherence to the following standards, even where they go above and beyond State standards, is a condition for landfill operation.

1. Operating Hours

~~The operating entity will limit landfill access to the hours of 6:00 AM to 4:00 PM Monday through Saturday.~~ **Amendment #4, Paragraph 1 – 4/23//99** *Operating hours shall be limited to 6:00 a.m. to 4:00 p.m. Monday through Saturday. However, operating hours shall be extended one additional hour to 5:00 p.m. for one working day following New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas Day and for one working day following emergencies requiring landfill shutdown.*

The City Manager is authorized to extend this accommodation on a day to day basis upon the request of the Director, IWMD. The City Manager agrees he will not unreasonably withhold consent.

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   a. County will develop an operation plan which will minimize the visual impact of the existing landfill as well as the proposed landfill expansion.

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   a. When the Olinda/Olinda Alpha landfill site is to close it shall be done in conformance with the State standards in effect at the time of closure.

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   a. The County will not utilize off-site borrow sites "A" or "B", the Beta parcel, or any property within the proposed or existing Chino Hills State Park. The County may accept other off-site cover material which may become available.

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~~1. The County will provide an access road to the landfill entrance via a route mutually agreed upon by City and County.~~
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~~2. This access road will be designed and landscaped by the County. Road and landscape design plans must be mutually agreed upon by County and City.~~
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~~3. If Tonner Canyon is used as an access road, a bridge over Valencia Avenue will be included as part of that project.~~
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~~4. Valencia Avenue, upon City approval, may be used for landfill traffic entering or exiting the Olinda/Olinda Alpha site.~~
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~~6. If Tonner Canyon is used as an access road, the Tonner Canyon interchange shall be modified consistent with the improvements necessary to handle the landfill trip generation based on an average annual maximum of 6,000 tons per day. If an assessment district or similar funding mechanism is established to cover the cost of full interchange improvements, the County agrees to participate in funding those improvements, proportionate to its share of traffic demand. If during the expected lifetime of the landfill, traffic generation at the landfill increases, then the County will be responsible for full interchange or road improvements necessary to handle the increased demand.~~

Amendment #3, Paragraph C.6.- -8/5/97 *Expansion of the landfill as described in EIR # 523 may proceed effective July 1, 1997.*

~~7. No expansion of the landfill will occur until the access road and any landfill related interchange improvements are completed unless mutually agreed upon by the City and County.~~
Amendment #2, Paragraph C.7. ~~*7. No expansion of the landfill will occur until a Public Works construction contract has been put out to bid for the access road and any landfill related interchange improvements unless mutually agreed upon by the CITY and COUNTY. County agrees to award bid within 90 days after receipt of bids.*~~

Amendment #3, Paragraph C.6. (Amendment #3 struck out Paragraph C; it replaced Paragraphs C.1-C.6; did not replace Paragraph C.7)

D. Road Construction and Maintenance

~~1. The County will analyze existing structural sections and determine need for reconstruction of all designated landfill routes located in City or its sphere.~~
Amendment #3, Paragraph D.1 – 8/5/97. (struck out Paragraph D.1 and D.2) *The County's only responsibility for road construction and maintenance is as described in the Access Section, Paragraphs C1. through C6. Any obligations or other requirements in previous versions of this MOU are rescinded.*

~~2. The City and County may share the cost for road reconstruction as well as maintenance of such streets, proportionate to Olinda/Olinda Alpha landfill bound truck traffic. Such proportions will be determined via an axle count study to be conducted by County. Improvements made pursuant to this Agreement will not preclude or prejudice further improvements to such streets via Arterial Highway Funding Program.~~

E. Limitation on Volume

~~1. The Olinda/Olinda Alpha operation will be limited to a maximum annual average of six thousand (6,000) tons per day of municipal solid waste, excluding asphalt or soil.~~
Amendment #3, Paragraph E.1. – 8/5/97 *Effective August 1, 1997, the Olinda Alpha Landfill operation will be limited to a maximum annual average of seven thousand (7,000) tons per day of municipal solid waste, excluding asphalt and soil.*

~~2. Any waste discharge permit or the operating permit to be issued by the State of California shall specifically stipulate a maximum tonnage limitation of eight thousand (8,000) tons per day of municipal solid waste, excluding asphalt of soil.~~
Amendment #4, Paragraph E.2. – 4/23/99 *The maximum tonnage per day of municipal solid waste discharged shall be limited to 8,000 tons per day. Operator shall be allowed to increase daily tonnage limit to 10,000 tons per day for one working day following Thanksgiving, Christmas, New Year's Day, Memorial Day, Independence Day, and Labor Day and for one working day following emergencies requiring landfill shutdown.*

The City Manager is authorized to extend this accommodation on a day to day basis upon the request of the Director, IWMD. The City Manager agrees he will not unreasonably withhold consent.

The annual average tonnage limit of 7,000 tons per day of municipal solid waste will not increase (Section E. Limitation on Volume, Paragraph 2).

3. Notwithstanding, the actual volume of municipal solid waste which may be accumulated

throughout the expansion of Olinda/Olinda Alpha, the landfill will cease acceptance of such waste no later than December 31, 2013. Any operating permit issued by the State which encompasses this date shall stipulate this limitation.

F. Landfill Park

1. ~~The County shall establish temporary park uses on non-operating areas of the Olinda/Olinda Alpha landfill so long as the safety of the public and landfill operations can be maintained. Any temporary park and recreation facilities shall require the City's concurrence. The development and maintenance of these temporary facilities shall be funded from the Waste Management Enterprise Fund as a mitigation measure.~~
Amendment #2, Paragraph F.1. – 8/5/97 ~~*Because of potential interference of landfill operations resulting from the development of temporary park facilities on non-operating areas of the Olinda/Olinda Alpha Landfill, the COUNTY agrees to the following permanent facilities in lieu of the development of temporary facilities. These permanent facilities will be developed by the COUNTY over the life of the landfill operation.*~~

Amendment #2, Paragraph F.1.a. -

~~a. Development of recreational facilities within the next two years based on the findings of the Master Plan for Parks and Recreation for the City of Brea. ($1.5 million)~~

Amendment #3, Paragraph F.1.a. 8/5/97

~~*a. Because of potential interference of landfill operations resulting from the development of temporary park and recreation facilities on non-operating areas of the Olinda Alpha Landfill, the County agrees to allocate funds for specified permanent facilities in lieu of the development of temporary facilities. These permanent park and recreation facilities will be planned, designed, acquired, and constructed by the City. The County will allocate funds for the park and recreation facilities listed below provided the following funding allocation procedures have been followed:*~~

~~*Funding Allocation Procedure*~~
~~*(A) City will provide an annual certification that it has adopted an expenditure schedule for a Sports Park project (as referenced in the 1997 Parks, Recreation, Human Services, and Open Space Master Plan – see page 37 of the Master Plan) and project accounts in its current fiscal year budget.*~~
~~*(B) City will provide to County an annual Sports Park expenditure report for each account within 60 days of the close of each fiscal year.*~~
~~*(C) County will pay to City allocation specified below within 30 days of receipt of City certification, but no sooner than January of the specified fiscal year:*~~

~~*County Funding Allocation Schedule*~~
~~*1. FY 1997-1998 Property Acquisition – $4 Million January 1998*~~
~~*2. FY 1999-2000 Planning and Design – $1.5 Million January 2000*~~
~~*3. FY 2000-2001 Construction – $3.9 Million January 2001*~~

~~*Funds not spent as allocated in FY 1999-2000 for Planning and Design may be reallocated for construction of the Sports Park project in FY 2000-2001*~~

~~*The County may, at any time, conduct an audit of the City's specified Sports Park accounts and expenditures. In no event will the County funding allocation be made earlier than January of the designated fiscal year. If City's project expenditures are not in accordance with the certified schedule, City and County will meet and confer to agree on a revised expenditure and allocation schedule. Subsequent County funding allocations will be delayed pending a mutually agreed upon expenditure schedule. This Memorandum of Understanding may be updated on an annual basis to reflect these*~~

~~*schedule adjustments. City agrees to refund County payments if these funds are used for any activity other than for planning, design, acquisition, and construction of Sports Park facilities.*~~

Amendment #5. Paragraph F.1.a.
COUTY agrees to allocate funds in the amount of $3.9 million for land acquisition, whereon permanent park and recreation facilities are to be constructed. These permanent park and recreational facilities will be planned, designed, acquired, and constructed by the CITY. The COUNTY will allocate funds for the land acquisition provided the following funding allocation procedures have been followed:

Funding Allocation Procedure
(A) COUNTY will pay to the CITY allocation specified below within 30 days of receipt of CITY certification.

Funding Allocation Schedule
1. FY 2000-2001 Property Acquisition - $3.9 Million

Funds not spend as allocated in FY 2000-2001 for land acquisition may be reallocated for planning and construction of the Sports Park Facilities Project.

The COUNTY may, at any time, conduct an audit of the CITY's specified Sports Park Facilities accounts and expenditures.

If CITY's project expenditures are not in accordance with the certified schedule, CITY and COUNTY will meet and confer to agree on a revised expenditure schedule. CITY agrees to refund COUNTY payments if these funds are used for any activity other than planning, design, acquisition, and construction of Sports Park Facilities.

Amendment #2, Paragraph F.1.b.
~~b. Obtain additional property adjacent to, or within reasonable proximity to, the landfill and develop a park and recreational complex on approximately 18-20 acres of land within the next five years. ($3.9 million and land acquisition)~~

Amendment #3, Paragraph F.1.b. 8/5/97
b. The County will redesign the Olinda Regional Park as a Natural Regional Park. Park development will commence in 2015 upon completion of landfill closure activities and will be phased over a ten year period. The County will allocate $3.4 million for this park project.

Amendment #2, Paragraph F.1.c.
~~c. Redesign the Olinda Regional Park to be a Natural Regional Park. Park development will commence in 2015 upon completion of landfill closure activities and will be phased over ten year period. ($3.4 million)~~

Amendment #3, Paragraph F.1.c. 8/5/97
c. The County will construct the Beta Parcel trail within six months (6) after Monterey Resources, Inc. constructs and energizes the necessary traffic signal on Carbon Canyon Road which will provide safe crossing for trail users.

Amendment #2, Paragraph F.1.d.
~~d. Develop and construct the trail through the Beta Parcel within two years as discussed in the conceptual General Development Plan. ($75,000)~~

Amendment #3, Paragraph F.1.d. 8/5/97
d. All funding amounts identified in above Paragraphs F.1.a and F.1.b are indicated in

1997 dollars, as of June, 1997. Since the above referenced park and recreation improvements will be made in subsequent years, these funding amounts will be adjusted annually referencing the June consumer Price Index (Los Angeles, Anaheim, Riverside), All Urban Consumers Index [1997=100], published by the United States Department of Labor Statistics.

Amendment #2, Paragraph F.1.e.

~~e. All funding amounts identified above are indicated in 1994 dollars, as of November 1994. Since the above referenced park and recreation improvements will be made in subsequent years, these funding amounts will be adjusted annually referencing the November Consumer Price Index (Los Angeles, Anaheim, Riverside), All Urban Consumers Index [1967 = 100], published by the United States Department of Labor Bureau of Labor Statistics.~~

Should the development of these facilities be infeasible due to technical, environmental, or legal concerns, the CITY and COUNTY agree to negotiate in good faith and implement other feasible and financially comparable alternatives.

2. ~~The County will prepare a General Development Plan for ultimate recreational uses to be established on the site following closure of landfill operations. Said plan shall be mutually agreed upon with the City and County. Said Plan shall be completed and approved prior to issuance of the State Operating Permit for the proposed expansion of the Olinda/Olinda Alpha landfill. Further, prior to the issuance of the State Operating Permit, the County shall develop a multi-year financial pro-forma indicating how sufficient funding shall accumulate for post-closure park development. The County shall accumulate, on a yearly basis, monies as indicated by the financial pro-forma.~~
Amendment #2, Paragraph F.2. *The CITY and COUNTY will cooperate in the preparation of a Master Plan of Parks and Recreation for the CITY. Scope of said Master Plan shall be mutually agreed upon by the CITY and COUNTY. The Master Plan will address a variety of issues, including but not limited to, maintenance levels, scheduling, and user fees at COUNTY facilities within the CITY or its sphere of influence. COUNTY EMA/Harbors, Beaches & Parks will allocate $65,000 for development of the Master Plan. Said Master Plan shall be completed and approved by the CITY and COUNTY prior to issuance of the State Operating Permit for the proposed expansion of the Olinda/Olinda Alpha Landfill.*

3. The County shall provide that the closure plan for the Olinda/Olinda Alpha Landfill includes a cover design appropriate for the recreational uses outlined in the General Development Plan for post closure uses.

G. Unanticipated Environmental Mitigation Claims

1. If, during the operation of the landfill expansion, unanticipated environmental impacts occur as a result of having the landfill within the City's boundary of sphere of influence, the City may file a claim with the County to offset such a burden. Any program proposal must demonstrate a reasonable relationship with the operation of the landfill.

2. The County shall disburse funds from the existing Environmental Mitigation Fund provided the program described offsets the environmental or infrastructure impacts reasonably associated with the landfill operation. The County shall accumulate sufficient funds on a yearly basis to cover anticipated program costs.

3. The County shall have full review and audit authority over such fund disbursements.

H. Land Use Planning

County shall not approve private development projects within the City's sphere of influence east of the 57 Freeway without verifying the City's ability to provide necessary services. The County will not approve of private services such as septic tanks, individual wells, or retention basins.

Amendment #3, Paragraph H. 8/5/97 *In recognition of the City's long range planning in its Sphere of Influence, the County will continue to be sensitive and responsive to the City's comments on proposed land uses in that area.*

I. Pursuit of Alternatives

The County and City agree to collaboratively explore waste recovery and other alternatives to landfill operations, as well as possible joint ventures in sponsoring such facilities.

J. Enforcement

1. The County will conform with all applicable regulations, restrictions and statutes at the Federal, State, and local level, as well as all provisions in this MOU.
2. If the ownership or operating responsibilities of the Olinda landfill are transferred or assigned to any other entity or agency, public or private, the County shall ensure that the obligations identified in this agreement will be reassigned so that the terms of this agreement shall continue to be met.

K. Arbitration

In the event that any dispute should arise between the parties hereto in regard to this MOU, the matter may be submitted to arbitration at the request of either the City or the County.

Said request shall state the matters the City/County considers to be in issue. The City/County shall, within thirty days, notify the requesting party, with its agreement with the listing of issues to be submitted to arbitration. Unless otherwise mutually agreed by the County Administrative Officer and the City Manager of Brea, an arbitrator shall be selected from a panel submitted by the American Arbitration Association and shall be selected from an uneven number listed, each party alternatively striking names from the list submitted until only the name of one arbitrator remains. The foregoing selection of an arbitrator shall be accomplished within 20 days of the submission of a list of arbitrators by AAA. In the event that the original request for arbitration is not answered within thirty days of delivery of notice, the party requesting arbitration may select an arbitrator from the list submitted by the American Arbitration Association and the decision of such an arbitrator shall be binding. If possible, the arbitrator shall conduct the first hearing within thirty days of selection and shall complete the arbitration and make an award in writing within thirty days of the close of an arbitration proceeding. The fees and expenses of the arbitrator, together with other expenses of the arbitration incurred or approved by the arbitrator, not including counsel fees or witness fees or other expenses incurred by a party for his own benefit, shall be borne equally by both parties.

L. ~~**Amendments**~~
~~This memorandum of understanding may be amended at any time by mutual consent of the City and County.~~

Amendment #3 L. 8/5/97 (replaced title) **General Provisions**

Amendment #3. Paragraph, L.1. 8/5/97
1. *Any discretionary actions by County set forth in this MOU which are not covered by EIR No. 523 and EIR No. 550 are subject to future California Environmental Quality Act (CEQA) compliance.*

Amendment #3, Paragraph L.2. 8/5/97
2. *This MOU may be amended at any time by mutual consent of the City and County.*

All other terms and conditions of the agreement remain unchanged.

THE CITY OF BREA, a municipal corporation

Dated:__________________

By:__________________________
Ron Isles, Mayor

Attest:

____
City Clerk

Dated:_________________

____
Frank Benest, City Manager

Attest:

____
City Clerk

"County": COUNTY OF ORANGE

Dated:_________________

By:__________________________
Roger R. Stanton, Chairman
Orange County Board of Supervisors

Attest:

____
Linda D. Ruth
Clerk of the Orange County
Board of Supervisors

ANNOTATED AGREEMENT

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE CITY OF BREA
AND
THE COUNTY OF ORANGE
REGARDING THE OLINDA-OLINDA ALPHA LANDFILL

THIS MEMORANDUM OF UNDERSTANDING is entered into on this 10th day of March, 1992 between the City of Brea ("City") and the County Of Orange ("County"), through their respective legislative bodies. The purpose of this Memorandum of Understanding (MOU) regarding the County's proposed expansion of the Olinda/Olinda Alpha is to establish duties the procedures regarding the continued operation of the Olinda/Olinda landfill and other matters of mutual concern. The City and the County hereby agree that no expansion of the Olinda/Olinda Alpha landfill shall occur until applicable provisions of this MOU are implemented as follows:

A. Public Health and Safety

The potential danger of a landfill operation to public health and safety shall be minimized. Proper operation and monitoring shall be enforced. The following conditions are provided to achieve an environmentally safe operation.

1. Adherence to State Standards:
   The Olinda/Olinda Alpha site will be operated in conformity with State requirements for a Class III landfill. Strict adherence to all applicable State standards is the legal responsibility of the landfill operating entity.

2. Surface and Groundwater Quality

   a. Desiltation basins, surface water quality sampling, hazardous and toxic materials management procedures will be established to reduce nonpoint source pollution discharges to "the maximum extent practicable". Applicable "Best Management Practices" for the Olinda/Olinda Alpha landfill shall be implemented at the proposed site.

   b. The appropriate Surface and Groundwater Hydrology and Water Quality Mitigation Measures per the NOCLATS EIR-523 shall be followed, as outlined in Attachment No. 1.

   c. The County shall meet all National Pollutant Discharge Elimination System standards.

   d. The County will submit a Groundwater Monitoring and Remediation Plan to the Regional Water Quality Control Board by July 1992. Upon their approval of the plan, the County will prepare plans and specifications for an appropriate leachate collection and disposal system. ~~The system should be in operation by March 1993~~. **Amendment #1, Paragraph A.2.d. – 4/6/93.** ~~*The system should be in operation by July 1994.*~~

      Amendment #2, Paragraph A.2.d. 11/29/94 (struck out "last sentence of Paragraph A,2d in its entirety and substituting") *The interim system should be in operation by July 1994. The permanent leachate disposal and collection system should be in operation by June 1995.*

8/15/02

3. Methane Collection, Migration and Control Systems

Such activities shall be conducted under South Coast Air Quality Management District (SCAQMD) jurisdiction per Rule 1150.1 and per the regulations contained in the applicable Chapters and Sections of the California Code of Regulations (CCR), Title 14 and Title 23.

4. Hazardous Waste Exclusion Plan

   a. The County will continue its load check program to prevent the disposal of hazardous material.

   b. Any hazardous material found will be either properly stored and/or removed and properly disposed of.

   c. County holds City harmless regarding hazardous materials cleanup to the extent permissible by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

B. Operating Procedures

In addition to meeting State standards, adherence to the following standards, even where they go above and beyond State standards, is a condition for landfill operation.

1. Operating Hours

~~The operating entity will limit landfill access to the hours of 6:00 AM to 4:00 PM Monday through Saturday.~~ **Amendment #4, Paragraph 1 – 4/23//99** *Operating hours shall be limited to 6:00 a.m. to 4:00 p.m. Monday through Saturday. However, operating hours shall be extended one additional hour to 5:00 p.m. for one working day following New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas Day and for one working day following emergencies requiring landfill shutdown.*

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   a. The County shall require covers on all trash hauling vehicles.

   b. The County shall control on-site windblown debris according to the latest acceptable landfill methods.

   c. The County shall routinely clean-up debris from the access road.

   ~~d. The County shall establish a litter clean-up program for the following roadways.~~

   ~~The Tonner Canyon landfill access road from the landfill entrance to the 57 Freeway and any other City approved routes to and from the landfill.~~

   Amendment #3, Paragraph B.2.d. – 8/5/97 (replace with) *The County shall establish a litter clean-up program for the Valencia Avenue landfill access road and any other City approved routes to and from the landfill.*

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c. Special operating procedures shall be established for Santa Ana wind and wet weather conditions.

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a. County will develop an operation plan which will minimize the visual impact of the existing landfill as well as the proposed landfill expansion.

b. To further minimize the visual impact of the landfill, the County will obtain the City's approval of landscape and irrigation plans for the existing landfill and proposed expansion.

~~c. The County will submit landscape and irrigation plans as part of such plans for Approval by the appropriate State agencies by September, 1992.~~
Amendment #1, Paragraph B.4.c. – 4/6/93. ~~*The County will submit landscape and irrigation plans as part of the Solid Waste Facility Permit (SWFP) application to the California Integrated Waste Management Board (CIWMB) by June 1994.*~~

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~~d. Plans will be implemented 90 days after State approval.~~
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b. The County will seek the City's input regarding Closure and Post Closure plan prior to submitting such pans to the appropriate agencies for approval.

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a. The County will not utilize off-site borrow sites "A" or "B", the Beta parcel, or any property within the proposed or existing Chino Hills State Park. The County may accept other off-site cover material which may become available.

b. The County shall aggressively advocate with appropriate State agencies the use of alternative cover such as shredded green waste.

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~~2. This access road will be designed and landscaped by the County. Road and landscape design plans must be mutually agreed upon by County and City.~~
Amendment #3, Paragraph C.2 – 8/5/97 *The County will design and construct Valencia Avenue as a four lane divided ultimate-width Primary Arterial Highway from Birch Street to Lambert Road and as a four lane undivided interim-width roadway within existing right of way westerly of centerline and ultimate one half width right of way easterly of centerline from Lambert Road to the northern most Olinda Heights access road.*

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~~6. If Tonner Canyon is used as an access road, the Tonner Canyon interchange shall be modified consistent with the improvements necessary to handle the landfill trip generation based on an average annual maximum of 6,000 tons per day. If an assessment district or similar funding mechanism is established to cover the cost of full interchange improvements, the County agrees to participate in funding those improvements, proportionate to its share of traffic demand. If during the expected lifetime of the landfill, traffic generation at the landfill increases, then the County will be responsible for full interchange or road improvements necessary to handle the increased demand.~~

Amendment #3, Paragraph C.6.- -8/5/97 *Expansion of the landfill as described in EIR # 523 may proceed effective July 1, 1997.*

~~7. No expansion of the landfill will occur until the access road and any landfill related interchange improvements are completed unless mutually agreed upon by the City and County.~~
Amendment #2, Paragraph C.7. ~~*7. No expansion of the landfill will occur until a Public Works construction contract has been put out to bid for the access road and any landfill related interchange improvements unless mutually agreed upon by the CITY and COUNTY. County agrees to award bid within 90 days after receipt of bids.*~~

Amendment #3, Paragraph C.6. (Amendment #3 struck out Paragraph C; it replaced Paragraphs C.1-C.6; did not replace Paragraph C.7)

D. Road Construction and Maintenance

~~1. The County will analyze existing structural sections and determine need for reconstruction of all designated landfill routes located in City or its sphere.~~
Amendment #3, Paragraph D.1 – 8/5/97. (struck out Paragraph D.1 and D.2) *The County's only responsibility for road construction and maintenance is as described in the Access Section, Paragraphs C1. through C6. Any obligations or other requirements in previous versions of this MOU are rescinded.*

~~2. The City and County may share the cost for road reconstruction as well as maintenance of such streets, proportionate to Olinda/Olinda Alpha landfill-bound truck traffic. Such proportions will be determined via an axle count study to be conducted by County. Improvements made pursuant to this Agreement will not preclude or prejudice further improvements to such streets via Arterial Highway Funding Program.~~

E. Limitation on Volume

~~1. The Olinda/Olinda Alpha operation will be limited to a maximum annual average of six thousand (6,000) tons per day of municipal solid waste, excluding asphalt or soil.~~
Amendment #3, Paragraph E.1. – 8/5/97 *Effective August 1, 1997, the Olinda Alpha Landfill operation will be limited to a maximum annual average of seven thousand (7,000) tons per day of municipal solid waste, excluding asphalt and soil.*

~~2. Any waste discharge permit or the operating permit to be issued by the State of California shall specifically stipulate a maximum tonnage limitation of eight thousand (8,000) tons per day of municipal solid waste, excluding asphalt of soil.~~
Amendment #4, Paragraph E.2. – 4/23/99 *The maximum tonnage per day of municipal solid waste discharged shall be limited to 8,000 tons per day. Operator shall be allowed to increase daily tonnage limit to 10,000 tons per day for one working day following Thanksgiving, Christmas, New Year's Day, Memorial Day, Independence Day, and Labor Day and for one working day following emergencies requiring landfill shutdown.*

The City Manager is authorized to extend this accommodation on a day to day basis upon the request of the Director, IWMD. The City Manager agrees he will not unreasonably withhold consent.

The annual average tonnage limit of 7,000 tons per day of municipal solid waste will not increase (Section E. Limitation on Volume, Paragraph 2).

3. Notwithstanding, the actual volume of municipal solid waste which may be accumulated

throughout the expansion of Olinda/Olinda Alpha, the landfill will cease acceptance of such waste no later than December 31, 2013. Any operating permit issued by the State which encompasses this date shall stipulate this limitation.

F. Landfill Park

1. ~~The County shall establish temporary park uses on non-operating areas of the Olinda/Olinda Alpha landfill so long as the safety of the public and landfill operations can be maintained. Any temporary park and recreation facilities shall require the City's concurrence. The development and maintenance of these temporary facilities shall be funded from the Waste Management Enterprise Fund as a mitigation measure.~~
Amendment #2, Paragraph F.1. – 8/5/97 ~~*Because of potential interference of landfill operations resulting from the development of temporary park facilities on non-operating areas of the Olinda/Olinda Alpha Landfill, the COUNTY agrees to the following permanent facilities in lieu of the development of temporary facilities. These permanent facilities will be developed by the COUNTY over the life of the landfill operation.*~~

Amendment #2, Paragraph F.1.a. -
~~a. Development of recreational facilities within the next two years based on the findings of the Master Plan for Parks and Recreation for the City of Brea. ($1.5 million)~~

Amendment #3, Paragraph F.1.a. 8/5/97
~~*a. Because of potential interference of landfill operations resulting from the development of temporary park and recreation facilities on non-operating areas of the Olinda Alpha Landfill, the County agrees to allocate funds for specified permanent facilities in lieu of the development of temporary facilities. These permanent park and recreation facilities will be planned, designed, acquired, and constructed by the City. The County will allocate funds for the park and recreation facilities listed below provided the following funding allocation procedures have been followed:*~~

~~*Funding Allocation Procedure*~~
~~*(A) City will provide an annual certification that it has adopted an expenditure schedule for a Sports Park project (as referenced in the 1997 Parks, Recreation, Human Services, and Open Space Master Plan - see page 37 of the Master Plan) and project accounts in its current fiscal year budget.*~~
~~*(B) City will provide to County an annual Sports Park expenditure report for each account within 60 days of the close of each fiscal year.*~~
~~*(C) County will pay to City allocation specified below within 30 days of receipt of City certification, but no sooner than January of the specified fiscal year.*~~

~~*County Funding Allocation Schedule*~~
~~*1. FY 1997-1998 Property Acquisition - $4 Million January 1998*~~
~~*2. FY 1999-2000 Planning and Design - $1.5 Million January 2000*~~
~~*3. FY 2000-2001 Construction - $3.9 Million January 2001*~~

~~*Funds not spent as allocated in FY 1999-2000 for Planning and Design may be reallocated for construction of the Sports Park project in FY 2000-2001*~~

~~*The County may, at any time, conduct an audit of the City's specified Sports Park accounts and expenditures. In no event will the County funding allocation be made earlier than January of the designated fiscal year. If City's project expenditures are not in accordance with the certified schedule, City and County will meet and confer to agree on a revised expenditure and allocation schedule. Subsequent County funding allocations will be delayed pending a mutually agreed upon expenditure schedule. This Memorandum of Understanding may be updated on an annual basis to reflect these*~~

~~schedule adjustments. City agrees to refund County payments if these funds are used for any activity other than for planning, design, acquisition, and construction of Sports Park facilities.~~

Amendment #5. Paragraph F.1.a.
COUTY agrees to allocate funds in the amount of $3.9 million for land acquisition, whereon permanent park and recreation facilities are to be constructed. These permanent park and recreational facilities will be planned, designed, acquired, and constructed by the CITY. The COUNTY will allocate funds for the land acquisition provided the following funding allocation procedures have been followed:

Funding Allocation Procedure
(A) COUNTY will pay to the CITY allocation specified below within 30 days of receipt of CITY certification.

Funding Allocation Schedule
1. FY 2000-2001 Property Acquisition - $3.9 Million

Funds not spend as allocated in FY 2000-2001 for land acquisition may be reallocated for planning and construction of the Sports Park Facilities Project.

The COUNTY may, at any time, conduct an audit of the CITY's specified Sports Park Facilities accounts and expenditures.

If CITY's project expenditures are not in accordance with the certified schedule, CITY and COUNTY will meet and confer to agree on a revised expenditure schedule. CITY agrees to refund COUNTY payments if these funds are used for any activity other than planning, design, acquisition, and construction of Sports Park Facilities.

Amendment #2, Paragraph F.1.b.
~~b. Obtain additional property adjacent to, or within reasonable proximity to, the landfill and develop a park and recreational complex on approximately 18-20 acres of land within the next five years. ($3.9 million and land acquisition)~~

Amendment #3, Paragraph F.1.b. 8/5/97
b. The County will redesign the Olinda Regional Park as a Natural Regional Park. Park development will commence in 2015 upon completion of landfill closure activities and will be phased over a ten year period. The County will allocate $3.4 million for this park project.

Amendment #2, Paragraph F.1.c.
~~c. Redesign the Olinda Regional Park to be a Natural Regional Park. Park development will commence in 2015 upon completion of landfill closure activities and will be phased over ten year period. ($3.4 million)~~

Amendment #3, Paragraph F.1.c. 8/5/97
c. The County will construct the Beta Parcel trail within six months (6) after Monterey Resources, Inc. constructs and energizes the necessary traffic signal on Carbon Canyon Road which will provide safe crossing for trail users.

Amendment #2, Paragraph F.1.d.
~~d. Develop and construct the trail through the Beta Parcel within two years as discussed in the conceptual General Development Plan. ($75,000)~~

Amendment #3, Paragraph F.1.d. 8/5/97
d. All funding amounts identified in above Paragraphs F.1.a and F.1.b are indicated in

1997 dollars, as of June, 1997. Since the above referenced park and recreation improvements will be made in subsequent years, these funding amounts will be adjusted annually referencing the June consumer Price Index (Los Angeles, Anaheim, Riverside), All Urban Consumers Index [1997=100], published by the United States Department of Labor Statistics.

Amendment #2, Paragraph F.1.e.

~~e. All funding amounts identified above are indicated in 1994 dollars, as of November 1994. Since the above referenced park and recreation improvements will be made in subsequent years, these funding amounts will be adjusted annually referencing the November Consumer Price Index (Los Angeles, Anaheim, Riverside), All Urban Consumers Index [1967 = 100], published by the United States Department of Labor Bureau of Labor Statistics.~~

Should the development of these facilities be infeasible due to technical, environmental, or legal concerns, the CITY and COUNTY agree to negotiate in good faith and implement other feasible and financially comparable alternatives.

2. ~~The County will prepare a General Development Plan for ultimate recreational uses to be established on the site following closure of landfill operations. Said plan shall be mutually agreed upon with the City and County. Said Plan shall be completed and approved prior to issuance of the State Operating Permit for the proposed expansion of the Olinda/Olinda Alpha landfill. Further, prior to the issuance of the State Operating Permit, the County shall develop a multi-year financial pro-forma indicating how sufficient funding shall accumulate for post-closure park development. The County shall accumulate, on a yearly basis, monies as indicated by the financial pro-forma.~~ **Amendment #2, Paragraph F.2.** *The CITY and COUNTY will cooperate in the preparation of a Master Plan of Parks and Recreation for the CITY. Scope of said Master Plan shall be mutually agreed upon by the CITY and COUNTY. The Master Plan will address a variety of issues, including but not limited to, maintenance levels, scheduling, and user fees at COUNTY facilities within the CITY or its sphere of influence. COUNTY EMA/Harbors, Beaches & Parks will allocate $65,000 for development of the Master Plan. Said Master Plan shall be completed and approved by the CITY and COUNTY prior to issuance of the State Operating Permit for the proposed expansion of the Olinda/Olinda Alpha Landfill.*

3. The County shall provide that the closure plan for the Olinda/Olinda Alpha Landfill includes a cover design appropriate for the recreational uses outlined in the General Development Plan for post closure uses.

G. Unanticipated Environmental Mitigation Claims

1. If, during the operation of the landfill expansion, unanticipated environmental impacts occur as a result of having the landfill within the City's boundary of sphere of influence, the City may file a claim with the County to offset such a burden. Any program proposal must demonstrate a reasonable relationship with the operation of the landfill.

2. The County shall disburse funds from the existing Environmental Mitigation Fund provided the program described offsets the environmental or infrastructure impacts reasonably associated with the landfill operation. The County shall accumulate sufficient funds on a yearly basis to cover anticipated program costs.

3. The County shall have full review and audit authority over such fund disbursements.

H. Land Use Planning

County shall not approve private development projects within the City's sphere of influence east of the 57 Freeway without verifying the City's ability to provide necessary services. The County will not approve of private services such as septic tanks, individual wells, or retention basins.

Amendment #3, Paragraph H. 8/5/97 *In recognition of the City's long range planning in its Sphere of Influence, the County will continue to be sensitive and responsive to the City's comments on proposed land uses in that area.*

I. Pursuit of Alternatives

The County and City agree to collaboratively explore waste recovery and other alternatives to landfill operations, as well as possible joint ventures in sponsoring such facilities.

J. Enforcement

1. The County will conform with all applicable regulations, restrictions and statutes at the Federal, State, and local level, as well as all provisions in this MOU.
2. If the ownership or operating responsibilities of the Olinda landfill are transferred or assigned to any other entity or agency, public or private, the County shall ensure that the obligations identified in this agreement will be reassigned so that the terms of this agreement shall continue to be met.

K. Arbitration

In the event that any dispute should arise between the parties hereto in regard to this MOU, the matter may be submitted to arbitration at the request of either the City or the County.

Said request shall state the matters the City/County considers to be in issue. The City/County shall, within thirty days, notify the requesting party, with its agreement with the listing of issues to be submitted to arbitration. Unless otherwise mutually agreed by the County Administrative Officer and the City Manager of Brea, an arbitrator shall be selected from a panel submitted by the American Arbitration Association and shall be selected from an uneven number listed, each party alternatively striking names from the list submitted until only the name of one arbitrator remains. The foregoing selection of an arbitrator shall be accomplished within 20 days of the submission of a list of arbitrators by AAA. In the event that the original request for arbitration is not answered within thirty days of delivery of notice, the party requesting arbitration may select an arbitrator from the list submitted by the American Arbitration Association and the decision of such an arbitrator shall be binding. If possible, the arbitrator shall conduct the first hearing within thirty days of selection and shall complete the arbitration and make an award in writing within thirty days of the close of an arbitration proceeding. The fees and expenses of the arbitrator, together with other expenses of the arbitration incurred or approved by the arbitrator, not including counsel fees or witness fees or other expenses incurred by a party for his own benefit, shall be borne equally by both parties.

L. ~~Amendments~~

This memorandum of understanding may be amended at any time by mutual consent of the City and County.

Amendment #3 L. 8/5/97 (replaced title) **General Provisions**

Amendment #3. Paragraph, L.1. 8/5/97

1. *Any discretionary actions by County set forth in this MOU which are not covered by EIR No. 523 and EIR No. 550 are subject to future California Environmental Quality Act (CEQA) compliance.*

Amendment #3, Paragraph L.2. 8/5/97

2. *This MOU may be amended at any time by mutual consent of the City and County.*

All other terms and conditions of the agreement remain unchanged.

THE CITY OF BREA, a municipal corporation

Dated:________________

By:______________________
Ron Isles, Mayor

Attest:

____
City Clerk

Dated:________________

____
Frank Benest, City Manager

Attest:

____
City Clerk

"County": COUNTY OF ORANGE

Dated:________________

By:______________________
Roger R. Stanton, Chairman
Orange County Board of Supervisors

Attest:

____
Linda D. Ruth
Clerk of the Orange County
Board of Supervisors

APPENDIX F
TRAFFIC STUDY

TRAFFIC APPENDIX

APPENDIX F-1

EXISTING 2004
AVERGE DAILY TRAFFIC (ADT)
COUNTS

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Thursday, January 08, 2004 City: Brea Project #: 04-1042-001

Location: Imperial Hwy. btwn. State College & SR-57 SB On-Off Ramps

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			26		33			12:00-12:15			433		354		
12:15-12:30			29		35			12:15-12:30			438		434		
12:30-12:45			28		30			12:30-12:45			426		446		
12:45-1:00			29	112	42	140	252	12:45-1:00			426	1723	433	1667	3390
1:00-1:15			54		54			1:00-1:15			420		433		
1:15-1:30			26		52			1:15-1:30			444		431		
1:30-1:45			26		33			1:30-1:45			423		402		
1:45-2:00			26	132	31	170	302	1:45-2:00			425	1712	414	1680	3392
2:00-2:15			19		47			2:00-2:15			490		418		
2:15-2:30			14		38			2:15-2:30			491		481		
2:30-2:45			19		43			2:30-2:45			409		409		
2:45-3:00			13	65	47	175	240	2:45-3:00			411	1801	435	1743	3544
3:00-3:15			16		65			3:00-3:15			415		420		
3:15-3:30			19		47			3:15-3:30			480		458		
3:30-3:45			21		53			3:30-3:45			493		481		
3:45-4:00			26	82	74	239	321	3:45-4:00			475	1863	420	1779	3642
4:00-4:15			47		90			4:00-4:15			407		456		
4:15-4:30			49		133			4:15-4:30			498		467		
4:30-4:45			53		111			4:30-4:45			538		454		
4:45-5:00			71	220	126	460	680	4:45-5:00			531	1974	487	1864	3838
5:00-5:15			112		187			5:00-5:15			521		438		
5:15-5:30			114		235			5:15-5:30			596		463		
5:30-5:45			133		235			5:30-5:45			528		451		
5:45-6:00			146	505	239	896	1401	5:45-6:00			569	2214	450	1802	4016
6:00-6:15			197		319			6:00-6:15			585		456		
6:15-6:30			193		365			6:15-6:30			580		455		
6:30-6:45			200		381			6:30-6:45			462		458		
6:45-7:00			202	792	403	1468	2260	6:45-7:00			442	2069	394	1763	3832
7:00-7:15			265		450			7:00-7:15			441		375		
7:15-7:30			268		478			7:15-7:30			456		340		
7:30-7:45			283		431			7:30-7:45			418		352		
7:45-8:00			217	1033	444	1803	2836	7:45-8:00			390	1705	296	1363	3068
8:00-8:15			336		469			8:00-8:15			302		276		
8:15-8:30			405		483			8:15-8:30			325		248		
8:30-8:45			478		460			8:30-8:45			344		231		
8:45-9:00			423	1642	426	1838	3480	8:45-9:00			312	1283	231	986	2269
9:00-9:15			416		388			9:00-9:15			284		215		
9:15-9:30			422		401			9:15-9:30			261		200		
9:30-9:45			427		468			9:30-9:45			251		193		
9:45-10:00			439	1704	438	1695	3399	9:45-10:00			222	1018	173	781	1799
10:00-10:15			329		412			10:00-10:15			186		163		
10:15-10:30			349		458			10:15-10:30			180		183		
10:30-10:45			364		438			10:30-10:45			183		130		
10:45-11:00			335	1377	425	1733	3110	10:45-11:00			163	712	123	599	1311
11:00-11:15			326		499			11:00-11:15			50		66		
11:15-11:30			326		486			11:15-11:30			46		87		
11:30-11:45			335		491			11:30-11:45			58		63		
11:45-12:00			385	1372	455	1931	3303	11:45-12:00			41	195	68	284	479
Total Vol.	0	0		9036		12548	21584		0	0		18269		16311	34580
Daily Totals									0	0		27305		28859	56164

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Thursday, January 08, 2004 City: Brea Project #: 04-1042-002

Location: Imperial Hwy. btwn. SR-57 SB On-Ramp & NB On-Ramp

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			59		84			12:00-12:15			501		517		
12:15-12:30			61		79			12:15-12:30			516		529		
12:30-12:45			77		58			12:30-12:45			518		498		
12:45-1:00			52	249	79	300	549	12:45-1:00			485	2020	544	2088	4108
1:00-1:15			57		30			1:00-1:15			507		524		
1:15-1:30			51		33			1:15-1:30			487		555		
1:30-1:45			44		40			1:30-1:45			500		494		
1:45-2:00			53	205	35	138	343	1:45-2:00			493	1987	497	2070	4057
2:00-2:15			56		43			2:00-2:15			440		481		
2:15-2:30			44		37			2:15-2:30			472		489		
2:30-2:45			39		34			2:30-2:45			477		490		
2:45-3:00			33	172	30	144	316	2:45-3:00			463	1852	520	1980	3832
3:00-3:15			27		32			3:00-3:15			465		504		
3:15-3:30			27		36			3:15-3:30			543		506		
3:30-3:45			27		26			3:30-3:45			458		530		
3:45-4:00			24	105	40	134	239	3:45-4:00			506	1972	462	2002	3974
4:00-4:15			30		52			4:00-4:15			553		520		
4:15-4:30			28		32			4:15-4:30			525		542		
4:30-4:45			46		43			4:30-4:45			486		577		
4:45-5:00			51	155	60	187	342	4:45-5:00			567	2131	517	2156	4287
5:00-5:15			64		91			5:00-5:15			529		540		
5:15-5:30			69		96			5:15-5:30			586		597		
5:30-5:45			102		86			5:30-5:45			571		576		
5:45-6:00			111	346	135	408	754	5:45-6:00			587	2273	539	2252	4525
6:00-6:15			191		165			6:00-6:15			598		526		
6:15-6:30			181		251			6:15-6:30			621		540		
6:30-6:45			199		231			6:30-6:45			532		523		
6:45-7:00			257	828	235	882	1710	6:45-7:00			496	2247	502	2091	4338
7:00-7:15			343		253			7:00-7:15			444		472		
7:15-7:30			347		264			7:15-7:30			452		478		
7:30-7:45			351		238			7:30-7:45			400		472		
7:45-8:00			392	1433	312	1067	2500	7:45-8:00			389	1685	425	1847	3532
8:00-8:15			481		330			8:00-8:15			362		392		
8:15-8:30			494		378			8:15-8:30			344		342		
8:30-8:45			478		306			8:30-8:45			314		399		
8:45-9:00			366	1819	331	1345	3164	8:45-9:00			285	1305	323	1456	2761
9:00-9:15			405		440			9:00-9:15			301		305		
9:15-9:30			470		443			9:15-9:30			292		276		
9:30-9:45			407		390			9:30-9:45			298		273		
9:45-10:00			360	1642	420	1693	3335	9:45-10:00			246	1137	247	1101	2238
10:00-10:15			344		495			10:00-10:15			233		228		
10:15-10:30			322		519			10:15-10:30			193		190		
10:30-10:45			329		467			10:30-10:45			173		202		
10:45-11:00			288	1283	484	1965	3248	10:45-11:00			150	749	172	792	1541
11:00-11:15			298		456			11:00-11:15			121		173		
11:15-11:30			323		510			11:15-11:30			103		138		
11:30-11:45			329		517			11:30-11:45			117		135		
11:45-12:00			358	1308	581	2064	3372	11:45-12:00			82	423	109	555	978
Total Vol.	0	0		9545		10327	19872		0	0		19781		20390	40171
Daily Totals									0	0		29326		30717	60043

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Thursday, January 08, 2004 City: Brea Project #: 04-1042-003

Location: Imperial Hwy. w/o Associated Rd.

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			34		55			12:00-12:15			578		472		
12:15-12:30			40		40			12:15-12:30			590		450		
12:30-12:45			37		45			12:30-12:45			551		481		
12:45-1:00			34	145	34	174	319	12:45-1:00			604	2323	454	1857	4180
1:00-1:15			32		23			1:00-1:15			599		471		
1:15-1:30			25		29			1:15-1:30			603		476		
1:30-1:45			20		34			1:30-1:45			533		449		
1:45-2:00			22	99	29	115	214	1:45-2:00			550	2285	432	1828	4113
2:00-2:15			11		29			2:00-2:15			533		471		
2:15-2:30			22		29			2:15-2:30			567		422		
2:30-2:45			14		27			2:30-2:45			500		552		
2:45-3:00			8	55	23	108	163	2:45-3:00			575	2175	436	1881	4056
3:00-3:15			14		13			3:00-3:15			580		450		
3:15-3:30			12		29			3:15-3:30			580		430		
3:30-3:45			13		21			3:30-3:45			583		482		
3:45-4:00			10	49	21	84	133	3:45-4:00			577	2320	414	1776	4096
4:00-4:15			21		21			4:00-4:15			586		434		
4:15-4:30			26		22			4:15-4:30			585		518		
4:30-4:45			24		48			4:30-4:45			588		507		
4:45-5:00			31	102	46	137	239	4:45-5:00			617	2376	521	1980	4356
5:00-5:15			68		53			5:00-5:15			590		481		
5:15-5:30			62		64			5:15-5:30			695		500		
5:30-5:45			88		98			5:30-5:45			669		538		
5:45-6:00			152	370	136	351	721	5:45-6:00			678	2632	578	2097	4729
6:00-6:15			226		168			6:00-6:15			722		487		
6:15-6:30			200		184			6:15-6:30			595		523		
6:30-6:45			232		234			6:30-6:45			604		440		
6:45-7:00			272	930	287	873	1803	6:45-7:00			512	2433	431	1881	4314
7:00-7:15			438		321			7:00-7:15			520		332		
7:15-7:30			368		364			7:15-7:30			527		399		
7:30-7:45			419		399			7:30-7:45			469		330		
7:45-8:00			547	1772	424	1508	3280	7:45-8:00			459	1975	324	1385	3360
8:00-8:15			554		423			8:00-8:15			416		301		
8:15-8:30			516		472			8:15-8:30			403		298		
8:30-8:45			426		404			8:30-8:45			296		269		
8:45-9:00			358	1854	475	1774	3628	8:45-9:00			334	1449	248	1116	2565
9:00-9:15			428		350			9:00-9:15			291		223		
9:15-9:30			369		341			9:15-9:30			273		229		
9:30-9:45			342		339			9:30-9:45			257		199		
9:45-10:00			347	1486	346	1376	2862	9:45-10:00			226	1047	202	853	1900
10:00-10:15			314		359			10:00-10:15			216		154		
10:15-10:30			321		308			10:15-10:30			188		151		
10:30-10:45			329		323			10:30-10:45			152		163		
10:45-11:00			340	1304	353	1343	2647	10:45-11:00			154	710	116	584	1294
11:00-11:15			390		335			11:00-11:15			124		107		
11:15-11:30			386		377			11:15-11:30			103		75		
11:30-11:45			400		428			11:30-11:45			85		88		
11:45-12:00			394	1570	413	1553	3123	11:45-12:00			67	379	59	329	708
Total Vol.	0	0		9736		9396	19132		0	0		22104		17567	39671
aily Totals									0	0		31840		26963	58803

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Thursday, January 08, 2004 City: Brea Project #: 04-1042-004

Location: Imperial Hwy. w/o Kraemer Blvd.

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			26		30			12:00-12:15			432		333		
12:15-12:30			30		26			12:15-12:30			440		379		
12:30-12:45			22		25			12:30-12:45			442		377		
12:45-1:00			20	98	22	103	201	12:45-1:00			420	1734	412	1501	3235
1:00-1:15			24		22			1:00-1:15			406		325		
1:15-1:30			16		17			1:15-1:30			400		402		
1:30-1:45			12		9			1:30-1:45			400		374		
1:45-2:00			12	64	9	57	121	1:45-2:00			356	1562	347	1448	3010
2:00-2:15			16		21			2:00-2:15			386		362		
2:15-2:30			14		13			2:15-2:30			414		406		
2:30-2:45			12		10			2:30-2:45			436		421		
2:45-3:00			16	58	16	60	118	2:45-3:00			400	1636	374	1563	3199
3:00-3:15			14		8			3:00-3:15			444		419		
3:15-3:30			12		8			3:15-3:30			382		365		
3:30-3:45			16		8			3:30-3:45			444		399		
3:45-4:00			18	60	14	38	98	3:45-4:00			398	1668	384	1567	3235
4:00-4:15			20		16			4:00-4:15			412		362		
4:15-4:30			26		24			4:15-4:30			394		361		
4:30-4:45			34		27			4:30-4:45			446		386		
4:45-5:00			52	132	49	116	248	4:45-5:00			420	1672	380	1489	3161
5:00-5:15			56		51			5:00-5:15			492		409		
5:15-5:30			80		78			5:15-5:30			432		375		
5:30-5:45			124		126			5:30-5:45			474		407		
5:45-6:00			166	426	193	448	874	5:45-6:00			400	1798	361	1552	3350
6:00-6:15			178		166			6:00-6:15			394		367		
6:15-6:30			256		248			6:15-6:30			352		315		
6:30-6:45			282		248			6:30-6:45			306		291		
6:45-7:00			366	1082	328	990	2072	6:45-7:00			304	1356	276	1249	2605
7:00-7:15			364		300			7:00-7:15			288		263		
7:15-7:30			404		355			7:15-7:30			256		262		
7:30-7:45			432		403			7:30-7:45			264		253		
7:45-8:00			528	1728	461	1519	3247	7:45-8:00			204	1012	186	964	1976
8:00-8:15			430		450			8:00-8:15			220		222		
8:15-8:30			448		366			8:15-8:30			160		152		
8:30-8:45			372		329			8:30-8:45			180		175		
8:45-9:00			342	1592	352	1497	3089	8:45-9:00			126	686	125	674	1360
9:00-9:15			320		309			9:00-9:15			144		160		
9:15-9:30			308		294			9:15-9:30			146		129		
9:30-9:45			328		292			9:30-9:45			126		137		
9:45-10:00			318	1274	293	1188	2462	9:45-10:00			118	534	129	555	1089
10:00-10:15			324		287			10:00-10:15			112		97		
10:15-10:30			344		312			10:15-10:30			84		71		
10:30-10:45			328		283			10:30-10:45			74		75		
10:45-11:00			358	1354	306	1188	2542	10:45-11:00			62	332	65	308	640
11:00-11:15			332		252			11:00-11:15			70		45		
11:15-11:30			388		334			11:15-11:30			44		45		
11:30-11:45			374		310			11:30-11:45			44		34		
11:45-12:00			402	1496	366	1262	2758	11:45-12:00			32	190	30	154	344
Total Vol.	0	0		9364		8466	17830		0	0		14180		13024	27204
Daily Totals									0	0		23544		21490	45034

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Wednesday, January 07, 2004 City: Brea Project #: 04-1042-005

Location: Imperial Hwy. w/o Valencia Ave.

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			23		21			12:00-12:15			406		395		
12:15-12:30			21		27			12:15-12:30			422		392		
12:30-12:45			9		16			12:30-12:45			399		405		
12:45-1:00			16	69	13	77	146	12:45-1:00			372	1599	361	1553	3152
1:00-1:15			9		16			1:00-1:15			344		381		
1:15-1:30			13		12			1:15-1:30			328		346		
1:30-1:45			9		10			1:30-1:45			359		375		
1:45-2:00			5	36	9	47	83	1:45-2:00			350	1381	351	1453	2834
2:00-2:15			11		10			2:00-2:15			314		353		
2:15-2:30			4		7			2:15-2:30			334		344		
2:30-2:45			11		9			2:30-2:45			347		375		
2:45-3:00			11	37	9	35	72	2:45-3:00			314	1309	353	1425	2734
3:00-3:15			15		11			3:00-3:15			338		370		
3:15-3:30			25		17			3:15-3:30			375		386		
3:30-3:45			12		10			3:30-3:45			396		382		
3:45-4:00			8	60	7	45	105	3:45-4:00			399	1508	406	1544	3052
4:00-4:15			22		20			4:00-4:15			363		382		
4:15-4:30			24		24			4:15-4:30			372		403		
4:30-4:45			35		30			4:30-4:45			429		447		
4:45-5:00			48	129	45	119	248	4:45-5:00			408	1572	437	1669	3241
5:00-5:15			75		56			5:00-5:15			391		431		
5:15-5:30			71		61			5:15-5:30			372		442		
5:30-5:45			130		126			5:30-5:45			402		445		
5:45-6:00			165	441	160	403	844	5:45-6:00			363	1528	415	1733	3261
6:00-6:15			175		161			6:00-6:15			352		373		
6:15-6:30			249		231			6:15-6:30			360		360		
6:30-6:45			329		284			6:30-6:45			313		326		
6:45-7:00			424	1177	376	1052	2229	6:45-7:00			256	1281	297	1356	2637
7:00-7:15			449		373			7:00-7:15			251		276		
7:15-7:30			453		413			7:15-7:30			197		231		
7:30-7:45			491		420			7:30-7:45			192		222		
7:45-8:00			562	1955	493	1699	3654	7:45-8:00			164	804	186	915	1719
8:00-8:15			552		465			8:00-8:15			173		186		
8:15-8:30			536		451			8:15-8:30			153		164		
8:30-8:45			483		406			8:30-8:45			172		184		
8:45-9:00			407	1978	382	1704	3682	8:45-9:00			136	634	150	684	1318
9:00-9:15			362		342			9:00-9:15			111		124		
9:15-9:30			313		321			9:15-9:30			145		145		
9:30-9:45			317		304			9:30-9:45			91		101		
9:45-10:00			379	1371	345	1312	2683	9:45-10:00			84	431	93	463	894
10:00-10:15			300		287			10:00-10:15			85		90		
10:15-10:30			296		291			10:15-10:30			50		62		
10:30-10:45			275		307			10:30-10:45			53		59		
10:45-11:00			293	1164	294	1179	2343	10:45-11:00			37	225	51	262	487
11:00-11:15			318		345			11:00-11:15			37		49		
11:15-11:30			392		374			11:15-11:30			36		37		
11:30-11:45			379		368			11:30-11:45			21		29		
11:45-12:00			346	1435	368	1455	2890	11:45-12:00			17	111	19	134	245
Total Vol.	0	0		9852		9127	18979		0	0		12383		13191	25574
Daily Totals									0	0		22235		22318	44553

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Wednesday, January 07, 2004

City: Brea

Project #: 04-1042-006

Location: Imperial Hwy. e/o Valencia Ave.

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			27		22			12:00-12:15			299		330		
12:15-12:30			20		24			12:15-12:30			372		339		
12:30-12:45			9		15			12:30-12:45			333		330		
12:45-1:00			12	68	10	71	139	12:45-1:00			350	1354	318	1317	2671
1:00-1:15			8		16			1:00-1:15			291		299		
1:15-1:30			16		12			1:15-1:30			286		290		
1:30-1:45			8		9			1:30-1:45			308		315		
1:45-2:00			7	39	8	45	84	1:45-2:00			292	1177	284	1188	2365
2:00-2:15			10		8			2:00-2:15			269		288		
2:15-2:30			5		8			2:15-2:30			281		281		
2:30-2:45			10		6			2:30-2:45			295		313		
2:45-3:00			7	32	6	28	60	2:45-3:00			301	1146	330	1212	2358
3:00-3:15			7		8			3:00-3:15			291		318		
3:15-3:30			19		14			3:15-3:30			336		324		
3:30-3:45			12		9			3:30-3:45			379		363		
3:45-4:00			9	47	6	37	84	3:45-4:00			310	1316	339	1344	2660
4:00-4:15			22		20			4:00-4:15			333		342		
4:15-4:30			23		21			4:15-4:30			356		392		
4:30-4:45			29		28			4:30-4:45			390		393		
4:45-5:00			43	117	40	109	226	4:45-5:00			389	1468	424	1551	3019
5:00-5:15			68		47			5:00-5:15			368		421		
5:15-5:30			74		56			5:15-5:30			376		428		
5:30-5:45			116		102			5:30-5:45			377		422		
5:45-6:00			137	395	108	313	708	5:45-6:00			371	1492	402	1673	3165
6:00-6:15			157		120			6:00-6:15			331		352		
6:15-6:30			194		170			6:15-6:30			323		341		
6:30-6:45			298		237			6:30-6:45			279		305		
6:45-7:00			393	1042	321	848	1890	6:45-7:00			217	1150	276	1274	2424
7:00-7:15			367		300			7:00-7:15			242		259		
7:15-7:30			476		359			7:15-7:30			166		204		
7:30-7:45			434		357			7:30-7:45			184		197		
7:45-8:00			543	1820	440	1456	3276	7:45-8:00			152	744	179	839	1583
8:00-8:15			484		385			8:00-8:15			164		176		
8:15-8:30			473		391			8:15-8:30			132		151		
8:30-8:45			411		314			8:30-8:45			154		163		
8:45-9:00			370	1738	313	1403	3141	8:45-9:00			121	571	146	636	1207
9:00-9:15			279		249			9:00-9:15			109		126		
9:15-9:30			274		240			9:15-9:30			133		139		
9:30-9:45			259		235			9:30-9:45			94		93		
9:45-10:00			302	1114	254	978	2092	9:45-10:00			90	426	91	449	875
10:00-10:15			197		239			10:00-10:15			66		78		
10:15-10:30			230		241			10:15-10:30			50		62		
10:30-10:45			209		220			10:30-10:45			45		52		
10:45-11:00			207	843	233	933	1776	10:45-11:00			34	195	47	239	434
11:00-11:15			223		266			11:00-11:15			31		43		
11:15-11:30			271		292			11:15-11:30			35		36		
11:30-11:45			243		272			11:30-11:45			22		27		
11:45-12:00			246	983	308	1138	2121	11:45-12:00			14	102	16	122	224
Total Vol.	0	0		8238		7359	15597		0	0		11141		11844	22985
Daily Totals									0	0		19379		19203	38582

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Thursday, January 08, 2004 City: Brea Project #: 04-1042-007

Location: Valencia Ave. n/o Imperial Hwy.

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
12:00-12:15	7		2					12:00-12:15	121		123				
12:15-12:30	6		4					12:15-12:30	129		122				
12:30-12:45	4		1					12:30-12:45	138		144				
12:45-1:00	3	20	5	12			32	12:45-1:00	103	491	138	527			1018
1:00-1:15	0		1					1:00-1:15	147		117				
1:15-1:30	3		3					1:15-1:30	115		120				
1:30-1:45	0		0					1:30-1:45	120		116				
1:45-2:00	0	3	1	5			8	1:45-2:00	89	471	97	450			921
2:00-2:15	2		0					2:00-2:15	110		121				
2:15-2:30	0		2					2:15-2:30	102		125				
2:30-2:45	0		4					2:30-2:45	142		131				
2:45-3:00	1	3	1	7			10	2:45-3:00	98	452	125	502			954
3:00-3:15	13		3					3:00-3:15	116		107				
3:15-3:30	2		0					3:15-3:30	103		124				
3:30-3:45	5		3					3:30-3:45	124		115				
3:45-4:00	2	22	5	11			33	3:45-4:00	95	438	140	486			924
4:00-4:15	1		2					4:00-4:15	165		141				
4:15-4:30	1		3					4:15-4:30	103		125				
4:30-4:45	8		5					4:30-4:45	145		131				
4:45-5:00	6	16	13	23			39	4:45-5:00	111	524	122	519			1043
5:00-5:15	5		9					5:00-5:15	155		167				
5:15-5:30	23		14					5:15-5:30	104		161				
5:30-5:45	31		25					5:30-5:45	115		161				
5:45-6:00	63	122	67	115			237	5:45-6:00	103	477	136	625			1102
6:00-6:15	59		70					6:00-6:15	102		113				
6:15-6:30	89		73					6:15-6:30	72		97				
6:30-6:45	94		86					6:30-6:45	47		89				
6:45-7:00	113	355	129	358			713	6:45-7:00	37	258	47	346			604
7:00-7:15	124		88					7:00-7:15	43		55				
7:15-7:30	118		103					7:15-7:30	29		30				
7:30-7:45	115		144					7:30-7:45	38		43				
7:45-8:00	150	507	135	470			977	7:45-8:00	26	136	25	153			289
8:00-8:15	145		119					8:00-8:15	32		32				
8:15-8:30	150		112					8:15-8:30	22		30				
8:30-8:45	123		88					8:30-8:45	11		18				
8:45-9:00	120	538	93	412			950	8:45-9:00	18	83	12	92			175
9:00-9:15	105		81					9:00-9:15	9		23				
9:15-9:30	75		92					9:15-9:30	8		14				
9:30-9:45	93		57					9:30-9:45	11		10				
9:45-10:00	117	390	88	318			708	9:45-10:00	11	39	9	56			95
10:00-10:15	46		40					10:00-10:15	8		9				
10:15-10:30	64		44					10:15-10:30	5		4				
10:30-10:45	74		39					10:30-10:45	8		12				
10:45-11:00	74	258	35	158			416	10:45-11:00	12	33	6	31			64
11:00-11:15	69		35					11:00-11:15	10		7				
11:15-11:30	78		34					11:15-11:30	5		6				
11:30-11:45	74		40					11:30-11:45	4		3				
11:45-12:00	65	286	46	155			441	11:45-12:00	4	23	4	20			43
Total Vol.		2520		2044	0	0	4564			3425		3807	0	0	7232
Daily Totals										5945		5851	0	0	11796

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Wednesday, January 07, 2004 City: Brea Project #: 04-1042-008

Location: Valencia Ave. n/o Rose Dr./Birch St.

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
12:00-12:15	6		17					12:00-12:15	110		116				
12:15-12:30	3		6					12:15-12:30	114		106				
12:30-12:45	3		10					12:30-12:45	124		138				
12:45-1:00	1	13	5	38			51	12:45-1:00	96	444	137	497			941
1:00-1:15	4		4					1:00-1:15	99		142				
1:15-1:30	4		5					1:15-1:30	114		151				
1:30-1:45	0		4					1:30-1:45	119		150				
1:45-2:00	1	9	6	19			28	1:45-2:00	128	460	122	565			1025
2:00-2:15	1		3					2:00-2:15	91		145				
2:15-2:30	2		3					2:15-2:30	100		169				
2:30-2:45	1		4					2:30-2:45	115		209				
2:45-3:00	3	7	2	12			19	2:45-3:00	129	435	198	721			1156
3:00-3:15	4		1					3:00-3:15	134		244				
3:15-3:30	5		3					3:15-3:30	119		240				
3:30-3:45	4		5					3:30-3:45	95		268				
3:45-4:00	0	13	0	9			22	3:45-4:00	118	466	285	1037			1503
4:00-4:15	4		3					4:00-4:15	100		296				
4:15-4:30	4		3					4:15-4:30	82		289				
4:30-4:45	21		7					4:30-4:45	90		319				
4:45-5:00	18	47	4	17			64	4:45-5:00	102	374	329	1233			1607
5:00-5:15	25		12					5:00-5:15	76		320				
5:15-5:30	47		9					5:15-5:30	93		318				
5:30-5:45	109		13					5:30-5:45	87		295				
5:45-6:00	158	339	39	73			412	5:45-6:00	81	337	272	1205			1542
6:00-6:15	170		64					6:00-6:15	77		260				
6:15-6:30	245		59					6:15-6:30	54		229				
6:30-6:45	233		76					6:30-6:45	56		187				
6:45-7:00	258	906	81	280			1186	6:45-7:00	61	248	175	851			1099
7:00-7:15	292		100					7:00-7:15	58		126				
7:15-7:30	294		129					7:15-7:30	45		102				
7:30-7:45	311		132					7:30-7:45	45		101				
7:45-8:00	336	1233	127	488			1721	7:45-8:00	26	174	85	414			588
8:00-8:15	291		109					8:00-8:15	25		79				
8:15-8:30	353		128					8:15-8:30	42		71				
8:30-8:45	235		102					8:30-8:45	29		74				
8:45-9:00	223	1102	105	444			1546	8:45-9:00	18	114	77	301			415
9:00-9:15	167		104					9:00-9:15	25		38				
9:15-9:30	175		88					9:15-9:30	28		59				
9:30-9:45	141		120					9:30-9:45	26		42				
9:45-10:00	132	615	94	406			1021	9:45-10:00	19	98	44	183			281
10:00-10:15	123		87					10:00-10:15	23		29				
10:15-10:30	96		101					10:15-10:30	20		27				
10:30-10:45	128		95					10:30-10:45	14		23				
10:45-11:00	93	440	125	408			848	10:45-11:00	11	68	22	101			169
11:00-11:15	129		115					11:00-11:15	8		17				
11:15-11:30	133		162					11:15-11:30	14		13				
11:30-11:45	113		133					11:30-11:45	12		10				
11:45-12:00	132	507	123	533			1040	11:45-12:00	9	43	4	44			87
Total Vol.		5231		2727	0	0	7958			3261		7152	0	0	10413
Daily Totals										8492		9879	0	0	18371

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Wednesday, January 07, 2004 City: Brea Project #: 04-1042-009

Location: Valencia Ave. n/o Lambert Rd./Carbon Canyon Rd.

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
12:00-12:15	4		2					12:00-12:15	58		47				
12:15-12:30	1		3					12:15-12:30	44		40				
12:30-12:45	0		3					12:30-12:45	57		58				
12:45-1:00	0	5	0	8			13	12:45-1:00	44	203	50	195			398
1:00-1:15	0		3					1:00-1:15	51		54				
1:15-1:30	1		1					1:15-1:30	51		51				
1:30-1:45	1		1					1:30-1:45	64		62				
1:45-2:00	4	6	1	6			12	1:45-2:00	60	226	42	209			435
2:00-2:15	1		1					2:00-2:15	54		45				
2:15-2:30	0		1					2:15-2:30	44		63				
2:30-2:45	0		1					2:30-2:45	55		53				
2:45-3:00	4	5	0	3			8	2:45-3:00	67	220	54	215			435
3:00-3:15	1		1					3:00-3:15	49		64				
3:15-3:30	1		1					3:15-3:30	58		54				
3:30-3:45	4		1					3:30-3:45	54		51				
3:45-4:00	0	6	1	4			10	3:45-4:00	57	218	40	209			427
4:00-4:15	4		1					4:00-4:15	44		36				
4:15-4:30	6		2					4:15-4:30	19		25				
4:30-4:45	4		2					4:30-4:45	25		24				
4:45-5:00	1	15	3	8			23	4:45-5:00	30	118	33	118			236
5:00-5:15	20		7					5:00-5:15	28		42				
5:15-5:30	14		7					5:15-5:30	24		47				
5:30-5:45	14		3					5:30-5:45	14		37				
5:45-6:00	26	74	13	30			104	5:45-6:00	29	95	43	169			264
6:00-6:15	33		23					6:00-6:15	23		40				
6:15-6:30	34		25					6:15-6:30	17		37				
6:30-6:45	38		24					6:30-6:45	17		30				
6:45-7:00	42	147	36	108			255	6:45-7:00	25	82	30	137			219
7:00-7:15	36		46					7:00-7:15	19		29				
7:15-7:30	47		50					7:15-7:30	15		25				
7:30-7:45	50		41					7:30-7:45	12		32				
7:45-8:00	45	178	52	189			367	7:45-8:00	11	57	16	102			159
8:00-8:15	44		46					8:00-8:15	11		21				
8:15-8:30	40		52					8:15-8:30	10		24				
8:30-8:45	34		48					8:30-8:45	10		19				
8:45-9:00	37	155	42	188			343	8:45-9:00	14	45	16	80			125
9:00-9:15	69		43					9:00-9:15	4		16				
9:15-9:30	57		46					9:15-9:30	6		18				
9:30-9:45	69		55					9:30-9:45	10		16				
9:45-10:00	66	261	39	183			444	9:45-10:00	2	22	10	60			82
10:00-10:15	74		42					10:00-10:15	6		16				
10:15-10:30	41		51					10:15-10:30	8		14				
10:30-10:45	52		41					10:30-10:45	5		10				
10:45-11:00	43	210	63	197			407	10:45-11:00	2	21	9	49			70
11:00-11:15	47		67					11:00-11:15	1		7				
11:15-11:30	69		70					11:15-11:30	3		7				
11:30-11:45	58		59					11:30-11:45	2		4				
11:45-12:00	61	235	47	243			478	11:45-12:00	1	7	3	21			28
Total Vol.		1297		1167	0	0	2464			1314		1564	0	0	2878
Daily Totals										2611		2731	0	0	5342

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Wednesday, January 07, 2004 City: Brea

Project #: 04-1042-010

Location: Valencia Ave. s/o Lambert Rd./Carbon Canyon Rd.

Client Ref #:

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
12:00-12:15	17		6					12:00-12:15	102		119				
12:15-12:30	6		3					12:15-12:30	95		110				
12:30-12:45	10		3					12:30-12:45	117		133				
12:45-1:00	5	38	1	13			51	12:45-1:00	129	443	96	458			901
1:00-1:15	4		4					1:00-1:15	128		102				
1:15-1:30	5		4					1:15-1:30	142		110				
1:30-1:45	4		0					1:30-1:45	133		126				
1:45-2:00	6	19	1	9			28	1:45-2:00	112	515	124	462			977
2:00-2:15	3		1					2:00-2:15	136		95				
2:15-2:30	3		2					2:15-2:30	153		105				
2:30-2:45	4		1					2:30-2:45	197		114				
2:45-3:00	2	12	3	7			19	2:45-3:00	192	678	127	441			1119
3:00-3:15	1		4					3:00-3:15	213		134				
3:15-3:30	3		5					3:15-3:30	246		118				
3:30-3:45	5		4					3:30-3:45	261		90				
3:45-4:00	0	9	0	13			22	3:45-4:00	268	988	121	463			1451
4:00-4:15	3		4					4:00-4:15	290		94				
4:15-4:30	3		4					4:15-4:30	284		83				
4:30-4:45	6		20					4:30-4:45	324		85				
4:45-5:00	4	16	17	45			61	4:45-5:00	310	1208	102	364			1572
5:00-5:15	11		25					5:00-5:15	327		80				
5:15-5:30	10		49					5:15-5:30	313		92				
5:30-5:45	14		106					5:30-5:45	302		84				
5:45-6:00	36	71	163	343			414	5:45-6:00	261	1203	79	335			1538
6:00-6:15	62		168					6:00-6:15	257		80				
6:15-6:30	53		247					6:15-6:30	224		53				
6:30-6:45	61		230					6:30-6:45	193		55				
6:45-7:00	72	248	267	912			1160	6:45-7:00	171	845	63	251			1096
7:00-7:15	90		288					7:00-7:15	133		58				
7:15-7:30	98		292					7:15-7:30	98		42				
7:30-7:45	80		333					7:30-7:45	102		45				
7:45-8:00	88	356	333	1246			1602	7:45-8:00	83	416	27	172			588
8:00-8:15	87		293					8:00-8:15	80		24				
8:15-8:30	68		357					8:15-8:30	72		43				
8:30-8:45	89		235					8:30-8:45	71		27				
8:45-9:00	61	305	219	1104			1409	8:45-9:00	81	304	18	112			416
9:00-9:15	98		158					9:00-9:15	38		25				
9:15-9:30	88		130					9:15-9:30	60		28				
9:30-9:45	98		115					9:30-9:45	43		27				
9:45-10:00	92	376	120	523			899	9:45-10:00	44	185	19	99			284
10:00-10:15	76		99					10:00-10:15	30		22				
10:15-10:30	92		101					10:15-10:30	25		20				
10:30-10:45	83		101					10:30-10:45	25		13				
10:45-11:00	105	356	98	399			755	10:45-11:00	21	101	11	66			167
11:00-11:15	108		108					11:00-11:15	15		8				
11:15-11:30	103		105					11:15-11:30	14		13				
11:30-11:45	96		102					11:30-11:45	10		12				
11:45-12:00	97	404	112	427			831	11:45-12:00	4	43	9	42			85
Total Vol.		2210		5041	0	0	7251			6929		3265	0	0	10194
aily Totals										9139		8306	0	0	17445

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Wednesday, January 07, 2004 City: Brea Project #: 04-1042-011

Location: Valencia Ave. n/o Santa Fe Ave.

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
12:00-12:15	0		0					12:00-12:15	44		65				
12:15-12:30	0		1					12:15-12:30	37		49				
12:30-12:45	1		0					12:30-12:45	41		37				
12:45-1:00	0	1	0	1			2	12:45-1:00	65	187	50	201			388
1:00-1:15	1		0					1:00-1:15	54		36				
1:15-1:30	1		0					1:15-1:30	66		37				
1:30-1:45	1		0					1:30-1:45	57		37				
1:45-2:00	0	3	0	0			3	1:45-2:00	48	225	63	173			398
2:00-2:15	0		0					2:00-2:15	43		42				
2:15-2:30	0		0					2:15-2:30	45		48				
2:30-2:45	0		0					2:30-2:45	55		32				
2:45-3:00	2	2	1	1			3	2:45-3:00	52	195	37	159			354
3:00-3:15	0		0					3:00-3:15	54		38				
3:15-3:30	1		0					3:15-3:30	41		39				
3:30-3:45	1		0					3:30-3:45	54		42				
3:45-4:00	0	2	0	0			2	3:45-4:00	29	178	48	167			345
4:00-4:15	0		0					4:00-4:15	20		37				
4:15-4:30	4		3					4:15-4:30	12		46				
4:30-4:45	3		1					4:30-4:45	4		9				
4:45-5:00	3	10	1	5			15	4:45-5:00	4	40	3	95			135
5:00-5:15	3		0					5:00-5:15	7		5				
5:15-5:30	6		1					5:15-5:30	7		16				
5:30-5:45	15		0					5:30-5:45	6		6				
5:45-6:00	7	31	1	2			33	5:45-6:00	4	24	2	29			53
6:00-6:15	22		4					6:00-6:15	9		2				
6:15-6:30	41		1					6:15-6:30	4		0				
6:30-6:45	36		28					6:30-6:45	7		2				
6:45-7:00	39	138	20	53			191	6:45-7:00	2	22	4	8			30
7:00-7:15	48		23					7:00-7:15	3		4				
7:15-7:30	39		23					7:15-7:30	5		1				
7:30-7:45	60		47					7:30-7:45	3		1				
7:45-8:00	41	188	41	134			322	7:45-8:00	6	17	3	9			26
8:00-8:15	54		34					8:00-8:15	1		1				
8:15-8:30	41		44					8:15-8:30	1		0				
8:30-8:45	42		50					8:30-8:45	5		0				
8:45-9:00	59	196	23	151			347	8:45-9:00	3	10	0	1			11
9:00-9:15	56		33					9:00-9:15	2		2				
9:15-9:30	52		42					9:15-9:30	0		0				
9:30-9:45	57		47					9:30-9:45	1		0				
9:45-10:00	68	233	50	172			405	9:45-10:00	0	3	0	2			5
10:00-10:15	56		36					10:00-10:15	2		0				
10:15-10:30	37		57					10:15-10:30	2		2				
10:30-10:45	56		47					10:30-10:45	1		1				
10:45-11:00	53	202	42	182			384	10:45-11:00	2	7	2	5			12
11:00-11:15	74		43					11:00-11:15	3		0				
11:15-11:30	67		38					11:15-11:30	1		0				
11:30-11:45	84		51					11:30-11:45	1		0				
11:45-12:00	69	294	42	174			468	11:45-12:00	1	6	0	0			6
Total Vol.		1300		875	0	0	2175			914		849	0	0	1763
aily Totals										2214		1724	0	0	3938

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Wednesday, January 07, 2004 City: Brea Project #: 04-1042-012

Location: Valencia Ave. s/o Olinda/Alphia Landfill (n/o dwy.)

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
12:00-12:15	0		0					12:00-12:15	0		134				
12:15-12:30	0		0					12:15-12:30	14		104				
12:30-12:45	0		0					12:30-12:45	0		90				
12:45-1:00	0	0	0	0				12:45-1:00	2	16	121	449			465
1:00-1:15	0		0					1:00-1:15	2		94				
1:15-1:30	0		0					1:15-1:30	0		139				
1:30-1:45	0		0					1:30-1:45	0		121				
1:45-2:00	0	0	0	0				1:45-2:00	5	7	150	504			511
2:00-2:15	0		0					2:00-2:15	0		114				
2:15-2:30	0		0					2:15-2:30	0		105				
2:30-2:45	0		0					2:30-2:45	135		56				
2:45-3:00	0	0	0	0				2:45-3:00	121	256	49	324			580
3:00-3:15	0		0					3:00-3:15	153		54				
3:15-3:30	2		0					3:15-3:30	163		66				
3:30-3:45	1		0					3:30-3:45	134		55				
3:45-4:00	0	3	0	0			3	3:45-4:00	101	551	50	225			776
4:00-4:15	0		0					4:00-4:15	88		50				
4:15-4:30	0		0					4:15-4:30	58		53				
4:30-4:45	0		0					4:30-4:45	7		8				
4:45-5:00	5	5	0	0			5	4:45-5:00	0	153	0	111			264
5:00-5:15	6		0					5:00-5:15	0		1				
5:15-5:30	18		1					5:15-5:30	16		17				
5:30-5:45	20		0					5:30-5:45	0		0				
5:45-6:00	15	59	1	2			61	5:45-6:00	1	17	1	19			36
6:00-6:15	48		12					6:00-6:15	0		0				
6:15-6:30	96		17					6:15-6:30	0		0				
6:30-6:45	79		50					6:30-6:45	0		0				
6:45-7:00	81	304	36	115			419	6:45-7:00	0	0	0	0			
7:00-7:15	126		40					7:00-7:15	0		0				
7:15-7:30	113		35					7:15-7:30	0		0				
7:30-7:45	175		68					7:30-7:45	0		0				
7:45-8:00	118	532	54	197			729	7:45-8:00	0	0	0	0			
8:00-8:15	207		78					8:00-8:15	0		0				
8:15-8:30	81		70					8:15-8:30	0		0				
8:30-8:45	62		78					8:30-8:45	0		0				
8:45-9:00	112	462	58	284			746	8:45-9:00	0	0	0	0			
9:00-9:15	109		66					9:00-9:15	0		0				
9:15-9:30	101		68					9:15-9:30	0		0				
9:30-9:45	125		104					9:30-9:45	0		0				
9:45-10:00	120	455	107	345			800	9:45-10:00	0	0	0	0			
10:00-10:15	79		97					10:00-10:15	0		0				
10:15-10:30	20		129					10:15-10:30	0		0				
10:30-10:45	14		109					10:30-10:45	0		0				
10:45-11:00	5	118	106	441			559	10:45-11:00	0	0	0	0			
11:00-11:15	15		150					11:00-11:15	0		0				
11:15-11:30	3		124					11:15-11:30	0		0				
11:30-11:45	12		179					11:30-11:45	0		0				
11:45-12:00	2	32	148	601			633	11:45-12:00	0	0	0	0			
Total Vol.		1970		1985	0	0	3955			1000		1632	0	0	2632
aily Totals										2970		3617	0	0	6587

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Thursday, January 08, 2004 City: Brea Project #: 04-1042-013

Location: Lambert Rd. w/o Valencia Ave.

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			5		16			12:00-12:15			109		104		
12:15-12:30			10		8			12:15-12:30			116		132		
12:30-12:45			12		10			12:30-12:45			97		119		
12:45-1:00			4	31	8	42	73	12:45-1:00			99	421	150	505	926
1:00-1:15			8		8			1:00-1:15			108		157		
1:15-1:30			5		5			1:15-1:30			89		134		
1:30-1:45			2		3			1:30-1:45			104		152		
1:45-2:00			5	20	5	21	41	1:45-2:00			110	411	157	600	1011
2:00-2:15			2		3			2:00-2:15			118		163		
2:15-2:30			13		5			2:15-2:30			115		201		
2:30-2:45			2		2			2:30-2:45			130		234		
2:45-3:00			6	23	5	15	38	2:45-3:00			152	515	234	832	1347
3:00-3:15			6		3			3:00-3:15			116		280		
3:15-3:30			11		5			3:15-3:30			124		272		
3:30-3:45			11		2			3:30-3:45			131		299		
3:45-4:00			5	33	2	12	45	3:45-4:00			142	513	328	1179	1692
4:00-4:15			14		3			4:00-4:15			130		287		
4:15-4:30			23		2			4:15-4:30			150		272		
4:30-4:45			44		5			4:30-4:45			162		271		
4:45-5:00			47	128	5	15	143	4:45-5:00			150	592	305	1135	1727
5:00-5:15			76		2			5:00-5:15			170		294		
5:15-5:30			92		10			5:15-5:30			164		262		
5:30-5:45			154		5			5:30-5:45			163		229		
5:45-6:00			203	525	10	27	552	5:45-6:00			130	627	277	1062	1689
6:00-6:15			218		7			6:00-6:15			141		249		
6:15-6:30			228		20			6:15-6:30			122		148		
6:30-6:45			245		30			6:30-6:45			100		135		
6:45-7:00			258	949	18	75	1024	6:45-7:00			90	453	130	662	1115
7:00-7:15			247		23			7:00-7:15			75		127		
7:15-7:30			232		30			7:15-7:30			51		107		
7:30-7:45			277		38			7:30-7:45			63		99		
7:45-8:00			276	1032	64	155	1187	7:45-8:00			51	240	91	424	664
8:00-8:15			227		48			8:00-8:15			58		73		
8:15-8:30			237		53			8:15-8:30			50		79		
8:30-8:45			192		45			8:30-8:45			41		56		
8:45-9:00			220	876	63	209	1085	8:45-9:00			38	187	48	256	443
9:00-9:15			149		66			9:00-9:15			36		53		
9:15-9:30			156		73			9:15-9:30			37		53		
9:30-9:45			132		64			9:30-9:45			40		45		
9:45-10:00			133	570	50	253	823	9:45-10:00			30	143	50	201	344
10:00-10:15			114		76			10:00-10:15			32		35		
10:15-10:30			117		68			10:15-10:30			21		38		
10:30-10:45			108		94			10:30-10:45			19		21		
10:45-11:00			137	476	76	314	790	10:45-11:00			20	92	23	117	209
11:00-11:15			109		97			11:00-11:15			16		31		
11:15-11:30			109		84			11:15-11:30			21		12		
11:30-11:45			109		102			11:30-11:45			10		8		
11:45-12:00			101	428	109	392	820	11:45-12:00			15	62	10	61	123
Total Vol.	0	0		5091		1530	6621		0	0		4256		7034	11290
aily Totals									0	0		9347		8564	17911

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Thursday, January 08, 2004 City: Brea Project #: 04-1042-014

Location: Carbon Canyon Rd. e/o Valencia Ave.

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			4		28			12:00-12:15			84		64		
12:15-12:30			6		13			12:15-12:30			107		50		
12:30-12:45			4		15			12:30-12:45			97		62		
12:45-1:00			1	15	12	68	83	12:45-1:00			113	401	57	233	634
1:00-1:15			5		9			1:00-1:15			125		64		
1:15-1:30			3		11			1:15-1:30			111		49		
1:30-1:45			1		9			1:30-1:45			126		53		
1:45-2:00			2	11	5	34	45	1:45-2:00			142	504	52	218	722
2:00-2:15			1		8			2:00-2:15			166		59		
2:15-2:30			2		10			2:15-2:30			210		57		
2:30-2:45			1		6			2:30-2:45			242		57		
2:45-3:00			5	9	4	28	37	2:45-3:00			267	885	73	246	1131
3:00-3:15			5		5			3:00-3:15			324		64		
3:15-3:30			11		5			3:15-3:30			364		58		
3:30-3:45			6		5			3:30-3:45			350		50		
3:45-4:00			4	26	6	21	47	3:45-4:00			404	1442	62	234	1676
4:00-4:15			12		7			4:00-4:15			410		54		
4:15-4:30			4		10			4:15-4:30			404		72		
4:30-4:45			4		30			4:30-4:45			394		50		
4:45-5:00			6	26	29	76	102	4:45-5:00			412	1620	59	235	1855
5:00-5:15			4		61			5:00-5:15			437		39		
5:15-5:30			6		60			5:15-5:30			399		54		
5:30-5:45			10		150			5:30-5:45			365		89		
5:45-6:00			14	34	195	466	500	5:45-6:00			312	1513	56	238	1751
6:00-6:15			18		261			6:00-6:15			278		43		
6:15-6:30			27		240			6:15-6:30			254		45		
6:30-6:45			44		267			6:30-6:45			225		67		
6:45-7:00			46	135	261	1029	1164	6:45-7:00			13	770	199	354	1124
7:00-7:15			51		362			7:00-7:15			196		24		
7:15-7:30			61		373			7:15-7:30			191		35		
7:30-7:45			77		411			7:30-7:45			157		20		
7:45-8:00			107	296	378	1524	1820	7:45-8:00			132	676	28	107	783
8:00-8:15			54		410			8:00-8:15			119		19		
8:15-8:30			64		307			8:15-8:30			115		23		
8:30-8:45			65		282			8:30-8:45			86		19		
8:45-9:00			70	253	301	1300	1553	8:45-9:00			85	405	20	81	486
9:00-9:15			56		110			9:00-9:15			83		18		
9:15-9:30			78		103			9:15-9:30			73		16		
9:30-9:45			61		104			9:30-9:45			46		11		
9:45-10:00			49	244	68	385	629	9:45-10:00			59	261	19	64	325
10:00-10:15			73		101			10:00-10:15			58		13		
10:15-10:30			76		78			10:15-10:30			39		18		
10:30-10:45			65		76			10:30-10:45			35		14		
10:45-11:00			86	300	90	345	645	10:45-11:00			35	167	11	56	223
11:00-11:15			46		124			11:00-11:15			29		11		
11:15-11:30			62		93			11:15-11:30			22		15		
11:30-11:45			59		127			11:30-11:45			26		5		
11:45-12:00			51	218	139	483	701	11:45-12:00			26	103	10	41	144
Total Vol.	0	0		1567		5759	7326		0	0		8747		2107	10854
aily Totals									0	0		10314		7866	18180

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Thursday, January 08, 2004 City: Brea Project #: 04-1042-015

Location: Lambert Rd. e/o SR-57 NB On/Off Ramps

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			89		93			12:00-12:15			344		393		
12:15-12:30			64		100			12:15-12:30			326		411		
12:30-12:45			77		80			12:30-12:45			342		418		
12:45-1:00			74	304	72	345	649	12:45-1:00			333	1345	402	1624	2969
1:00-1:15			59		72			1:00-1:15			394		381		
1:15-1:30			57		67			1:15-1:30			359		410		
1:30-1:45			38		59			1:30-1:45			388		362		
1:45-2:00			49	203	51	249	452	1:45-2:00			406	1547	493	1646	3193
2:00-2:15			56		39			2:00-2:15			356		370		
2:15-2:30			33		43			2:15-2:30			415		389		
2:30-2:45			24		37			2:30-2:45			429		476		
2:45-3:00			21	134	28	147	281	2:45-3:00			453	1653	521	1756	3409
3:00-3:15			29		21			3:00-3:15			480		491		
3:15-3:30			19		20			3:15-3:30			398		453		
3:30-3:45			22		48			3:30-3:45			424		453		
3:45-4:00			18	88	34	123	211	3:45-4:00			462	1764	468	1865	3629
4:00-4:15			11		25			4:00-4:15			373		435		
4:15-4:30			13		24			4:15-4:30			444		453		
4:30-4:45			18		53			4:30-4:45			494		516		
4:45-5:00			24	66	59	161	227	4:45-5:00			419	1730	483	1887	3617
5:00-5:15			15		38			5:00-5:15			414		522		
5:15-5:30			34		58			5:15-5:30			438		435		
5:30-5:45			51		74			5:30-5:45			424		435		
5:45-6:00			68	168	93	263	431	5:45-6:00			432	1708	439	1831	3539
6:00-6:15			61		74			6:00-6:15			408		409		
6:15-6:30			62		94			6:15-6:30			374		429		
6:30-6:45			63		122			6:30-6:45			376		403		
6:45-7:00			72	258	139	429	687	6:45-7:00			328	1486	404	1645	3131
7:00-7:15			105		154			7:00-7:15			351		353		
7:15-7:30			118		164			7:15-7:30			307		320		
7:30-7:45			155		209			7:30-7:45			282		311		
7:45-8:00			188	566	250	777	1343	7:45-8:00			268	1208	267	1251	2459
8:00-8:15			185		242			8:00-8:15			231		229		
8:15-8:30			153		226			8:15-8:30			204		246		
8:30-8:45			196		290			8:30-8:45			207		218		
8:45-9:00			186	720	308	1066	1786	8:45-9:00			206	848	223	916	1764
9:00-9:15			205		288			9:00-9:15			221		210		
9:15-9:30			203		295			9:15-9:30			245		217		
9:30-9:45			229		308			9:30-9:45			194		217		
9:45-10:00			253	890	339	1230	2120	9:45-10:00			183	843	272	916	1759
10:00-10:15			251		288			10:00-10:15			204		250		
10:15-10:30			275		340			10:15-10:30			175		211		
10:30-10:45			276		315			10:30-10:45			141		210		
10:45-11:00			263	1065	322	1265	2330	10:45-11:00			134	654	190	861	1515
11:00-11:15			299		360			11:00-11:15			117		159		
11:15-11:30			294		344			11:15-11:30			103		131		
11:30-11:45			268		404			11:30-11:45			83		135		
11:45-12:00			353	1214	362	1470	2684	11:45-12:00			83	386	102	527	913
Total Vol.	0	0		5676		7525	13201		0	0		15172		16725	31897
Daily Totals									0	0		20848		24250	45098

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Thursday, January 08, 2004 City: Brea Project #: 04-1042-016

Location: Lambert Rd. w/o SR-57 SB On/Off Ramps

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			94		93			12:00-12:15			363		336		
12:15-12:30			95		86			12:15-12:30			356		363		
12:30-12:45			77		95			12:30-12:45			353		376		
12:45-1:00			77	343	82	356	699	12:45-1:00			350	1422	388	1463	2885
1:00-1:15			86		68			1:00-1:15			334		383		
1:15-1:30			57		72			1:15-1:30			372		345		
1:30-1:45			60		67			1:30-1:45			373		381		
1:45-2:00			43	246	60	267	513	1:45-2:00			365	1444	346	1455	2899
2:00-2:15			55		47			2:00-2:15			399		444		
2:15-2:30			60		39			2:15-2:30			331		336		
2:30-2:45			37		41			2:30-2:45			405		357		
2:45-3:00			24	176	38	165	341	2:45-3:00			434	1569	452	1589	3158
3:00-3:15			26		29			3:00-3:15			494		512		
3:15-3:30			33		19			3:15-3:30			513		425		
3:30-3:45			21		23			3:30-3:45			375		398		
3:45-4:00			24	104	45	116	220	3:45-4:00			377	1759	429	1764	3523
4:00-4:15			18		33			4:00-4:15			424		436		
4:15-4:30			14		24			4:15-4:30			348		409		
4:30-4:45			12		29			4:30-4:45			462		419		
4:45-5:00			19	63	49	135	198	4:45-5:00			522	1756	491	1755	3511
5:00-5:15			26		61			5:00-5:15			427		410		
5:15-5:30			21		34			5:15-5:30			394		476		
5:30-5:45			35		57			5:30-5:45			439		381		
5:45-6:00			60	142	71	223	365	5:45-6:00			415	1675	408	1675	3350
6:00-6:15			74		89			6:00-6:15			409		411		
6:15-6:30			72		69			6:15-6:30			394		368		
6:30-6:45			66		89			6:30-6:45			359		394		
6:45-7:00			70	282	120	367	649	6:45-7:00			381	1543	361	1534	3077
7:00-7:15			78		143			7:00-7:15			337		376		
7:15-7:30			114		141			7:15-7:30			343		307		
7:30-7:45			128		156			7:30-7:45			315		306		
7:45-8:00			175	495	197	637	1132	7:45-8:00			287	1282	278	1267	2549
8:00-8:15			198		243			8:00-8:15			264		240		
8:15-8:30			206		212			8:15-8:30			256		222		
8:30-8:45			160		221			8:30-8:45			218		226		
8:45-9:00			211	775	267	943	1718	8:45-9:00			238	976	195	883	1859
9:00-9:15			220		284			9:00-9:15			233		205		
9:15-9:30			202		271			9:15-9:30			235		208		
9:30-9:45			223		275			9:30-9:45			258		183		
9:45-10:00			254	899	290	1120	2019	9:45-10:00			202	928	218	814	1742
10:00-10:15			278		306			10:00-10:15			196		244		
10:15-10:30			255		265			10:15-10:30			234		226		
10:30-10:45			287		304			10:30-10:45			195		202		
10:45-11:00			306	1126	291	1166	2292	10:45-11:00			147	772	197	869	1641
11:00-11:15			273		294			11:00-11:15			138		185		
11:15-11:30			300		332			11:15-11:30			142		149		
11:30-11:45			289		314			11:30-11:45			107		130		
11:45-12:00			315	1177	357	1297	2474	11:45-12:00			96	483	127	591	1074
Total Vol.	0	0		5828		6792	12620		0	0		15609		15659	31268
Daily Totals									0	0		21437		22451	43888

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Wednesday, January 07, 2004 City: Brea

Location: Rose Dr. e/o Valencia Ave.

Project #: 04-1042-017

Client Ref #:

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			14		11			12:00-12:15			99		120		
12:15-12:30			14		4			12:15-12:30			94		99		
12:30-12:45			7		12			12:30-12:45			117		101		
12:45-1:00			6	41	10	37	78	12:45-1:00			124	434	105	425	859
1:00-1:15			5		7			1:00-1:15			105		144		
1:15-1:30			3		8			1:15-1:30			83		117		
1:30-1:45			4		7			1:30-1:45			86		113		
1:45-2:00			3	15	5	27	42	1:45-2:00			96	370	126	500	870
2:00-2:15			0		2			2:00-2:15			102		108		
2:15-2:30			2		5			2:15-2:30			106		106		
2:30-2:45			1		2			2:30-2:45			103		113		
2:45-3:00			2	5	4	13	18	2:45-3:00			100	411	123	450	861
3:00-3:15			2		5			3:00-3:15			118		154		
3:15-3:30			1		2			3:15-3:30			129		157		
3:30-3:45			6		4			3:30-3:45			143		171		
3:45-4:00			2	11	1	12	23	3:45-4:00			145	535	192	674	1209
4:00-4:15			1		3			4:00-4:15			123		208		
4:15-4:30			2		0			4:15-4:30			162		202		
4:30-4:45			2		4			4:30-4:45			143		208		
4:45-5:00			3	8	4	11	19	4:45-5:00			150	578	210	828	1406
5:00-5:15			8		11			5:00-5:15			159		252		
5:15-5:30			14		10			5:15-5:30			196		213		
5:30-5:45			22		17			5:30-5:45			186		254		
5:45-6:00			44	88	22	60	148	5:45-6:00			181	722	277	996	1718
6:00-6:15			67		36			6:00-6:15			168		251		
6:15-6:30			83		49			6:15-6:30			184		226		
6:30-6:45			113		52			6:30-6:45			159		203		
6:45-7:00			140	403	90	227	630	6:45-7:00			127	638	190	870	1508
7:00-7:15			137		99			7:00-7:15			112		184		
7:15-7:30			137		141			7:15-7:30			109		162		
7:30-7:45			178		181			7:30-7:45			108		119		
7:45-8:00			179	631	209	630	1261	7:45-8:00			87	416	80	545	961
8:00-8:15			235		201			8:00-8:15			72		97		
8:15-8:30			205		186			8:15-8:30			66		60		
8:30-8:45			182		197			8:30-8:45			61		82		
8:45-9:00			184	806	206	790	1596	8:45-9:00			70	269	84	323	592
9:00-9:15			139		147			9:00-9:15			59		77		
9:15-9:30			132		128			9:15-9:30			42		64		
9:30-9:45			93		95			9:30-9:45			55		46		
9:45-10:00			96	460	114	484	944	9:45-10:00			41	197	42	229	426
10:00-10:15			99		92			10:00-10:15			42		42		
10:15-10:30			90		107			10:15-10:30			31		40		
10:30-10:45			71		96			10:30-10:45			28		34		
10:45-11:00			53	313	91	386	699	10:45-11:00			27	128	27	143	271
11:00-11:15			88		104			11:00-11:15			24		27		
11:15-11:30			62		88			11:15-11:30			18		22		
11:30-11:45			78		97			11:30-11:45			17		17		
11:45-12:00			90	318	109	398	716	11:45-12:00			18	77	8	74	151
Total Vol.	0	0		3099		3075	6174		0	0		4775		6057	10832
aily Totals									0	0		7874		9132	17006

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Wednesday, January 07, 2004 City: Brea

Project #: 04-1042-018

Location: Birch St. w/o Valencia Ave.

Client Ref #:

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			3		6			12:00-12:15			80		76		
12:15-12:30			3		10			12:15-12:30			76		104		
12:30-12:45			3		9			12:30-12:45			73		105		
12:45-1:00			5	14	7	32	46	12:45-1:00			95	324	107	392	716
1:00-1:15			3		6			1:00-1:15			104		76		
1:15-1:30			2		3			1:15-1:30			84		84		
1:30-1:45			5		6			1:30-1:45			77		92		
1:45-2:00			1	11	1	16	27	1:45-2:00			92	357	85	337	694
2:00-2:15			1		0			2:00-2:15			72		102		
2:15-2:30			4		2			2:15-2:30			67		96		
2:30-2:45			3		2			2:30-2:45			82		104		
2:45-3:00			2	10	2	6	16	2:45-3:00			71	292	116	418	710
3:00-3:15			3		1			3:00-3:15			81		127		
3:15-3:30			1		1			3:15-3:30			80		127		
3:30-3:45			7		8			3:30-3:45			112		157		
3:45-4:00			0	11	1	11	22	3:45-4:00			94	367	136	547	914
4:00-4:15			4		0			4:00-4:15			119		165		
4:15-4:30			1		2			4:15-4:30			79		172		
4:30-4:45			3		0			4:30-4:45			107		168		
4:45-5:00			7	15	2	4	19	4:45-5:00			109	414	158	663	1077
5:00-5:15			12		4			5:00-5:15			123		186		
5:15-5:30			6		5			5:15-5:30			114		226		
5:30-5:45			12		18			5:30-5:45			168		216		
5:45-6:00			17	47	14	41	88	5:45-6:00			168	573	209	837	1410
6:00-6:15			37		17			6:00-6:15			144		197		
6:15-6:30			54		15			6:15-6:30			117		195		
6:30-6:45			47		35			6:30-6:45			96		154		
6:45-7:00			70	208	40	107	315	6:45-7:00			95	452	138	684	1136
7:00-7:15			100		51			7:00-7:15			69		126		
7:15-7:30			112		69			7:15-7:30			73		106		
7:30-7:45			134		105			7:30-7:45			53		93		
7:45-8:00			173	519	110	335	854	7:45-8:00			49	244	89	414	658
8:00-8:15			184		129			8:00-8:15			48		67		
8:15-8:30			169		135			8:15-8:30			39		67		
8:30-8:45			143		110			8:30-8:45			29		71		
8:45-9:00			142	638	89	463	1101	8:45-9:00			33	149	63	268	417
9:00-9:15			105		78			9:00-9:15			41		62		
9:15-9:30			98		63			9:15-9:30			21		52		
9:30-9:45			63		51			9:30-9:45			18		49		
9:45-10:00			77	343	74	266	609	9:45-10:00			19	99	40	203	302
10:00-10:15			72		75			10:00-10:15			21		28		
10:15-10:30			60		55			10:15-10:30			21		33		
10:30-10:45			74		48			10:30-10:45			6		25		
10:45-11:00			62	268	49	227	495	10:45-11:00			16	64	27	113	177
11:00-11:15			62		62			11:00-11:15			14		20		
11:15-11:30			67		55			11:15-11:30			6		11		
11:30-11:45			80		75			11:30-11:45			6		20		
11:45-12:00			69	278	83	275	553	11:45-12:00			3	29	10	61	90
Total Vol.	0	0		2362		1783	4145		0	0		3364		4937	8301
aily Totals									0	0		5726		6720	12446

Average Daily Traffic Volumes

Prepared by: Southland Car Counters

Volumes for: Thursday, January 08, 2004 City: Brea Project #: 04-1042-019

Location: Birch St. w/o Associated Rd. (South Leg)

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
12:00-12:15			18		15			12:00-12:15			105		116		
12:15-12:30			16		6			12:15-12:30			110		109		
12:30-12:45			23		16			12:30-12:45			109		120		
12:45-1:00			25	82	7	44	126	12:45-1:00			120	444	121	466	910
1:00-1:15			13		8			1:00-1:15			130		118		
1:15-1:30			11		3			1:15-1:30			131		109		
1:30-1:45			8		1			1:30-1:45			140		107		
1:45-2:00			6	38	5	17	55	1:45-2:00			151	552	137	471	1023
2:00-2:15			2		1			2:00-2:15			170		160		
2:15-2:30			3		3			2:15-2:30			201		162		
2:30-2:45			6		2			2:30-2:45			187		157		
2:45-3:00			7	18	3	9	27	2:45-3:00			211	769	152	631	1400
3:00-3:15			3		3			3:00-3:15			209		152		
3:15-3:30			4		2			3:15-3:30			204		246		
3:30-3:45			5		1			3:30-3:45			190		269		
3:45-4:00			3	15	5	11	26	3:45-4:00			188	791	215	882	1673
4:00-4:15			2		2			4:00-4:15			191		207		
4:15-4:30			7		2			4:15-4:30			193		279		
4:30-4:45			4		4			4:30-4:45			191		277		
4:45-5:00			7	20	4	12	32	4:45-5:00			227	802	265	1028	1830
5:00-5:15			15		6			5:00-5:15			207		242		
5:15-5:30			15		9			5:15-5:30			212		299		
5:30-5:45			20		13			5:30-5:45			259		309		
5:45-6:00			14	64	17	45	109	5:45-6:00			273	951	309	1159	2110
6:00-6:15			43		23			6:00-6:15			266		297		
6:15-6:30			51		53			6:15-6:30			264		254		
6:30-6:45			64		57			6:30-6:45			241		248		
6:45-7:00			76	234	54	187	421	6:45-7:00			218	989	196	995	1984
7:00-7:15			111		65			7:00-7:15			174		165		
7:15-7:30			219		109			7:15-7:30			187		167		
7:30-7:45			177		149			7:30-7:45			165		150		
7:45-8:00			196	703	178	501	1204	7:45-8:00			163	689	128	610	1299
8:00-8:15			244		185			8:00-8:15			141		105		
8:15-8:30			317		251			8:15-8:30			130		94		
8:30-8:45			279		271			8:30-8:45			118		82		
8:45-9:00			236	1076	209	916	1992	8:45-9:00			112	501	73	354	855
9:00-9:15			138		219			9:00-9:15			109		53		
9:15-9:30			124		131			9:15-9:30			114		74		
9:30-9:45			97		121			9:30-9:45			112		58		
9:45-10:00			81	440	90	561	1001	9:45-10:00			101	436	51	236	672
10:00-10:15			83		113			10:00-10:15			99		34		
10:15-10:30			89		125			10:15-10:30			82		48		
10:30-10:45			91		124			10:30-10:45			43		57		
10:45-11:00			115	378	94	456	834	10:45-11:00			53	277	29	168	445
11:00-11:15			111		99			11:00-11:15			37		13		
11:15-11:30			103		80			11:15-11:30			34		16		
11:30-11:45			123		110			11:30-11:45			24		16		
11:45-12:00			116	453	114	403	856	11:45-12:00			20	115	15	60	175
Total Vol.	0	0		3521		3162	6683		0	0		7316		7060	14376
Daily Totals									0	0		10837		10222	21059

APPENDIX F-2

EXISTING PEAK HOUR TURNING MOVEMENT COUNTS

TMC SUMMARY OF Valencia Ave. / Carbon Canyon Rd./Lambert Rd.

Project #: 04-1041-001

N

Valencia Ave.

APPROACH LANES

	1	2	0
TOTAL	282	298	4
PM	0	0	0
MD	79	143	1
AM	203	155	3

on Canyon Rd./Lambert

	TOTAL	AM	MD	PM
1	123	59	64	0
3	314	167	147	0
0	444	355	89	0

APPROACH LANES

rbon Canyon Rd./Lambert

AM	MD	PM	TOTAL	
5	6	0	11	2
735	285	0	1020	3
698	116	0	814	0

APPROACH LANES

PM	0	0	0
MD	80	163	127
AM	87	104	119
TOTAL	167	267	246
	1	2	1

APPROACH LANES

Valencia Ave.

LOCATION #: 001

TURNING MOVEMENT COUNT

Valencia Ave. / Carbon Canyon Rd./Lambert Rd.
(Intersection Name)

Tuesday
Day

1/6/04
Date

COUNT PERIODS

am	7:00 AM	-	9:00 AM
noon	11:00 AM	-	1:00 PM
pm	10:00 AM	-	12:00 PM

AM PEAK HOUR 730 AM

NOON PEAK HOUR 1100 AM

PM PEAK HOUR 0 AM

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Valencia Ave.

E-W STREET: Carbon Canyon Rd./ Lambert Rd.

DATE: 1/6/2004

DAY: TUESDAY

LOCATION: City of Brea

PROJECT# 04-1041-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	0	1	3	0	2	3	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	18	26	23	1	33	29	15	25	53	203	183	0	609
7:15 AM	25	19	27	0	30	49	15	37	59	185	187	1	634
7:30 AM	30	29	23	0	39	55	8	41	76	171	176	1	649
7:45 AM	23	23	37	2	33	61	17	48	90	187	194	2	717
8:00 AM	17	34	31	0	40	42	16	51	96	170	165	1	663
8:15 AM	17	18	28	1	43	45	18	27	93	170	200	1	661
8:30 AM	31	34	33	0	36	43	12	34	77	134	166	1	601
8:45 AM	15	42	26	2	37	40	10	32	66	141	149	0	560
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	176	225	228	6	291	364	111	295	610	1361	1420	7	5094

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	87	104	119	3	155	203	59	167	355	698	735	5	2690
PEAK HR. FACTOR:		0.934			0.940			0.891			0.939		0.938

CONTROL: Signalized

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Valencia Ave.

E-W STREET: Carbon Canyon Rd./
Lambert Rd.

DATE: 1/6/2004

DAY: TUESDAY

LOCATION: City of Brea

PROJECT# 04-1041-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	0	1	3	0	2	3	0	
10:00 AM	13	31	19	0	39	23	15	31	15	41	80	1	308
10:15 AM	23	34	25	1	32	22	17	33	16	36	59	0	298
10:30 AM	20	36	27	1	47	18	10	28	24	33	78	1	323
10:45 AM	16	32	29	1	34	22	7	33	36	34	72	0	316
11:00 AM	13	39	26	0	36	22	13	32	29	22	59	1	292
11:15 AM	24	39	34	0	34	20	10	43	19	30	72	1	326
11:30 AM	19	39	32	0	38	22	22	29	22	33	84	1	341
11:45 AM	24	46	35	1	35	15	19	43	19	31	70	3	341
12:00 PM													
12:15 PM													
12:30 PM													
12:45 PM													
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	152	296	227	4	295	164	113	272	180	260	574	8	2545

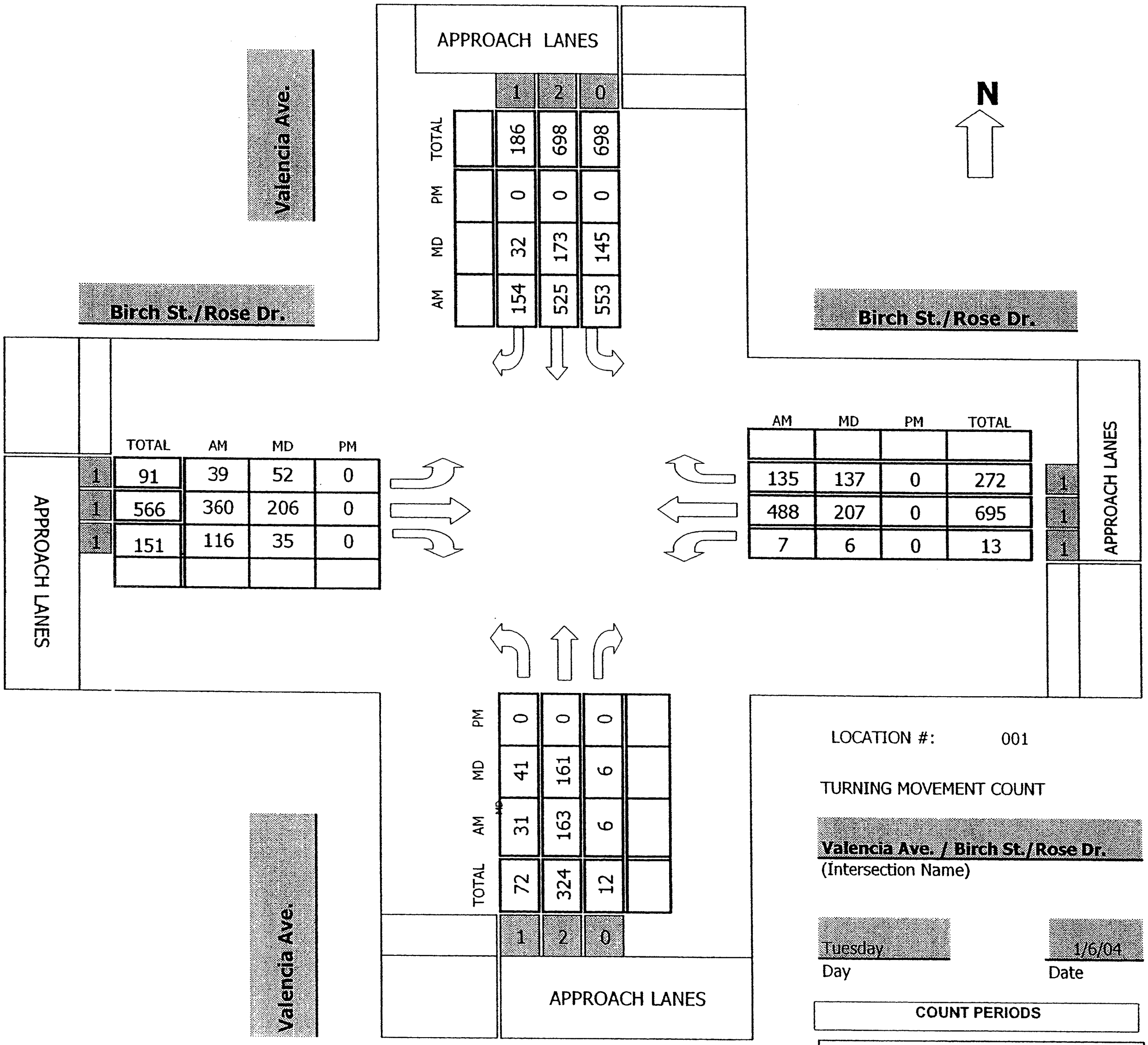
NOON Peak Hr Begins at: 1100 AM

PEAK VOLUMES =	80	163	127	1	143	79	64	147	89	116	285	6	1300
PEAK HR. FACTOR:		0.881			0.929			0.926			0.862		0.953

CONTROL: Signalized

TMC SUMMARY OF Valencia Ave. / Birch St./Rose Dr.

Project #: 04-1041-002



North approach (lanes: 1, 2, 0)

TOTAL	186	698	698
PM	0	0	0
MD	32	173	145
AM	154	525	553

West approach

Lanes	TOTAL	AM	MD	PM
1	91	39	52	0
1	566	360	206	0
1	151	116	35	0

East approach

AM	MD	PM	TOTAL	Lanes
135	137	0	272	1
488	207	0	695	1
7	6	0	13	1

South approach (lanes: 1, 2, 0)

PM	0	0	0
MD	41	161	6
AM	31	163	6
TOTAL	72	324	12

LOCATION #: 001

TURNING MOVEMENT COUNT

Valencia Ave. / Birch St./Rose Dr.
(Intersection Name)

Tuesday
Day

1/6/04
Date

COUNT PERIODS

am	7:00 AM	-	9:00 AM
noon	11:00 AM	-	1:00 PM
pm	10:00 AM	-	12:00 PM

AM PEAK HOUR 730 AM

NOON PEAK HOUR 1100 AM

PM PEAK HOUR 0 AM

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Valencia Ave.
DATE: 1/6/2004
LOCATION: City of Brea

E-W STREET: Birch St./Rose Dr.
DAY: TUESDAY
PROJECT# 04-1041-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	1	1	1	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	6	35	1	136	101	32	3	42	12	1	73	24	466
7:15 AM	5	26	1	129	111	35	5	69	26	3	118	41	569
7:30 AM	8	34	0	114	126	42	12	91	25	2	113	38	605
7:45 AM	6	46	2	162	130	41	10	99	32	2	135	33	698
8:00 AM	8	44	4	136	136	40	13	86	31	2	138	29	667
8:15 AM	9	39	0	141	133	31	4	84	28	1	102	35	607
8:30 AM	9	43	1	116	105	19	10	80	13	5	116	44	561
8:45 AM	7	38	1	123	98	24	4	61	21	7	68	39	491
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	58	305	10	1057	940	264	61	612	188	23	863	283	4664

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	31	163	6	553	525	154	39	360	116	7	488	135	2577
PEAK HR. FACTOR:		0.893			0.925			0.913			0.926		0.923

CONTROL: Signalized;

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Valencia Ave.　DATE: 1/6/2004　LOCATION: City of Brea

E-W STREET: Birch St./Rose Dr.　DAY: TUESDAY　PROJECT# 04-1041-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	1	1	1	1	
10:00 AM	7	25	0	40	51	11	2	28	4	1	50	30	249
10:15 AM	7	37	2	32	48	7	9	40	11	0	46	34	273
10:30 AM	9	35	0	36	56	12	11	39	8	2	46	29	283
10:45 AM	4	33	0	44	44	12	9	43	7	1	43	34	274
11:00 AM	3	35	4	37	43	8	8	46	5	2	49	28	268
11:15 AM	6	41	1	40	35	6	10	55	8	0	59	46	307
11:30 AM	12	32	0	30	46	9	15	41	12	1	44	33	275
11:45 AM	20	53	1	38	49	9	19	64	10	3	55	30	351
12:00 PM													
12:15 PM													
12:30 PM													
12:45 PM													
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	68	291	8	297	372	74	83	356	65	10	392	264	2280

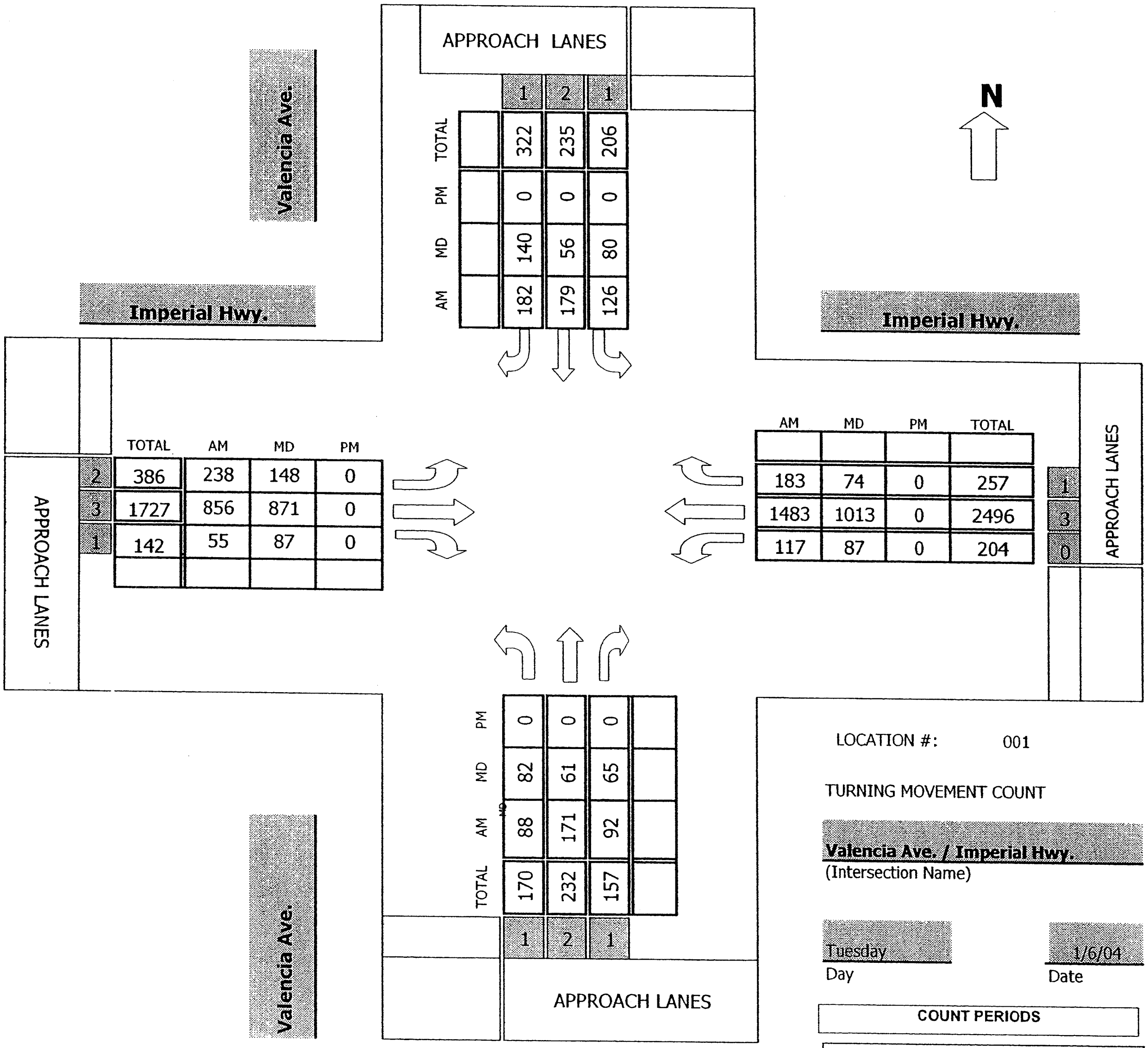
NOON Peak Hr Begins at: 1100 AM

PEAK VOLUMES =	41	161	6	145	173	32	52	206	35	6	207	137	1201
PEAK HR. FACTOR:		0.703			0.911			0.788			0.833		0.855

CONTROL: Signalized;

TMC SUMMARY OF Valencia Ave. / Imperial Hwy.

Project #: 04-1041-003



APPROACH LANES	1	2	1
TOTAL	322	235	206
PM	0	0	0
MD	140	56	80
AM	182	179	126

APPROACH LANES	TOTAL	AM	MD	PM
2	386	238	148	0
3	1727	856	871	0
1	142	55	87	0

AM	MD	PM	TOTAL	APPROACH LANES
183	74	0	257	1
1483	1013	0	2496	3
117	87	0	204	0

PM	0	0	0
MD	82	61	65
AM	88	171	92
TOTAL	170	232	157
APPROACH LANES	1	2	1

LOCATION #: 001

TURNING MOVEMENT COUNT

Valencia Ave. / Imperial Hwy.
(Intersection Name)

Tuesday
Day

1/6/04
Date

COUNT PERIODS			
am	7:00 AM	-	9:00 AM
noon	11:00 AM	-	1:00 PM
pm	10:00 AM	-	12:00 PM

AM PEAK HOUR	730 AM
NOON PEAK HOUR	1100 AM
PM PEAK HOUR	0 AM

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Valencia Ave.

E-W STREET: Imperial Hwy.

DATE: 1/6/2004

DAY: TUESDAY

LOCATION: City of Brea

PROJECT# 04-1041-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	2	3	1	1	3	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	15	28	8	13	59	25	51	155	6	9	322	29	720
7:15 AM	14	34	10	27	55	38	30	180	6	6	352	28	780
7:30 AM	19	35	16	29	43	42	60	207	9	26	360	35	881
7:45 AM	15	46	25	40	37	47	54	230	16	39	368	49	966
8:00 AM	22	51	31	26	45	46	69	247	21	31	403	54	1046
8:15 AM	32	39	20	31	54	47	55	172	9	21	352	45	877
8:30 AM	29	30	23	30	41	44	55	186	18	22	310	41	829
8:45 AM	12	21	18	26	37	35	84	150	17	11	282	22	715
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	158	284	151	222	371	324	458	1527	102	165	2749	303	6814

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	88	171	92	126	179	182	238	856	55	117	1483	183	3770
PEAK HR. FACTOR:		0.844			0.922			0.852			0.913		0.901

CONTROL: Signalized;

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Valencia Ave.
DATE: 1/6/2004
LOCATION: City of Brea

E-W STREET: Imperial Hwy.
DAY: TUESDAY
PROJECT# 04-1041-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	2	3	1	1	3	0	
10:00 AM	14	5	16	7	11	32	19	132	13	8	183	13	453
10:15 AM	26	22	12	16	14	37	33	183	12	17	227	14	613
10:30 AM	14	13	12	15	14	31	38	151	16	15	227	20	566
10:45 AM	28	15	19	15	16	26	38	178	19	18	216	8	596
11:00 AM	16	11	13	18	9	29	35	197	23	26	262	24	663
11:15 AM	27	15	14	19	11	31	36	195	20	12	240	9	629
11:30 AM	20	16	21	19	16	34	32	222	21	23	241	22	687
11:45 AM	19	19	17	24	20	46	45	257	23	26	270	19	785
12:00 PM													
12:15 PM													
12:30 PM													
12:45 PM													
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	164	116	124	133	111	266	276	1515	147	145	1866	129	4992

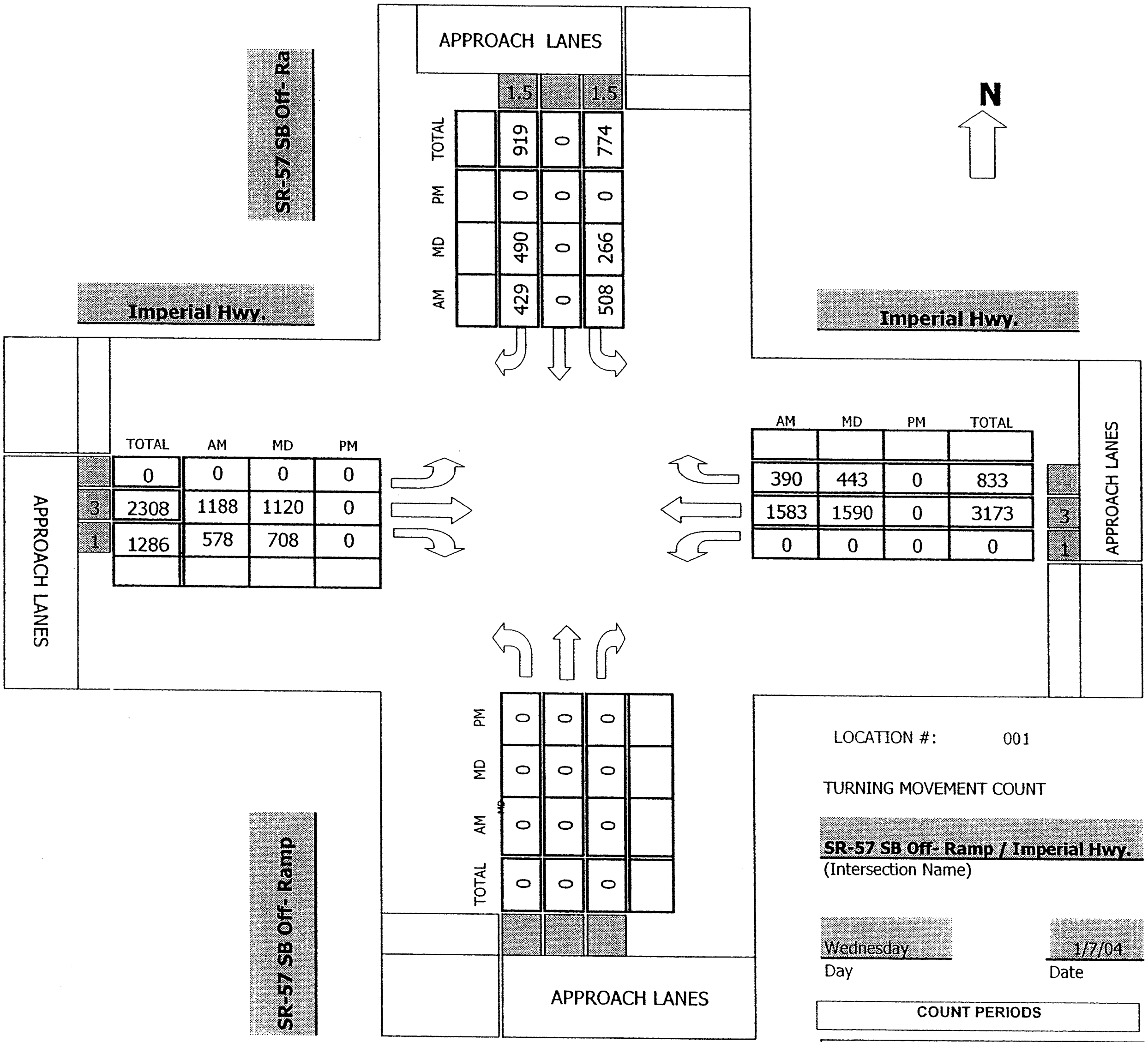
NOON Peak Hr Begins at: 1100 AM

PEAK VOLUMES =	82	61	65	80	56	140	148	871	87	87	1013	74	2764
PEAK HR. FACTOR:		0.912			0.767			0.851			0.932		0.880

CONTROL: Signalized;

TMC SUMMARY OF SR-57 SB Off- Ramp / Imperial Hwy.

Project #: 04-1041-005



APPROACH LANES		1.5		1.5
TOTAL		919	0	774
PM		0	0	0
MD		490	0	266
AM		429	0	508

APPROACH LANES	TOTAL	AM	MD	PM
	0	0	0	0
3	2308	1188	1120	0
1	1286	578	708	0

AM	MD	PM	TOTAL	APPROACH LANES
390	443	0	833	
1583	1590	0	3173	3
0	0	0	0	1

PM	0	0	0	
MD	0	0	0	
AM	0	0	0	
TOTAL	0	0	0	
APPROACH LANES				

LOCATION #: 001

TURNING MOVEMENT COUNT

SR-57 SB Off- Ramp / Imperial Hwy.
(Intersection Name)

Wednesday
Day

1/7/04
Date

COUNT PERIODS

am	7:00 AM -	9:00 AM
noon	11:00 AM -	1:00 PM
pm	10:00 AM -	12:00 PM

AM PEAK HOUR 730 AM

NOON PEAK HOUR 1100 AM

PM PEAK HOUR 0 AM

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: SR-57 SB Off- Ramp
DATE: 1/7/2004
LOCATION: City of Brea

E-W STREET: Imperial Hwy.
DAY: WEDNESDAY
PROJECT# 04-1041-005

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:				1.5		1.5		3	1		3	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM				121		85		255	136		369	93	1059
7:15 AM				115		86		285	146		367	72	1071
7:30 AM				113		106		315	143		368	80	1125
7:45 AM				141		102		336	142		398	91	1210
8:00 AM				126		114		279	158		426	97	1200
8:15 AM				128		107		258	135		391	122	1141
8:30 AM				101		130		243	128		370	112	1084
8:45 AM				133		148		253	161		370	120	1185
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	0	0	978	0	878	0	2224	1149	0	3059	787	9075

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	0	0	0	508	0	429	0	1188	578	0	1583	390	4676
PEAK HR. FACTOR:		0.000			0.964			0.924			0.943		0.966

CONTROL: Signalized

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: SR-57 SB Off- Ramp   DATE: 1/7/2004   LOCATION: City of Brea

E-W STREET: Imperial Hwy.   DAY: WEDNESDAY   PROJECT# 04-1041-005

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:				1.5		1.5		3	1		3	1	
10:00 AM				60		135		202	154		384	166	1101
10:15 AM				63		110		251	149		336	100	1009
10:30 AM				70		109		223	146		342	125	1015
10:45 AM				72		120		266	140		404	118	1120
11:00 AM				86		130		251	168		350	75	1060
11:15 AM				56		126		265	185		362	105	1099
11:30 AM				58		121		319	188		416	152	1254
11:45 AM				66		113		285	167		462	111	1204
12:00 PM													
12:15 PM													
12:30 PM													
12:45 PM													
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	0	0	531	0	964	0	2062	1297	0	3056	952	8862

NOON Peak Hr Begins at: 1100 AM

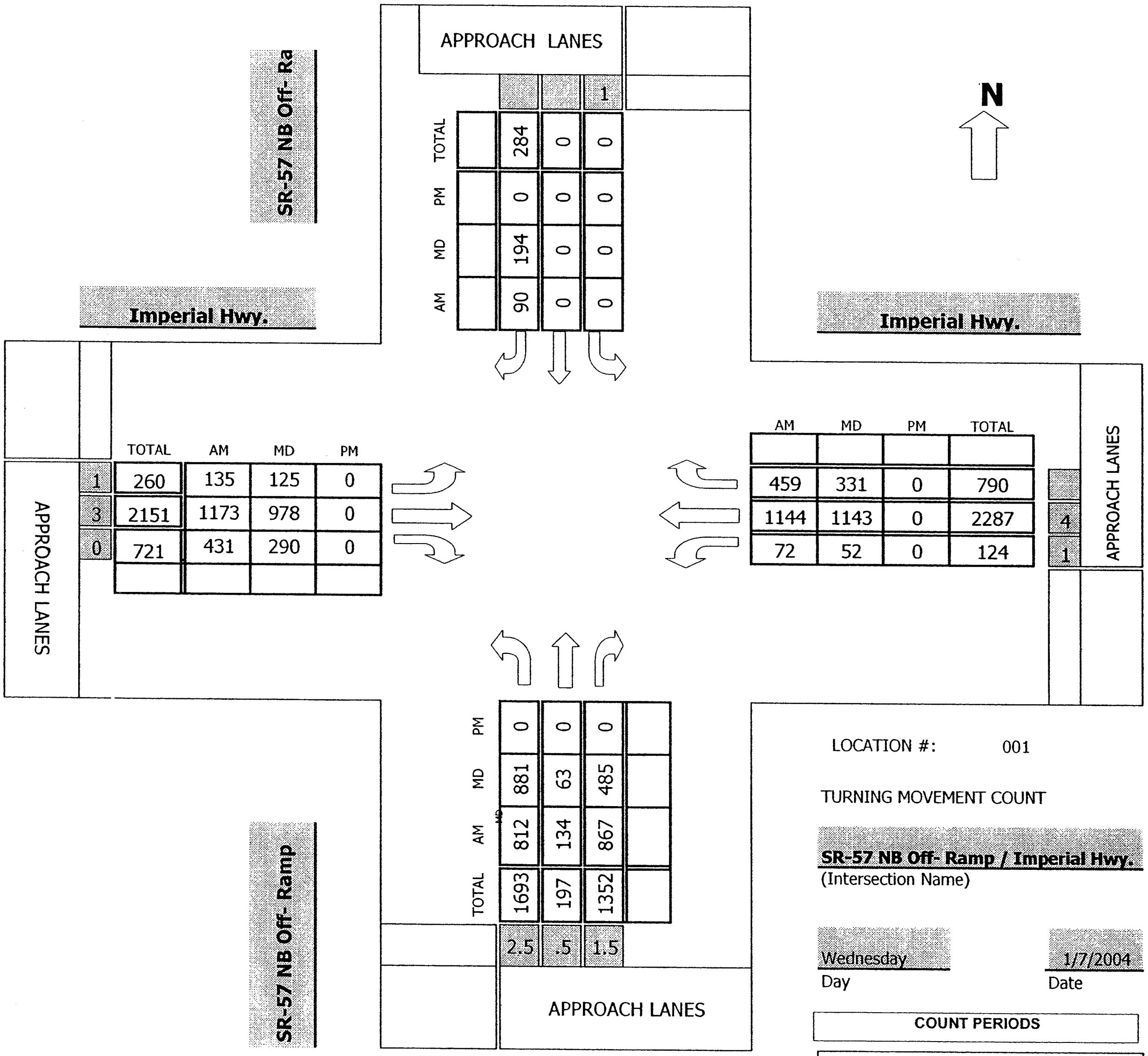
PEAK VOLUMES =	0	0	0	266	0	490	0	1120	708	0	1590	443	4617
PEAK HR. FACTOR:		0.000			0.875			0.000			0.887		0.920

CONTROL: Signalized

[redacted]

TMC SUMMARY OF SR-57 NB Off- Ramp / Imperial Hwy.

Project #: 04-1041-004



SR-57 NB Off- Ra (north approach)

APPROACH LANES			1
TOTAL	284	0	0
PM	0	0	0
MD	194	0	0
AM	90	0	0

Imperial Hwy. (west approach)

APPROACH LANES	TOTAL	AM	MD	PM
1	260	135	125	0
3	2151	1173	978	0
0	721	431	290	0

Imperial Hwy. (east approach)

AM	MD	PM	TOTAL	APPROACH LANES
459	331	0	790	
1144	1143	0	2287	4
72	52	0	124	1

SR-57 NB Off- Ramp (south approach)

PM	0	0	0
MD	881	63	485
AM	812	134	867
TOTAL	1693	197	1352
APPROACH LANES	2.5	.5	1.5

LOCATION #: 001

TURNING MOVEMENT COUNT

SR-57 NB Off- Ramp / Imperial Hwy.
(Intersection Name)

Wednesday
Day

1/7/2004
Date

COUNT PERIODS			
am	7:00 AM	-	9:00 AM
noon	11:00 AM	-	1:00 PM
pm	10:00 AM	-	12:00 PM

AM PEAK HOUR	730 AM
NOON PEAK HOUR	1100 AM
PM PEAK HOUR	0 AM

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: SR-57 NB Off- Ramp   DATE: 1/7/2004   LOCATION: City of Brea

E-W STREET: Imperial Hwy.   DAY: WEDNESDAY   PROJECT# 04-1041-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WR1	WT	WR	TOTAL
LANES:	2.5	.5	1.5			1	1	3	0		4	1	
10:00 AM	173	4	118			27	27	191	60	10	241	56	907
10:15 AM	167	8	109			25	22	226	66	15	240	70	948
10:30 AM	148	8	124			23	25	199	64	12	276	84	963
10:45 AM	203	18	124			28	29	233	60	12	245	63	1015
11:00 AM	190	13	105			43	33	237	65	13	276	78	1053
11:15 AM	204	15	118			43	26	223	70	18	260	96	1073
11:30 AM	217	15	133			53	25	266	85	10	314	74	1192
11:45 AM	270	20	129			55	41	252	70	11	293	83	1224
12:00 PM													
12:15 PM													
12:30 PM													
12:45 PM													
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WR1	WT	WR	TOTAL
TOTAL VOLUMES =	1572	101	960	0	0	297	228	1827	540	101	2145	604	8375

NOON Peak Hr Begins at: 1100 AM

PEAK VOLUMES =	881	63	485	0	0	194	125	978	290	52	1143	331	4542
PEAK HR. FACTOR:		0.853			0.882			0.926			0.959		0.928

CONTROL: Signalized

WR1= CARS INTO SHOPPING CTR

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: SR-57 NB Off- Ramp
DATE: 1/7/2004
LOCATION: City of Brea

E-W STREET: Imperial Hwy.
DAY: WEDNESDAY
PROJECT# 04-1041-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WR1	WT	WR	TOTAL
LANES:	2.5	.5	1.5			1	1	3	0		4	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	173	50	184			16	22	203	86	20	229	115	1098
7:15 AM	193	25	170			23	29	240	150	21	250	119	1220
7:30 AM	197	36	206			26	28	277	113	19	242	122	1266
7:45 AM	194	37	243			33	49	296	119	20	270	112	1373
8:00 AM	228	40	230			8	43	316	116	15	321	89	1406
8:15 AM	193	21	188			23	15	284	83	18	311	136	1272
8:30 AM	217	14	165			31	26	227	113	19	271	109	1192
8:45 AM	202	14	161			31	19	270	78	22	253	99	1149
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WR1	WT	WR	TOTAL
TOTAL VOLUMES =	1597	237	1547	0	0	191	231	2113	858	154	2147	901	9976

AM Peak Hr Begins at: 730 AM

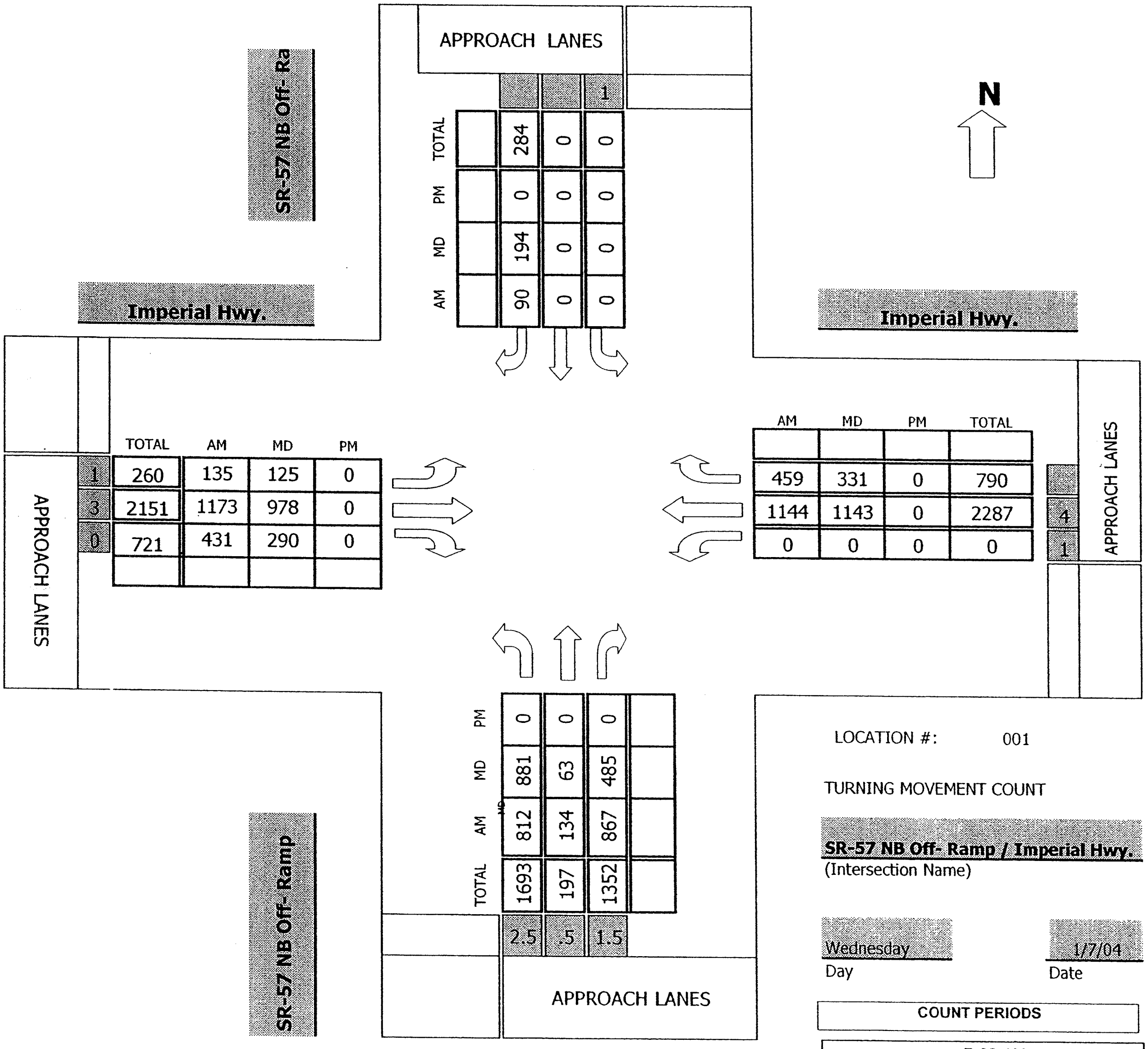
PEAK VOLUMES =	812	134	867	0	0	90	135	1173	431	72	1144	459	5317
PEAK HR. FACTOR:		0.910			0.682			0.915			0.901		0.945

CONTROL: Signalized

WR1=CARS INTO SHOPPING CENTER

TMC SUMMARY OF SR-57 NB Off- Ramp / Imperial Hwy.

Project #: 04-1041-004



APPROACH LANES			1
TOTAL	284	0	0
PM	0	0	0
MD	194	0	0
AM	90	0	0

APPROACH LANES	TOTAL	AM	MD	PM
1	260	135	125	0
3	2151	1173	978	0
0	721	431	290	0

AM	MD	PM	TOTAL	APPROACH LANES
459	331	0	790	
1144	1143	0	2287	4
0	0	0	0	1

PM	0	0	0	
MD	881	63	485	
AM	812	134	867	
TOTAL	1693	197	1352	
APPROACH LANES	2.5	.5	1.5	

LOCATION #: 001

TURNING MOVEMENT COUNT

SR-57 NB Off- Ramp / Imperial Hwy.
(Intersection Name)

Wednesday
Day

1/7/04
Date

COUNT PERIODS

am	7:00 AM -	9:00 AM
noon	11:00 AM -	1:00 PM
pm	10:00 AM -	12:00 PM

AM PEAK HOUR	730 AM
NOON PEAK HOUR	1100 AM
PM PEAK HOUR	0 AM

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: SR-57 NB Off- Ramp
DATE: 1/7/2004
LOCATION: City of Brea

E-W STREET: Imperial Hwy.
DAY: WEDNESDAY
PROJECT# 04-1041-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2.5	.5	1.5			1	1	3	0		4	1	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	173	50	184			16	22	203	86		229	115	1078
7:15 AM	193	25	170			23	29	240	150		250	119	1199
7:30 AM	197	36	206			26	28	277	113		242	122	1247
7:45 AM	194	37	243			33	49	296	119		270	112	1353
8:00 AM	228	40	230			8	43	316	116		321	89	1391
8:15 AM	193	21	188			23	15	284	83		311	136	1254
8:30 AM	217	14	165			31	26	227	113		271	109	1173
8:45 AM	202	14	161			31	19	270	78		253	99	1127
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	1597	237	1547	0	0	191	231	2113	858	0	2147	901	9822

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	812	134	867	0	0	90	135	1173	431	0	1144	459	5245
PEAK HR. FACTOR:		0.910			0.682			0.915			0.897		0.943

CONTROL: Signalized

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: SR-57 NB Off- Ramp DATE: 1/7/2004 LOCATION: City of Brea

E-W STREET: Imperial Hwy. DAY: WEDNESDAY PROJECT# 04-1041-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2.5	.5	1.5			1	1	3	0		4	1	
10:00 AM	173	4	118			27	27	191	60		241	56	897
10:15 AM	167	8	109			25	22	226	66		240	70	933
10:30 AM	148	8	124			23	25	199	64		276	84	951
10:45 AM	203	18	124			28	29	233	60		245	63	1003
11:00 AM	190	13	105			43	33	237	65		276	78	1040
11:15 AM	204	15	118			43	26	223	70		260	96	1055
11:30 AM	217	15	133			53	25	266	85		314	74	1182
11:45 AM	270	20	129			55	41	252	70		293	83	1213
12:00 PM													
12:15 PM													
12:30 PM													
12:45 PM													
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	1572	101	960	0	0	297	228	1827	540	0	2145	604	8274

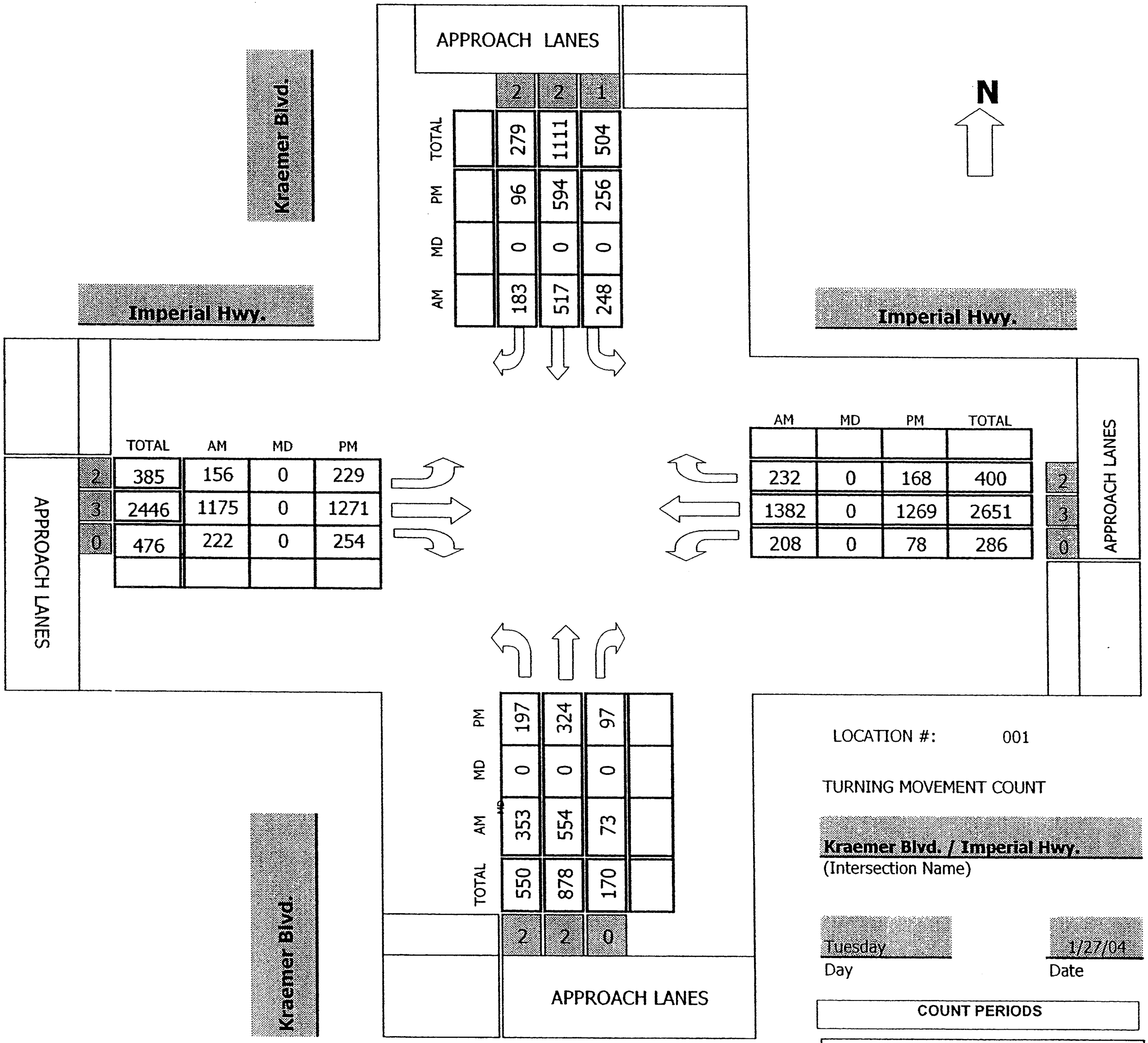
NOON Peak Hr Begins at: 1100 AM

PEAK VOLUMES =	881	63	485	0	0	194	125	978	290	0	1143	331	4490
PEAK HR. FACTOR:		0.853			0.882			0.926			0.950		0.925

CONTROL: Signalized

TMC SUMMARY OF Kraemer Blvd. / Imperial Hwy.

Project #: 04-1088-003



		2	2	1
TOTAL		279	1111	504
PM		96	594	256
MD		0	0	0
AM		183	517	248

	TOTAL	AM	MD	PM
2	385	156	0	229
3	2446	1175	0	1271
0	476	222	0	254

AM	MD	PM	TOTAL	
232	0	168	400	2
1382	0	1269	2651	3
208	0	78	286	0

PM	197	324	97	
MD	0	0	0	
AM	353	554	73	
TOTAL	550	878	170	
	2	2	0	

LOCATION #: 001

TURNING MOVEMENT COUNT

Kraemer Blvd. / Imperial Hwy.
(Intersection Name)

Tuesday
Day

1/27/04
Date

COUNT PERIODS

am	7:00 AM	-	9:00 AM
noon	4:00 PM	-	6:00 PM
pm	4:00 PM	-	6:00 PM

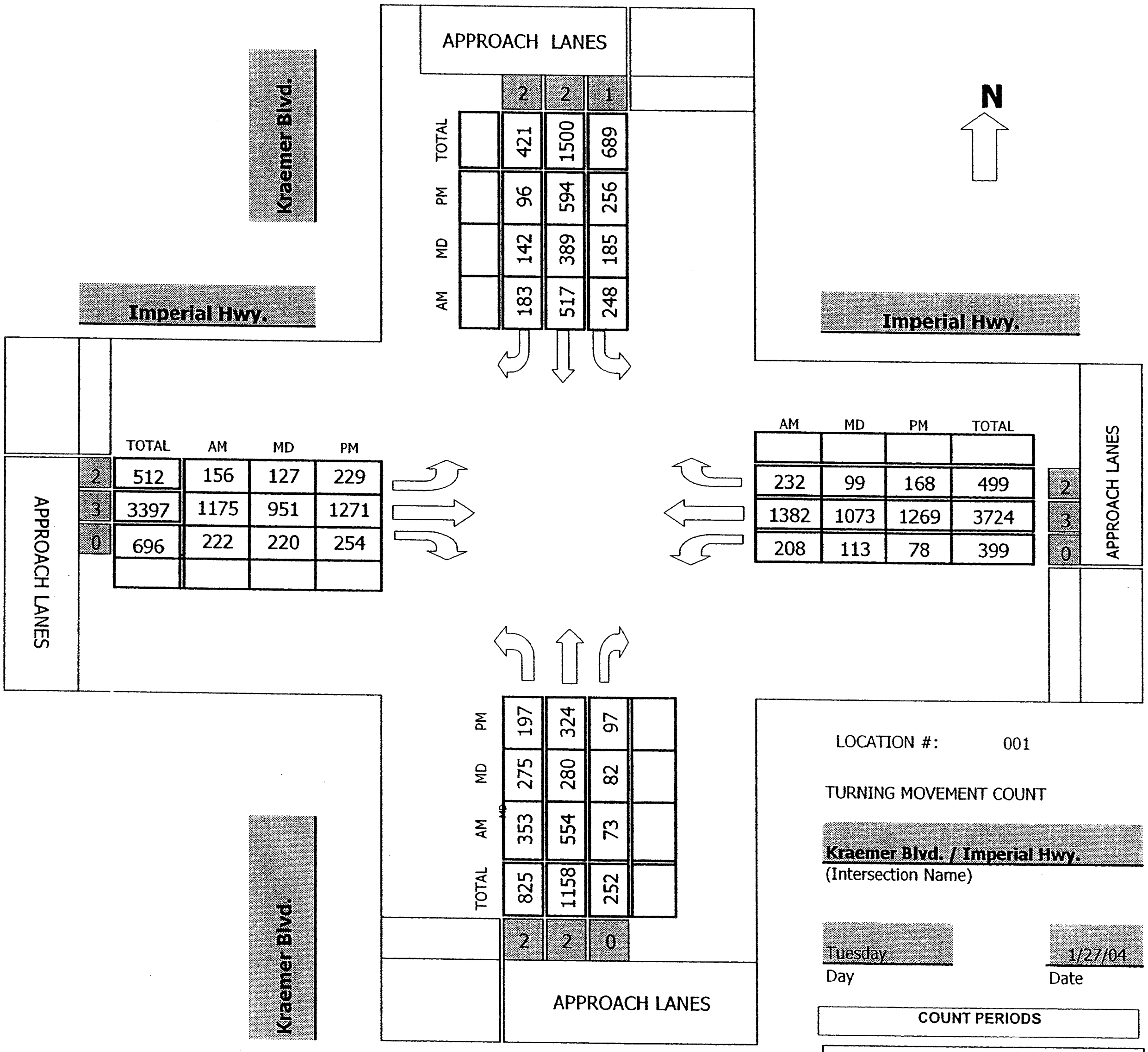
AM PEAK HOUR 745 AM

NOON PEAK HOUR 0 AM

PM PEAK HOUR 430 PM

TMC SUMMARY OF Kraemer Blvd. / Imperial Hwy.

Project #: 04-1088-003



APPROACH LANES	2	2	1
TOTAL	421	1500	689
PM	96	594	256
MD	142	389	185
AM	183	517	248

APPROACH LANES	TOTAL	AM	MD	PM
2	512	156	127	229
3	3397	1175	951	1271
0	696	222	220	254

AM	MD	PM	TOTAL	APPROACH LANES
232	99	168	499	2
1382	1073	1269	3724	3
208	113	78	399	0

PM	197	324	97
MD	275	280	82
AM	353	554	73
TOTAL	825	1158	252
APPROACH LANES	2	2	0

LOCATION #: 001

TURNING MOVEMENT COUNT

Kraemer Blvd. / Imperial Hwy.
(Intersection Name)

Tuesday
Day

1/27/04
Date

COUNT PERIODS

am	7:00 AM	-	9:00 AM
noon	4:00 PM	-	6:00 PM
pm	4:00 PM	-	6:00 PM

AM PEAK HOUR	745 AM
NOON PEAK HOUR	1100 AM
PM PEAK HOUR	430 PM

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Kraemer Blvd.　　DATE: 1/27/2004　　LOCATION: City of Brea

E-W STREET: Imperial Hwy.　　DAY: TUESDAY　　PROJECT# 04-1088-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	2	0	2	2	1	2	3	0	2	3	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	54	121	18	64	114	45	37	274	58	43	268	53	1149
7:15 AM	84	128	21	62	101	31	34	246	60	40	275	44	1126
7:30 AM	75	120	18	64	133	50	43	269	64	36	328	50	1250
7:45 AM	73	110	20	52	133	54	27	273	41	53	358	54	1248
8:00 AM	97	157	15	72	144	45	46	291	57	73	362	63	1422
8:15 AM	92	132	17	71	109	40	34	306	67	49	352	59	1328
8:30 AM	91	155	21	53	131	44	49	305	57	33	310	56	1305
8:45 AM	72	117	18	59	113	38	31	278	53	28	305	58	1170
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	638	1040	148	497	978	347	301	2242	457	355	2558	437	9998

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES =	353	554	73	248	517	183	156	1175	222	208	1382	232	5303
PEAK HR. FACTOR:		0.911			0.908			0.945			0.915		0.932

CONTROL: Signalized;

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Kraemer Blvd. DATE: 2/3/2004 LOCATION: City of Brea

E-W STREET: Imperial Hwy. DAY: TUESDAY PROJECT# 04-1088-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	2	0	2	2	1	2	3	0	2	3	0	
10:00 AM	34	23	10	21	34	6	29	145	37	11	106	15	471
10:15 AM	57	47	14	35	44	23	19	246	44	9	195	27	760
10:30 AM	69	50	13	38	61	15	27	238	34	26	196	21	788
10:45 AM	57	53	18	36	73	26	34	256	57	25	216	25	876
11:00 AM	61	67	15	42	84	20	30	200	53	27	208	27	834
11:15 AM	70	63	12	35	83	29	24	243	54	26	280	27	946
11:30 AM	65	76	33	48	111	49	27	228	47	34	257	25	1000
11:45 AM	79	74	22	60	111	44	46	280	66	26	328	20	1156
12:00 PM													
12:15 PM													
12:30 PM													
12:45 PM													
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													

TOTAL VOLUMES =	NL 492	NT 453	NR 137	SL 315	ST 601	SR 212	EL 236	ET 1836	ER 392	WL 184	WT 1786	WR 187	TOTAL 6831

NOON Peak Hr Begins at: 1100 AM

PEAK VOLUMES =	275	280	82	185	389	142	127	951	220	113	1073	99	3936
PEAK HR. FACTOR:		0.910			0.833			0.828			0.859		0.851

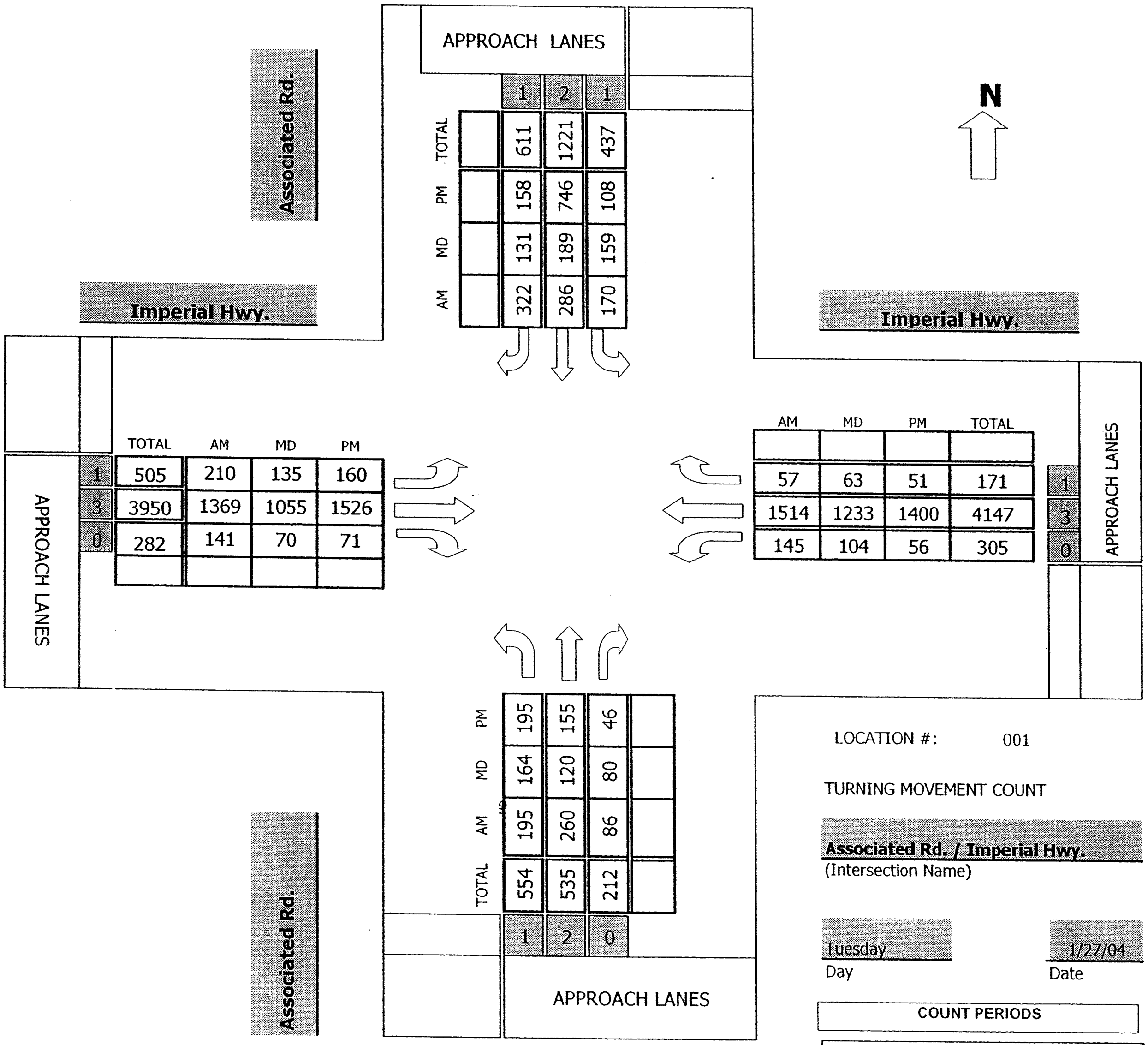
CONTROL:

NR=TRASH TRUCKS MAKING MOVEMENT
CVT= 2
BLUE=2
OTHER=4

WL=TRASH TRUCKS MAKING MOVEMENT
CVT= 2
BLUE= 6
OTHER= 1

TMC SUMMARY OF Associated Rd. / Imperial Hwy.

Project #: 04-1088-002



APPROACH LANES	1	2	1
TOTAL	611	1221	437
PM	158	746	108
MD	131	189	159
AM	322	286	170

APPROACH LANES	TOTAL	AM	MD	PM
1	505	210	135	160
3	3950	1369	1055	1526
0	282	141	70	71

AM	MD	PM	TOTAL	APPROACH LANES
57	63	51	171	1
1514	1233	1400	4147	3
145	104	56	305	0

PM	195	155	46
MD	164	120	80
AM	195	260	86
TOTAL	554	535	212
APPROACH LANES	1	2	0

LOCATION #: 001

TURNING MOVEMENT COUNT

Associated Rd. / Imperial Hwy.
(Intersection Name)

Tuesday
Day

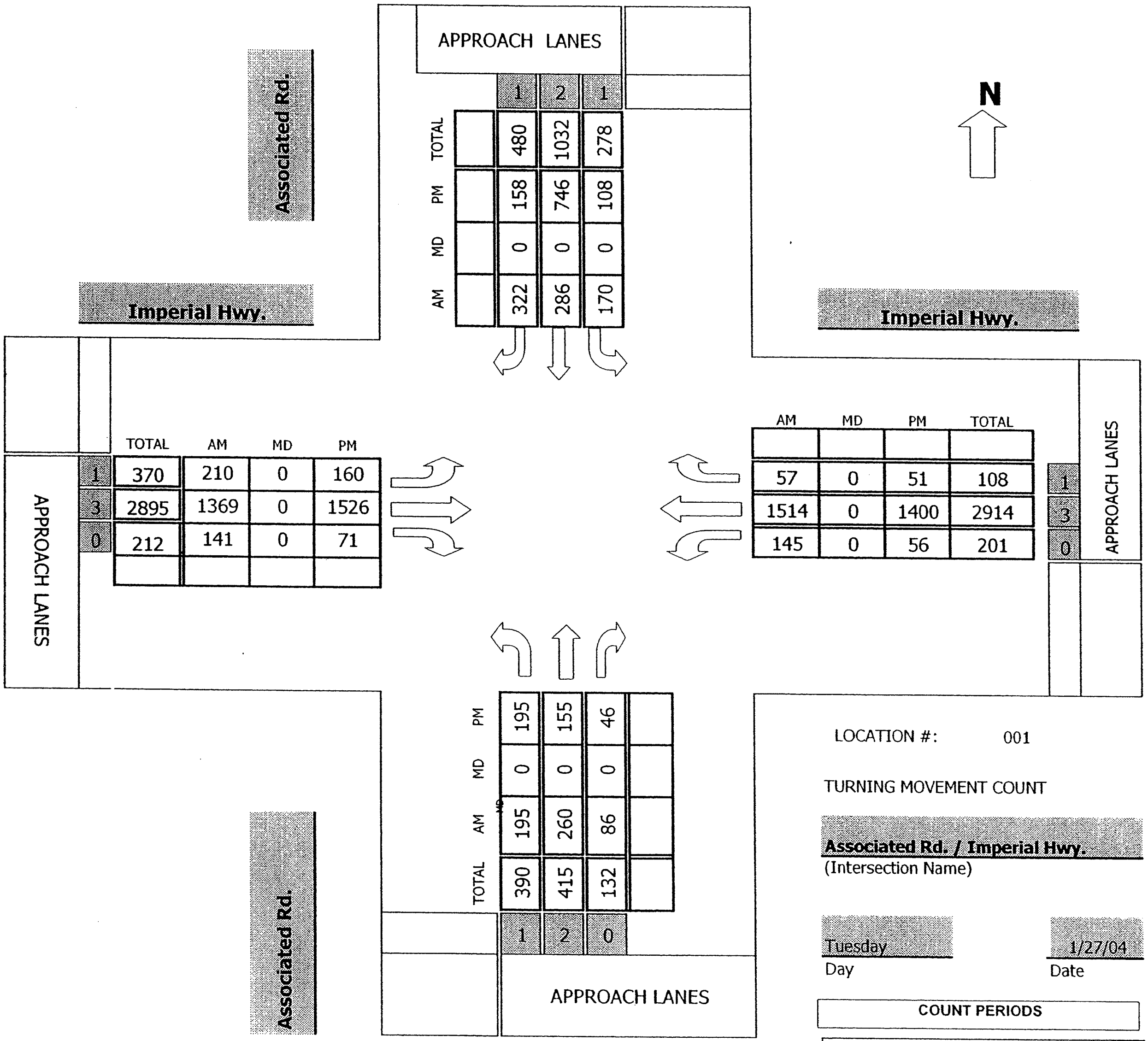
1/27/04
Date

COUNT PERIODS			
am	7:00 AM	-	9:00 AM
noon	4:00 PM	-	6:00 PM
pm	4:00 PM	-	6:00 PM

AM PEAK HOUR	745 AM
NOON PEAK HOUR	1100 AM
PM PEAK HOUR	400 PM

TMC SUMMARY OF Associated Rd. / Imperial Hwy.

Project #: 04-1088-002



APPROACH LANES	1	2	1
TOTAL	480	1032	278
PM	158	746	108
MD	0	0	0
AM	322	286	170

APPROACH LANES	TOTAL	AM	MD	PM
1	370	210	0	160
3	2895	1369	0	1526
0	212	141	0	71

AM	MD	PM	TOTAL	APPROACH LANES
57	0	51	108	1
1514	0	1400	2914	3
145	0	56	201	0

PM	195	155	46
MD	0	0	0
AM	195	260	86
TOTAL	390	415	132
APPROACH LANES	1	2	0

LOCATION #: 001

TURNING MOVEMENT COUNT

Associated Rd. / Imperial Hwy.
(Intersection Name)

Tuesday
Day

1/27/04
Date

COUNT PERIODS			
am	7:00 AM	-	9:00 AM
noon	4:00 PM	-	6:00 PM
pm	4:00 PM	-	6:00 PM

AM PEAK HOUR 745 AM

NOON PEAK HOUR 0 AM

PM PEAK HOUR 400 PM

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Associated Rd.
DATE: 1/27/2004
LOCATION: City of Brea

E-W STREET: Imperial Hwy.
DAY: TUESDAY
PROJECT# 04-1088-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	3	0	1	3	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	51	41	26	43	56	53	40	327	37	32	336	17	1059
7:15 AM	40	42	24	31	58	40	49	348	39	27	404	14	1116
7:30 AM	41	67	11	33	56	84	39	271	28	31	360	9	1030
7:45 AM	49	60	18	47	78	87	51	370	41	41	388	11	1241
8:00 AM	49	67	18	52	74	91	58	335	31	31	404	14	1224
8:15 AM	45	67	28	32	60	59	59	344	29	40	404	22	1189
8:30 AM	52	66	22	39	74	85	42	320	40	33	318	10	1101
8:45 AM	40	68	9	51	41	50	44	392	44	43	364	9	1155
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	367	478	156	328	497	549	382	2707	289	278	2978	106	9115

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES =	195	260	86	170	286	322	210	1369	141	145	1514	57	4755
PEAK HR. FACTOR:		0.966			0.896			0.931			0.921		0.958

CONTROL: Signalized;

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Associated Rd. DATE: 2/3/2004 LOCATION: City of Brea

E-W STREET: Imperial Hwy. DAY: TUESDAY PROJECT# 04-1088-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	3	0	1	3	0	
10:00 AM	32	61	22	15	56	34	17	193	13	11	246	13	713
10:15 AM	40	17	28	23	29	33	32	270	11	14	260	14	771
10:30 AM	30	24	17	21	18	25	23	249	10	17	259	25	718
10:45 AM	37	19	20	23	28	32	26	277	18	17	306	11	814
11:00 AM	32	30	24	22	42	21	26	238	12	19	288	12	766
11:15 AM	26	26	17	36	32	32	29	258	15	35	313	15	834
11:30 AM	63	36	19	52	68	41	47	261	22	25	294	16	944
11:45 AM	43	28	20	49	47	37	33	298	21	25	338	20	959
12:00 PM													
12:15 PM													
12:30 PM													
12:45 PM													
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	303	241	167	241	320	255	233	2044	122	163	2304	126	6519

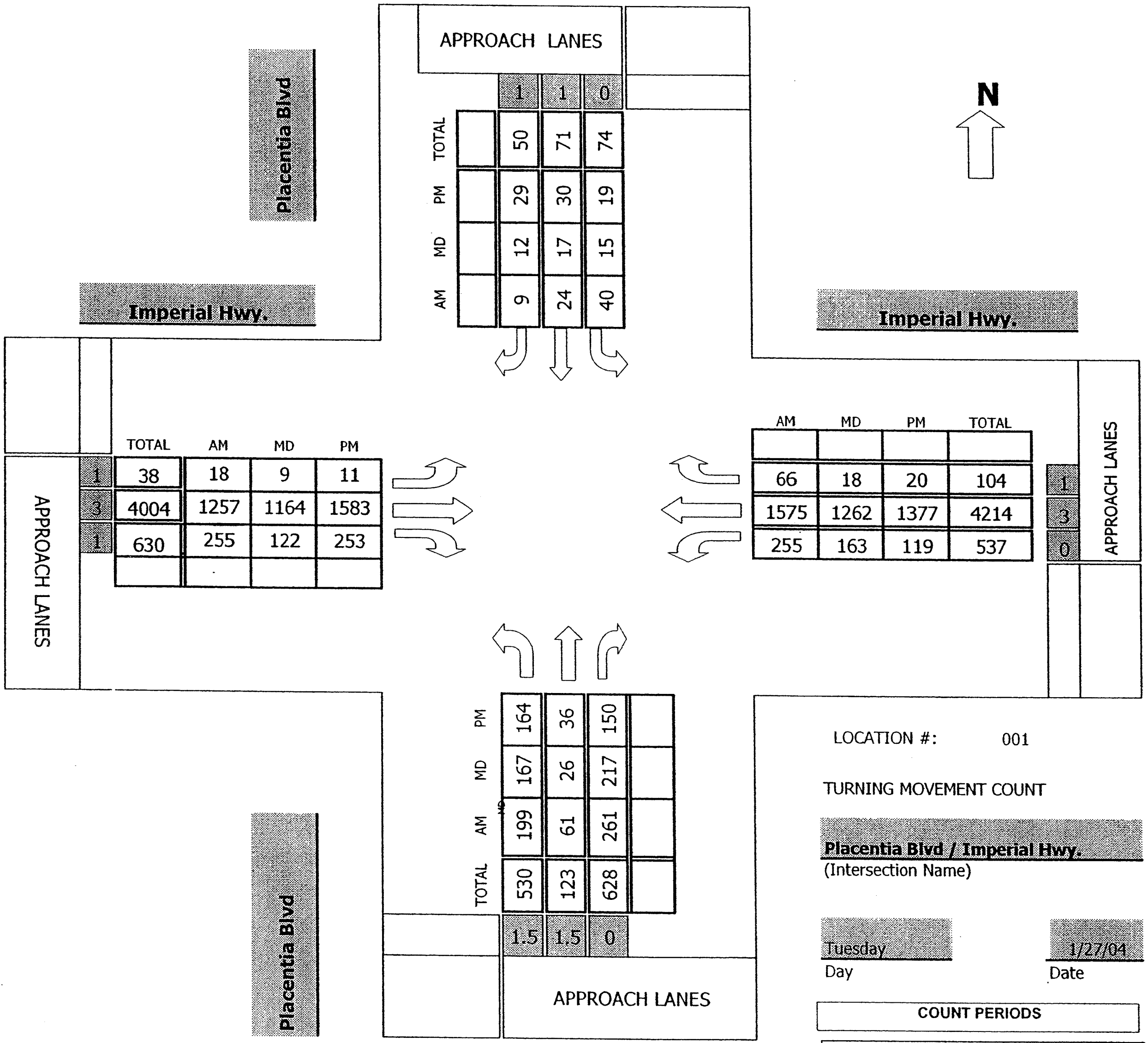
NOON Peak Hr Begins at: 1100 AM

PEAK VOLUMES =	164	120	80	159	189	131	135	1055	70	104	1233	63	3503
PEAK HR. FACTOR:		0.771			0.744			0.895			0.914		0.913

CONTROL:

TMC SUMMARY OF Placentia Blvd / Imperial Hwy.

Project #: 04-1088-001



APPROACH LANES	1	1	0
TOTAL	50	71	74
PM	29	30	19
MD	12	17	15
AM	9	24	40

APPROACH LANES	TOTAL	AM	MD	PM
1	38	18	9	11
3	4004	1257	1164	1583
1	630	255	122	253

AM	MD	PM	TOTAL	APPROACH LANES
66	18	20	104	1
1575	1262	1377	4214	3
255	163	119	537	0

PM	164	36	150
MD	167	26	217
AM	199	61	261
TOTAL	530	123	628
APPROACH LANES	1.5	1.5	0

LOCATION #: 001

TURNING MOVEMENT COUNT

Placentia Blvd / Imperial Hwy.
(Intersection Name)

Day: Tuesday
Date: 1/27/04

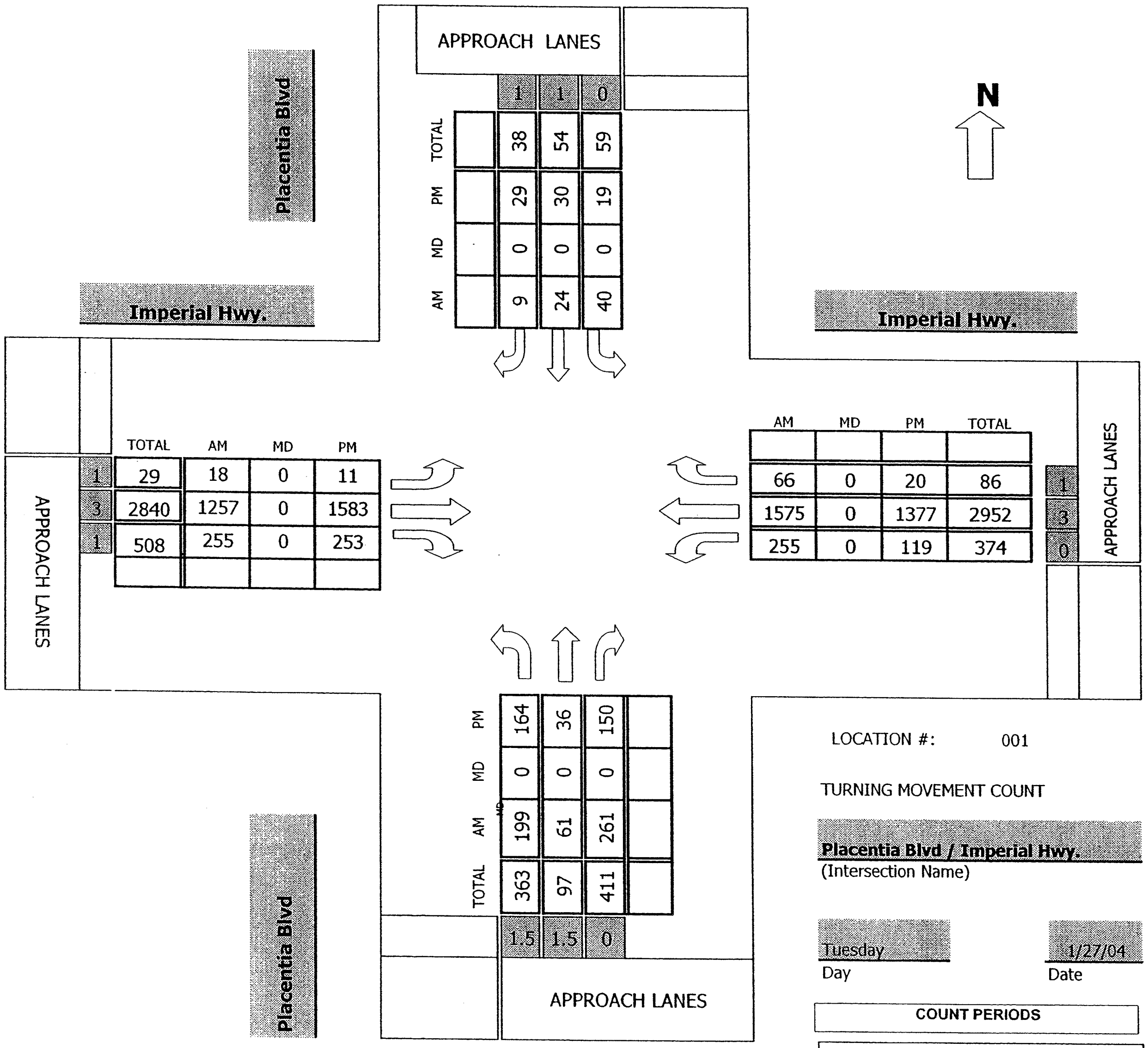
COUNT PERIODS

am	7:00 AM	-	9:00 AM
noon	4:00 PM	-	6:00 PM
pm	4:00 PM	-	6:00 PM

AM PEAK HOUR	745 AM
NOON PEAK HOUR	1100 AM
PM PEAK HOUR	430 PM

TMC SUMMARY OF Placentia Blvd / Imperial Hwy.

Project #: 04-1088-001



LOCATION #: 001

TURNING MOVEMENT COUNT

Placentia Blvd / Imperial Hwy.
(Intersection Name)

Tuesday
Day

1/27/04
Date

COUNT PERIODS

am	7:00 AM	-	9:00 AM
noon	4:00 PM	-	6:00 PM
pm	4:00 PM	-	6:00 PM

AM PEAK HOUR	745 AM
NOON PEAK HOUR	0 AM
PM PEAK HOUR	430 PM

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Placentia Blvd | DATE: 1/27/2004 | LOCATION: City of Brea

E-W STREET: Imperial Hwy. | DAY: TUESDAY | PROJECT# 04-1088-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1.5	0	1	1	0	1	3	1	1	3	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	64	18	68	9	3	1	3	298	50	52	306	6	878
7:15 AM	55	14	54	9	3	1	2	283	30	58	344	12	865
7:30 AM	39	14	60	5	3	0	3	314	39	46	383	11	917
7:45 AM	37	14	69	10	7	6	5	280	45	85	411	11	980
8:00 AM	58	19	63	10	6	2	3	338	71	60	359	12	1001
8:15 AM	57	16	62	10	4	1	4	299	80	62	426	20	1041
8:30 AM	47	12	67	10	7	0	6	340	59	48	379	23	998
8:45 AM	43	10	61	6	3	1	4	319	69	58	368	10	952
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	400	117	504	69	36	12	30	2471	443	469	2976	105	7632

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES =	199	61	261	40	24	9	18	1257	255	255	1575	66	4020
PEAK HR. FACTOR:		0.930			0.793			0.928			0.933		0.965

CONTROL: Signalized;

Intersection Turning Movement

Prepared by: Southland Car Counters

N-S STREET: Placentia Blvd
DATE: 2/3/2004
LOCATION: City of Brea

E-W STREET: Imperial Hwy.
DAY: TUESDAY
PROJECT# 04-1088-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1.5	0	1	1	0	1	3	1	1	3	0	
10:00 AM	28	5	28	3	1	3	4	227	32	25	261	4	621
10:15 AM	30	3	37	3	5	2	3	273	24	25	263	5	673
10:30 AM	27	2	37	4	1	6	5	246	20	25	230	1	604
10:45 AM	34	9	39	5	6	3	1	271	25	35	280	5	713
11:00 AM	37	5	41	3	2	1	2	299	23	27	285	4	729
11:15 AM	29	3	44	5	4	4	2	238	36	58	319	4	746
11:30 AM	57	10	59	4	4	4	1	321	31	31	324	3	849
11:45 AM	44	8	73	3	7	3	4	306	32	47	334	7	868
12:00 PM													
12:15 PM													
12:30 PM													
12:45 PM													
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES =	286	45	358	30	30	26	22	2181	223	273	2296	33	5803

NOON Peak Hr Begins at: 1100 AM

PEAK VOLUMES =	167	26	217	15	17	12	9	1164	122	163	1262	18	3192
PEAK HR. FACTOR:		0.813			0.846			0.917			0.930		0.919

CONTROL:

APPENDIX F-3

ICU/LOS CALCULATION WORKSHEETS
EXISTING A.M. PEAK HOUR

```
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
          ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #1 Lambert Rd-Carb.Cyn Rd/Valencia  [Ex.04 AM St. Pk.Hr 7:30-8:30]
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap. (X):         0.635
Loss Time (sec):       5 (Y+R =  0 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        31               Level Of Service:                  B
*******************************************************************************
Street Name:            Valencia Avenue          Lambert Road/Carbon Canyon Road
Approach:       North Bound      South Bound      East Bound      West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Ignore           Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        1  0  2  0  1   1  0  1  1  0   1  0  2  1  0   2  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> Count Date: 6 Jan 2004 <<
Base Vol:       87  104   119     3  155   203    59  167   355   698  735     5
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    87  104   119     3  155   203    59  167   355   698  735     5
User Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     87  104     0     3  155   203    59  167   355   698  735     5
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    87  104     0     3  155   203    59  167   355   698  735     5
PCE Adj:      1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     87  104     0     3  155   203    59  167   355   698  735     5
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:   1.06 1.06  1.06  1.06 1.06  1.06  1.06 1.06  1.06  1.06 1.06  1.06
Lanes:        1.00 2.00  1.00  1.00 1.00  1.00  1.00 2.00  1.00  2.00 2.98  0.02
Final Sat.:   1700 3400  1700  1700 1700  1700  1700 3400  1700  3400 5066    34
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.05 0.03  0.00  0.00 0.09  0.12  0.03 0.05  0.21  0.21 0.15  0.15
Crit Moves:   ****                        ****              ****  ****
*******************************************************************************
```

```
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
          ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #2 Valencia Ave/Rose St-BirchStreet [EX>AM St. Pk.Hr. 7:30-8:30AM]
*******************************************************************************
Cycle (sec):         100                 Critical Vol./Cap. (X):        0.735
Loss Time (sec):       5 (Y+R =  0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41                 Level Of Service:                  C
*******************************************************************************
Street Name:             Valencia Avenue               Rose St/BirchStreet
Approach:          North Bound      South Bound      East Bound       West Bound
Movement:        L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:          Protected        Protected        Protected        Protected
Rights:             Include          Include          Include          Include
Min. Green:      0     0     0    0     0     0    0     0     0    0     0     0
Lanes:          1  0  1  1  0    1  0  1  1  0    1  0  1  0  1    1  0  1  0  1
------------|----------------||----------------||----------------||----------------|
Volume Module: >> Count Date:  6 Jan 2004 <<
Base Vol:       31   163     6   553   525   154    39   360   116     7   488   135
Growth Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:    31   163     6   553   525   154    39   360   116     7   488   135
User Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:     31   163     6   553   525   154    39   360   116     7   488   135
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:    31   163     6   553   525   154    39   360   116     7   488   135
PCE Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:     31   163     6   553   525   154    39   360   116     7   488   135
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:   1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.22  1.06  1.06  1.22
Lanes:        1.00  1.93  0.07  1.00  1.55  0.45  1.00  1.00  1.00  1.00  1.00  1.00
Final Sat.:   1700  3279   121  1700  2629   771  1700  1700  1955  1700  1700  1955
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.02  0.05  0.05  0.33  0.20  0.20  0.02  0.21  0.06  0.00  0.29  0.07
Crit Moves:         ****        ****              ****                    ****
*******************************************************************************
```

```
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                   Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #3 Valencia Avenue/Imperial Hwy. [Existing St. peak Hr. 7:30-8:30AM
******************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):        0.592
Loss Time (sec):       5 (Y+R =  0 sec) Average Delay (sec/veh):     xxxxxx
Optimal Cycle:        28              Level Of Service:                  A
******************************************************************************
Street Name:             Valencia Avenue                  Imperial Highway
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Protected         Protected        Protected
Rights:           Include           Include           Include          Include
Min. Green:    0     0     0    0    0     0    0    0     0    0    0     0
Lanes:        1  0  2  0  1   1  0  2  0  1   2  0  3  0  1   1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 6 Jan 2004 <<
Base Vol:      88   171    92   126  179   182   238  856    55   117 1483   183
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   88   171    92   126  179   182   238  856    55   117 1483   183
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    88   171    92   126  179   182   238  856    55   117 1483   183
Reduct Vol:     0     0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   88   171    92   126  179   182   238  856    55   117 1483   183
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    88   171    92   126  179   182   238  856    55   117 1483   183
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.06 1.06  1.22  1.06 1.06  1.22  1.06 1.06  1.22  1.06 1.06  1.06
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  2.00 3.00  1.00  1.00 2.67  0.33
Final Sat.:  1700 3400  1955  1700 3400  1955  3400 5100  1955  1700 4540   560
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.05  0.05  0.07 0.05  0.09  0.07 0.17  0.03  0.07 0.33  0.33
Crit Moves:  ****                        ****  ****                   ****
******************************************************************************
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------------------------------------------------------------------------------
------------------------------------------------------------------------------

                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #7 Imperial hwy & Kraemer Blvd [Exist. 2004AM Street PK Hr]
******************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        0.668
Loss Time (sec):        5 (Y+R =  4 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:         34               Level Of Service:                  B
******************************************************************************
Street Name:              Kraemer Blvd.                    Imperial Hwy.
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0     0     0   0     0     0   0     0     0   0     0     0
Lanes:         2  0  1  1  0   2  0  2  0  1   2  0  2  1  0   2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 27 Jan 2004 <<
Base Vol:      353   554    73   248   517   183   156  1175   222   208  1382   232
Growth Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   353   554    73   248   517   183   156  1175   222   208  1382   232
User Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    353   554    73   248   517   183   156  1175   222   208  1382   232
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   353   554    73   248   517   183   156  1175   222   208  1382   232
PCE Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    353   554    73   248   517   183   156  1175   222   208  1382   232
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:   1.06  1.06  1.06  1.06  1.06  1.22  1.06  1.06  1.06  1.06  1.06  1.06
Lanes:        2.00  1.77  0.23  2.00  2.00  1.00  2.00  2.52  0.48  2.00  2.57  0.43
Final Sat.:   3400  3004   396  3400  3400  1955  3400  4290   810  3400  4367   733
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.10  0.18  0.18  0.07  0.15  0.09  0.05  0.27  0.27  0.06  0.32  0.32
Crit Moves:   ****                    ****        ****                    ****
******************************************************************************
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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #7 Imperial Hwy & Placentia Ave [Exist 2004 AM Street Pk Hr]
********************************************************************************
Cycle (sec):          100                Critical Vol./Cap. (X):         0.728
Loss Time (sec):        5 (Y+R =  4 sec) Average Delay (sec/veh):       xxxxxx
Optimal Cycle:         40                Level Of Service:                   C
********************************************************************************
Street Name:                Placentia Ave                     Imperial Hwy
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         1  1  0  0  1    1  0  0  1  0    1  0  2  0  1    1  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> Count Date: 27 Jan 2004 <<
Base Vol:      199    61   261    40    24     9    18  1257   255   255  1575    66
Growth Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   199    61   261    40    24     9    18  1257   255   255  1575    66
User Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    199    61   261    40    24     9    18  1257   255   255  1575    66
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   199    61   261    40    24     9    18  1257   255   255  1575    66
PCE Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    199    61   261    40    24     9    18  1257   255   255  1575    66
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:   1.06  1.06  1.22  1.06  1.06  1.06  1.06  1.06  1.22  1.06  1.06  1.06
Lanes:        1.53  0.47  1.00  1.00  0.73  0.27  1.00  2.00  1.00  1.00  2.88  0.12
Final Sat.:   2596   796  1954  1696  1233   463  1696  3392  1954  1696  4883   205
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.08  0.08  0.13  0.02  0.02  0.02  0.01  0.37  0.13  0.15  0.32  0.32
Crit Moves:               ****  ****                    ****        ****
********************************************************************************
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                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #6 Imperial hwy & Associated Road [Existing 2004 AM Street  PK HR]
******************************************************************************
Cycle (sec):        100              Critical Vol./Cap. (X):         0.761
Loss Time (sec):      5 (Y+R =  4 sec) Average Delay (sec/veh):       xxxxxx
Optimal Cycle:       45              Level Of Service:                   C
******************************************************************************
Street Name:             Associated Rd.                  Imperial Hwy.
Approach:      North Bound      South Bound      East Bound      West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  1  1  0    1  0  2  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 27 Jan 2004 <<
Base Vol:      195  260   86   170  286  322   210 1369  141   145 1514   57
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   195  260   86   170  286  322   210 1369  141   145 1514   57
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:    195  260   86   170  286  322   210 1369  141   145 1514   57
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   195  260   86   170  286  322   210 1369  141   145 1514   57
PCE Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:    195  260   86   170  286  322   210 1369  141   145 1514   57
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1600 1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600
Adjustment:   1.06 1.06 1.06  1.06 1.06 1.22  1.06 1.06 1.22  1.06 1.06 1.06
Lanes:        1.00 1.50 0.50  1.00 2.00 1.00  1.00 2.72 0.28  1.00 2.89 0.11
Final Sat.:   1700 2555  845  1700 3400 1955  1700 4624  548  1700 4915  185
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.11 0.10 0.10  0.10 0.08 0.16  0.12 0.30 0.26  0.09 0.31 0.31
Crit Moves:   ****                       ****  ****                  ****
******************************************************************************
```

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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
              ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Imperial Hwy @ SR 57 SB Off-Ramp  [Existing04 Street Pk.Hr.7:30-
********************************************************************************
Cycle (sec):           100               Critical Vol./Cap. (X):        0.544
Loss Time (sec):         5 (Y+R =  0 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:          26               Level Of Service:                  A
********************************************************************************
Street Name:                  SR 57 Off-Ramp                 Imperial Highway
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Protected         Protected        Protected        Protected
Rights:           Include           Include          Include          Include
Min. Green:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         0  0  0  0  0    1  0  1! 0  1    0  0  3  0  0    0  0  3  0  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> Count Date: 7 Jan 2004 <<
Base Vol:       0     0     0  508     0   429     0 1188     0     0 1583     0
Growth Adj:  1.00  1.00  1.00 1.00  1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0     0     0  508     0   429     0 1188     0     0 1583     0
User Adj:    1.00  1.00  1.00 1.00  1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00  1.00  1.00 1.00  1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0     0     0  508     0   429     0 1188     0     0 1583     0
Reduct Vol:     0     0     0    0     0     0     0    0     0     0    0     0
Reduced Vol:    0     0     0  508     0   429     0 1188     0     0 1583     0
PCE Adj:     1.00  1.00  1.00 1.00  1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00  1.00  1.00 1.00  1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     0     0     0  508     0   429     0 1188     0     0 1583     0
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1600  1600  1600 1600  1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.06  1.06  1.06 1.06  1.06  1.06  1.06 1.06  1.06  1.06 1.06  1.06
Lanes:       0.00  0.00  0.00 1.63  xxxx  1.37  0.00 3.00  0.00  0.00 3.00  0.00
Final Sat.:     0     0     0 2765     0  2335     0 5100     0     0 5100     0
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.00  0.00  0.00 0.18  0.00  0.18  0.00 0.23  0.00  0.00 0.31  0.00
Crit Moves:                   ****              ****                    ****
********************************************************************************
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                      Level Of Service Computation Report
         ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #5 Imperial Hwy @NB57 Off-Ramp [Ex. 04 Exist AM PK HR]
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap. (X):        0.736
Loss Time (sec):       5 (Y+R =  0 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41                Level Of Service:                  C
********************************************************************************
Street Name:            SR57 NB Off-Ramp                 Imperial Highway
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected        Protected        Protected        Protected
Rights:          Include           Ovl             Ignore           Include
Min. Green:   0     0     0   0     0     0   0     0     0   0     0     0
Lanes:        2  0  0  1  1   0  0  0  0  2   1  0  3  0  1   0  0  3  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date:  7 Jan 2004 <<
Base Vol:     812  134   867    0    0    90  135 1173   431    0 1144   531
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  812  134   867    0    0    90  135 1173   431    0 1144   531
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  0.00 1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  0.00 1.00 1.00  1.00
PHF Volume:   812  134   867    0    0    90  135 1173     0    0 1144   531
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  812  134   867    0    0    90  135 1173     0    0 1144   531
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  0.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  0.00 1.00 1.00  1.00
Final Vol.:   812  134   867    0    0    90  135 1173     0    0 1144   531
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.06 1.06  1.22 1.06 1.06  1.06 1.06 1.06  1.06 1.06 1.06  1.06
Lanes:       2.00 0.27  1.73 0.00 0.00  2.00 1.00 3.00  1.00 0.00 3.00  1.00
Final Sat.:  3400  455  3387    0    0  3400 1700 5100  1700    0 5100  1700
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.24 0.29  0.26 0.00 0.00  0.03 0.08 0.23  0.00 0.00 0.22  0.31
Crit Moves:       ****       ****            ****                         ****
********************************************************************************
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APPENDIX F-4

ICU/LOS CALCULATION WORKSHEETS
EXISTING MID-MORNING PEAK HOUR

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                   Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #1 Lambert Rd.-Carb.Cyn Rd/Valencia Ave. [Landfill Pk.Hr 11AM-Noon]
*******************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):        0.257
Loss Time (sec):       5 (Y+R =  0 sec) Average Delay (sec/veh):    xxxxxx
Optimal Cycle:        16              Level Of Service:                  A
*******************************************************************************
Street Name:             Valencia Avenue          Lambert Road/Carbon Canyon Road
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:       L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Ignore          Include          Include          Include
Min. Green:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:          1  0  2  0  1    1  0  1  1  0    1  0  2  1  0    2  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> Count Date: 6 Jan 2004 <<
Base Vol:      80   163   127      1   143    79     64   147    89    116   285     6
Growth Adj:  1.00  1.00  1.00   1.00  1.00  1.00   1.00  1.00  1.00   1.00  1.00  1.00
Initial Bse:   80   163   127      1   143    79     64   147    89    116   285     6
User Adj:    1.00  1.00  0.00   1.00  1.00  1.00   1.00  1.00  1.00   1.00  1.00  1.00
PHF Adj:     1.00  1.00  0.00   1.00  1.00  1.00   1.00  1.00  1.00   1.00  1.00  1.00
PHF Volume:    80   163     0      1   143    79     64   147    89    116   285     6
Reduct Vol:     0     0     0      0     0     0      0     0     0      0     0     0
Reduced Vol:   80   163     0      1   143    79     64   147    89    116   285     6
PCE Adj:     1.00  1.00  0.00   1.00  1.00  1.00   1.00  1.00  1.00   1.00  1.00  1.00
MLF Adj:     1.00  1.00  0.00   1.00  1.00  1.00   1.00  1.00  1.00   1.00  1.00  1.00
Final Vol.:    80   163     0      1   143    79     64   147    89    116   285     6
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1600  1600  1600   1600  1600  1600   1600  1600  1600   1600  1600  1600
Adjustment:  1.06  1.06  1.06   1.06  1.06  1.06   1.06  1.06  1.06   1.06  1.06  1.06
Lanes:       1.00  2.00  1.00   1.00  1.29  0.71   1.00  2.00  1.00   2.00  2.94  0.06
Final Sat.:  1700  3400  1700   1700  2190  1210   1700  3400  1700   3400  4995   105
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.05  0.05  0.00   0.00  0.07  0.07   0.04  0.04  0.05   0.03  0.06  0.06
Crit Moves:  ****                     ****         ****                     ****
*******************************************************************************
```

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--------------------------------------------------------------------------------
                  Level Of Service Computation Report
      ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #2 Valencia Ave/Rose St-BirchStreet [ Landfill Pk.Hr. 11AM -Noon]
********************************************************************************
Cycle (sec):        100              Critical Vol./Cap. (X):        0.337
Loss Time (sec):      5 (Y+R =  0 sec) Average Delay (sec/veh):     xxxxxx
Optimal Cycle:       18              Level Of Service:                  A
********************************************************************************
Street Name:         Valencia Avenue              Rose St/BirchStreet
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        1  0  1  1  0   1  0  1  1  0   1  0  1  0  1   1  0  1  0  1
------------|----------------||----------------||----------------||----------------|
Volume Module: >> Count Date: 6 Jan 2004 <<
Base Vol:      41  161    6  145  173   32   52  206   35    6  207  137
Growth Adj:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:   41  161    6  145  173   32   52  206   35    6  207  137
User Adj:    1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Volume:    41  161    6  145  173   32   52  206   35    6  207  137
Reduct Vol:     0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:   41  161    6  145  173   32   52  206   35    6  207  137
PCE Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.:    41  161    6  145  173   32   52  206   35    6  207  137
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600
Adjustment:  1.06 1.06 1.06 1.06 1.06 1.06 1.06 1.06 1.22 1.06 1.06 1.22
Lanes:       1.00 1.93 0.07 1.00 1.69 0.31 1.00 1.00 1.00 1.00 1.00 1.00
Final Sat.:  1700 3278  122 1700 2869  531 1700 1700 1955 1700 1700 1955
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.05 0.05 0.09 0.06 0.06 0.03 0.12 0.02 0.00 0.12 0.07
Crit Moves:       ****      ****           ****                     ****
********************************************************************************
```

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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------

                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #3 Valencia Avenue/Imperial Hwy. [ Landfill Pk.Hr. 11AM-Noon]
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap. (X):        0.427
Loss Time (sec):       5 (Y+R =  0 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        21                Level Of Service:                  A
********************************************************************************
Street Name:           Valencia Avenue                  Imperial Highway
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:       L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Protected        Protected        Protected        Protected
Rights:            Include          Include          Include          Include
Min. Green:      0    0     0    0    0     0    0    0     0    0    0     0
Lanes:          1  0  2  0  1   1  0  2  0  1   2  0  3  0  1   1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 6 Jan 2004 <<
Base Vol:       82   61    65    80   56   140   148  871    87    87 1013    74
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    82   61    65    80   56   140   148  871    87    87 1013    74
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     82   61    65    80   56   140   148  871    87    87 1013    74
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    82   61    65    80   56   140   148  871    87    87 1013    74
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     82   61    65    80   56   140   148  871    87    87 1013    74
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:   1.06 1.06  1.22  1.06 1.06  1.22  1.06 1.06  1.22  1.06 1.06  1.06
Lanes:        1.00 2.00  1.00  1.00 2.00  1.00  2.00 3.00  1.00  1.00 2.80  0.20
Final Sat.:   1700 3400  1955  1700 3400  1955  3400 5100  1955  1700 4753   347
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.05 0.02  0.03  0.05 0.02  0.07  0.04 0.17  0.04  0.05 0.21  0.21
Crit Moves:   ****                        ****  ****                   ****
********************************************************************************
```

```
---------------------------------------------------------------------------------
---------------------------------------------------------------------------------

                      Level Of Service Computation Report
          ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*********************************************************************************
Intersection #7 Imperial hwy & Kraemer Blvd [Exist. 2004AM Mid Morn Pk]
*********************************************************************************
Cycle (sec):         100               Critical Vol./Cap. (X):         0.512
Loss Time (sec):       5 (Y+R =  4 sec) Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        24               Level Of Service:                   A
*********************************************************************************
Street Name:                Kraemer Blvd.                     Imperial Hwy.
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:       L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:         Protected        Protected        Protected        Protected
Rights:            Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:          2  0  1  1  0    2  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> Count Date: 3 Feb 2004 <<
Base Vol:       275  280    82   185  389   142   127  951   220   113 1073    99
Growth Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    275  280    82   185  389   142   127  951   220   113 1073    99
User Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:       1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     275  280    82   185  389   142   127  951   220   113 1073    99
Reduct Vol:       0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    275  280    82   185  389   142   127  951   220   113 1073    99
PCE Adj:       1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:       1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     275  280    82   185  389   142   127  951   220   113 1073    99
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:      1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:    1.06 1.06  1.06  1.06 1.06  1.22  1.06 1.06  1.06  1.06 1.06  1.06
Lanes:         2.00 1.55  0.45  2.00 2.00  1.00  2.00 2.44  0.56  2.00 2.75  0.25
Final Sat.:    3400 2630   770  3400 3400  1955  3400 4142   958  3400 4669   431
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:       0.08 0.11  0.11  0.05 0.11  0.07  0.04 0.23  0.23  0.03 0.23  0.23
Crit Moves:    ****                  ****        ****                   ****
*********************************************************************************
```

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------

                   Level Of Service Computation Report
         ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #7 Imperial Hwy & Placentia Ave [Exist 2004 Mid AM PK]
********************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):         0.604
Loss Time (sec):        5 (Y+R =  4 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:         29               Level Of Service:                   B
********************************************************************************
Street Name:                  Placentia Ave                  Imperial Hwy
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Protected        Protected        Protected        Protected
Rights:            Include          Include          Include          Include
Min. Green:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         1  0  1  0  1   1  0  0  1  0   1  0  2  0  1   1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 3 Feb 2004 <<
Base Vol:     167   26   217    15   17    12     9 1164   122   163 1262    18
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  167   26   217    15   17    12     9 1164   122   163 1262    18
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   167   26   217    15   17    12     9 1164   122   163 1262    18
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  167   26   217    15   17    12     9 1164   122   163 1262    18
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:   167   26   217    15   17    12     9 1164   122   163 1262    18
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.06 1.06  1.22  1.06 1.06  1.06  1.06 1.06  1.22  1.06 1.06  1.06
Lanes:       1.00 1.00  1.00  1.00 0.59  0.41  1.00 2.00  1.00  1.00 2.96  0.04
Final Sat.:  1700 1700  1955  1700  997   703  1700 3400  1955  1700 5028    72
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.02  0.11  0.01 0.02  0.02  0.01 0.34  0.06  0.10 0.25  0.25
Crit Moves:  ****                    ****            ****        ****
********************************************************************************
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
          ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #7 Imperial hwy & Associated  [Exist. 2004 Mid-Morn Pk.Hr.]
*******************************************************************************
Cycle (sec):          100                Critical Vol./Cap. (X):        0.547
Loss Time (sec):        5 (Y+R =  4 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:         26                Level Of Service:                  A
*******************************************************************************
Street Name:              Associated Rd.                    Imperial Hwy.
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:         Protected        Protected        Protected        Protected
Rights:            Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         1  0  1  1  0    1  0  2  0  1    1  0  2  1  0    1  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> Count Date:  3 Feb 2004 <<
Base Vol:      164   120    80   159   189   131   135  1055    70   104  1233    63
Growth Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   164   120    80   159   189   131   135  1055    70   104  1233    63
User Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    164   120    80   159   189   131   135  1055    70   104  1233    63
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   164   120    80   159   189   131   135  1055    70   104  1233    63
PCE Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    164   120    80   159   189   131   135  1055    70   104  1233    63
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:   1.06  1.06  1.06  1.06  1.06  1.22  1.06  1.06  1.22  1.06  1.06  1.06
Lanes:        1.00  1.20  0.80  1.00  2.00  1.00  1.00  2.81  0.19  1.00  2.85  0.15
Final Sat.:   1700  2040  1360  1700  3400  1955  1700  4783   365  1700  4852   248
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.10  0.06  0.06  0.09  0.06  0.07  0.08  0.22  0.19  0.06  0.25  0.25
Crit Moves:   ****                          ****  ****                    ****
*******************************************************************************
```

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Imperial Hwy @ SR 57 SB Off-Ramp  [Mid-Morning Landfill Pk.Hr. 1
********************************************************************************
Cycle (sec):        100              Critical Vol./Cap. (X):        0.510
Loss Time (sec):      5 (Y+R =  0 sec) Average Delay (sec/veh):     xxxxxx
Optimal Cycle:       24              Level Of Service:                  A
********************************************************************************
Street Name:              SR 57 Off-Ramp                   Imperial Highway
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        0  0  0  0  0   1  0  1! 0  1   0  0  3  0  0   0  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 7 Jan 2004 <<
Base Vol:      0    0    0   266    0  490     0 1120    0     0 1590    0
Growth Adj:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   0    0    0   266    0  490     0 1120    0     0 1590    0
User Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:    0    0    0   266    0  490     0 1120    0     0 1590    0
Reduct Vol:    0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   0    0    0   266    0  490     0 1120    0     0 1590    0
PCE Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:    0    0    0   266    0  490     0 1120    0     0 1590    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600
Adjustment:  1.06 1.06 1.06  1.06 1.06 1.06  1.06 1.06 1.06  1.06 1.06 1.06
Lanes:       0.00 0.00 0.00  1.06 0.00 1.94  0.00 3.00 0.00  0.00 3.00 0.00
Final Sat.:    0    0    0  1794    0 3306     0 5100    0     0 5100    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00 0.00  0.15 0.00 0.15  0.00 0.22 0.00  0.00 0.31 0.00
Crit Moves:                  ****            ****                  ****
********************************************************************************
```

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--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
         ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #5 Imperial Hwy @NB57 Off-Ramp [Ex. 04 Mid-Morn AM PK HR]
********************************************************************************
Cycle (sec):          100             Critical Vol./Cap. (X):         0.559
Loss Time (sec):        5 (Y+R =  0 sec) Average Delay (sec/veh):     xxxxxx
Optimal Cycle:         26             Level Of Service:                   A
********************************************************************************
Street Name:              SR57 NB Off-Ramp                 Imperial Highway
Approach:        North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Split Phase      Split Phase       Protected        Protected
Rights:           Include            Ovl             Ignore           Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         2  0  1! 0  1    0  0  0  0  2    1  0  3  0  1    0  0  3  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> Count Date: 7 Jan 2004 <<
Base Vol:      881   63   485     0     0   194   125   978   290     0  1143   383
Growth Adj:   1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   881   63   485     0     0   194   125   978   290     0  1143   383
User Adj:     1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
PHF Volume:    881   63   485     0     0   194   125   978     0     0  1143   383
Reduct Vol:      0    0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   881   63   485     0     0   194   125   978     0     0  1143   383
PCE Adj:      1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
Final Vol.:    881   63   485     0     0   194   125   978     0     0  1143   383
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1600 1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:   1.06 1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06
Lanes:        2.46 0.18  1.36  0.00  0.00  2.00  1.00  3.00  1.00  0.00  3.00  1.00
Final Sat.:   4192  300  2308     0     0  3400  1700  5100  1700     0  5100  1700
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.21 0.21  0.21  0.00  0.00  0.06  0.07  0.19  0.00  0.00  0.22  0.23
Crit Moves:        ****              ****        ****                          ****
********************************************************************************
```

APPENDIX F-5

OLINDA ALPHA LANDFILL

FY03 TRAFFIC COUNT INBOUND, RANKED BY DAY COUNT, ALL GATES (SCALES) TOTAL

✓

Olinda Alpha Landfill - FY03 Traffic Count
Inbound, Ranked by Day Count, All Gates Total

Day	Date	Total
Wed	8/28/2002	1,248
Tue	8/27/2002	1,223
Tue	8/13/2002	1,196
Fri	8/23/2002	1,195
Wed	7/31/2002	1,181
Wed	8/14/2002	1,149
Thu	8/29/2002	1,140
Fri	10/11/2002	1,137
Tue	7/30/2002	1,136
Thu	8/1/2002	1,135
Fri	7/26/2002	1,133
Fri	8/2/2002	1,122
Wed	10/30/2002	1,121
Mon	8/26/2002	1,119
Wed	7/24/2002	1,104
Tue	8/6/2002	1,094
Wed	8/21/2002	1,094
Thu	10/10/2002	1,094
Tue	10/29/2002	1,088
Wed	7/17/2002	1,082
Thu	7/25/2002	1,077
Wed	9/18/2002	1,075
Mon	7/29/2002	1,074
Thu	8/15/2002	1,065
Tue	8/20/2002	1,059
Tue	11/19/2002	1,057
Thu	5/8/2003	1,055
Tue	10/15/2002	1,054
Sat	1/11/2003	1,053
Thu	7/18/2002	1,042
Wed	10/23/2002	1,036
Wed	7/3/2002	1,033
Fri	7/19/2002	1,030
Thu	11/14/2002	1,030
Fri	5/9/2003	1,027
Tue	4/29/2003	1,025
Tue	7/16/2002	1,024
Thu	10/17/2002	1,024
Wed	6/18/2003	1,022
Thu	9/12/2002	1,021
Tue	7/23/2002	1,020
Fri	1/10/2003	1,019
Fri	8/16/2002	1,018
Fri	8/30/2002	1,016
Fri	1/17/2003	1,015
Thu	1/16/2003	1,013
Wed	11/20/2002	1,012
Fri	5/16/2003	1,010
Thu	9/19/2002	1,008
Mon	6/30/2003	1,006
Thu	8/22/2002	1,005
Fri	3/7/2003	1,004
Sat	1/18/2003	1,003

Mean	888
Median	903
Mode	922
Maximum	1,248
Minimum	364
Standard Deviation	149

85th percentile level

Olinda Alpha Landfill - FY03 Traffic Count
Inbound, Ranked by Day Count, All Gates Total

Day	Date	Total
Tue	5/6/2003	1,003
Sat	7/27/2002	1,002
Fri	5/30/2003	1,002
Wed	3/12/2003	997
Wed	7/10/2002	993
Tue	12/10/2002	993
Tue	6/17/2003	993
Wed	8/7/2002	992
Fri	10/4/2002	992
Thu	3/6/2003	992
Fri	9/20/2002	990
Thu	10/31/2002	989
Fri	7/5/2002	987
Tue	10/22/2002	987
Tue	9/17/2002	984
Mon	7/8/2002	982
Wed	3/26/2003	982
Tue	1/14/2003	981
Fri	8/9/2002	977
Wed	1/15/2003	977
Wed	2/19/2003	977
Fri	9/13/2002	975
Sat	10/12/2002	974
Wed	11/13/2002	974
Mon	10/28/2002	972
Wed	5/7/2003	972
Mon	8/5/2002	970
Fri	11/1/2002	970
Thu	11/7/2002	970
Thu	8/8/2002	968
Wed	9/4/2002	968
Sat	2/22/2003	968
Thu	6/19/2003	966
Tue	2/18/2003	965
Tue	5/27/2003	963
Wed	4/30/2003	962
Mon	2/24/2003	961
Fri	6/20/2003	959
Mon	7/22/2002	957
Fri	9/6/2002	957
Wed	5/14/2003	957
Tue	7/2/2002	954
Fri	3/21/2003	954
Sat	7/6/2002	953
Tue	7/9/2002	952
Sat	9/7/2002	952
Fri	11/22/2002	951
Wed	5/28/2003	951
Wed	9/11/2002	950
Tue	11/12/2002	948
Thu	9/5/2002	946
Thu	5/29/2003	944
Thu	3/27/2003	943

Olinda Alpha Landfill - FY03 Traffic Count
Inbound, Ranked by Day Count, All Gates Total

Day	Date	Total
Tue	9/3/2002	942
Tue	9/24/2002	942
Thu	4/3/2003	942
Mon	6/23/2003	942
Wed	10/16/2002	939
Mon	10/14/2002	938
Thu	10/24/2002	938
Tue	12/3/2002	938
Tue	5/20/2003	937
Fri	10/18/2002	936
Tue	2/4/2003	936
Thu	5/1/2003	935
Mon	6/16/2003	934
Mon	11/18/2002	933
Tue	6/10/2003	932
Mon	10/7/2002	931
Sat	3/22/2003	931
Fri	6/13/2003	931
Wed	10/9/2002	930
Mon	8/19/2002	929
Fri	4/4/2003	928
Wed	1/8/2003	927
Thu	1/23/2003	925
Thu	3/20/2003	925
Mon	8/12/2002	922
Mon	11/25/2002	922
Fri	12/27/2002	922
Tue	3/25/2003	922
Tue	4/22/2003	922
Mon	1/13/2003	920
Tue	10/8/2002	918
Fri	2/21/2003	918
Tue	5/13/2003	917
Tue	9/10/2002	916
Thu	1/9/2003	916
Fri	7/12/2002	913
Tue	1/21/2003	913
Fri	6/27/2003	913
Wed	10/2/2002	912
Thu	11/21/2002	912
Sat	12/28/2002	910
Tue	11/26/2002	909
Fri	5/2/2003	908
Mon	9/16/2002	907
Thu	5/15/2003	906
Wed	11/27/2002	905
Fri	5/23/2003	903
Mon	12/30/2002	902
Fri	9/27/2002	900
Mon	5/19/2003	899
Mon	9/9/2002	897
Thu	10/3/2002	897
Fri	11/15/2002	897

Olinda Alpha Landfill - FY03 Traffic Count
Inbound, Ranked by Day Count, All Gates Total

Day	Date	Total
Sat	1/4/2003	897
Thu	2/20/2003	897
Sat	6/21/2003	895
Fri	3/14/2003	892
Tue	11/5/2002	891
Wed	4/23/2003	891
Wed	2/5/2003	890
Mon	7/1/2002	889
Sat	4/5/2003	889
Mon	12/2/2002	886
Wed	12/4/2002	886
Fri	12/13/2002	885
Thu	4/24/2003	884
Sat	8/3/2002	883
Wed	6/25/2003	883
Fri	12/6/2002	879
Mon	6/2/2003	876
Mon	9/23/2002	875
Mon	5/12/2003	875
Fri	6/6/2003	875
Tue	4/8/2003	874
Wed	6/4/2003	874
Sat	6/28/2003	874
Tue	6/24/2003	873
Mon	10/21/2002	872
Fri	4/18/2003	872
Thu	12/19/2002	870
Fri	3/28/2003	870
Mon	9/30/2002	868
Wed	5/21/2003	868
Wed	11/6/2002	866
Wed	1/22/2003	866
Fri	1/3/2003	865
Tue	1/7/2003	865
Sat	11/16/2002	863
Wed	4/9/2003	863
Mon	11/4/2002	862
Sat	5/17/2003	861
Thu	3/13/2003	860
Wed	1/29/2003	859
Sat	6/7/2003	859
Wed	3/19/2003	858
Thu	6/26/2003	858
Wed	12/11/2002	856
Mon	1/20/2003	856
Fri	2/7/2003	856
Thu	6/5/2003	856
Fri	10/25/2002	855
Thu	2/6/2003	855
Sat	5/31/2003	855
Sat	5/24/2003	854
Sat	3/8/2003	851
Mon	3/10/2003	850

average

Olinda Alpha Landfill - FY03 Traffic Count
Inbound, Ranked by Day Count, All Gates Total

Day	Date	Total
Mon	4/28/2003	850
Sat	6/14/2003	850
Sat	3/29/2003	849
Fri	4/11/2003	849
Sat	9/21/2002	848
Thu	9/26/2002	847
Mon	4/7/2003	845
Sat	11/23/2002	844
Tue	3/11/2003	844
Tue	10/1/2002	843
Wed	4/2/2003	843
Mon	3/3/2003	842
Thu	7/11/2002	839
Fri	1/24/2003	836
Sat	7/13/2002	833
Wed	9/25/2002	833
Mon	2/3/2003	833
Sat	8/31/2002	831
Fri	4/25/2003	831
Sat	4/12/2003	830
Sat	5/10/2003	829
Mon	12/9/2002	827
Thu	1/2/2003	826
Tue	12/31/2002	825
Thu	4/17/2003	825
Sat	8/10/2002	824
Sat	10/5/2002	823
Thu	1/30/2003	819
Mon	3/31/2003	819
Thu	5/22/2003	819
Thu	12/12/2002	818
Thu	12/5/2002	817
Mon	7/15/2002	816
Mon	1/6/2003	816
Sat	2/8/2003	815
Sat	4/26/2003	815
Mon	12/16/2002	812
Tue	3/4/2003	812
Sat	7/20/2002	810
Mon	6/9/2003	810
Tue	1/28/2003	809
Mon	1/27/2003	808
Sat	8/24/2002	804
Tue	6/3/2003	804
Sat	10/19/2002	803
Tue	3/18/2003	798
Thu	4/10/2003	796
Sat	2/1/2003	792
Mon	3/24/2003	792
Mon	4/21/2003	791
Sat	9/28/2002	780
Sat	11/2/2002	779
Mon	5/5/2003	775

Olinda Alpha Landfill - FY03 Traffic Count
Inbound, Ranked by Day Count, All Gates Total

Day	Date	Total
Tue	4/1/2003	773
Sat	8/17/2002	770
Fri	11/29/2002	768
Mon	2/10/2003	760
Thu	12/26/2002	757
Fri	1/31/2003	757
Wed	4/16/2003	750
Sat	12/7/2002	744
Sat	12/14/2002	731
Sat	1/25/2003	731
Sat	4/19/2003	709
Sat	9/14/2002	708
Wed	3/5/2003	674
Sat	11/30/2002	665
Tue	4/15/2003	658
Sat	3/1/2003	645
Mon	2/17/2003	635
Fri	2/28/2003	633
Mon	3/17/2003	624
Wed	2/26/2003	586
Wed	12/18/2002	578
Sat	10/26/2002	576
Sat	2/15/2003	563
Tue	12/17/2002	543
Tue	12/24/2002	540
Fri	2/14/2003	539
Mon	11/11/2002	534
Sat	12/21/2002	534
Mon	12/23/2002	528
Tue	2/25/2003	509
Thu	2/27/2003	489
Fri	12/20/2002	488
Tue	2/11/2003	485
Mon	4/14/2003	456
Sat	11/9/2002	434
Wed	2/12/2003	416
Sat	3/15/2003	410
Thu	2/13/2003	397
Sat	5/3/2003	393
Fri	11/8/2002	364

APPENDIX F-6

LONG RANGE TRAFFIC VOLUME PROJECTIONS

SOURCE: AUSTIN-FOUST ASSOCIATES, INC.
CITY OF BREA GENERAL PLAN – TRAFFIC STUDY
APRIL 2003

City of Brea
GENERAL PLAN TRAFFIC ANALYSIS

Prepared by:

Austin-Foust Associates
2020 N. Tustin Avenue
Santa Ana, California 92705

January 29, 2003
(Revised February 11, 2003)

13. Valencia & Lambert

General Plan/MPAH Network

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	1	1700	50	.03	120	.07*
NBT	2	3400	160	.05*	10	.00
NBR	f		110		1510	
SBL	1	1700	110	.06*	180	.11
SBT	2	3400	130	.04	160	.09*
SBR	0	0	20		140	
EBL	1	1700	100	.06	10	.01
EBT	3	5100	410	.12*	1700	.34*
EBR	0	0	310	.18	30	
WBL	2	3400	1440	.42*	150	.04*
WBT	3	5100	2300	.46	690	.14
WBR	0	0	30		10	
Right Turn Adjustment			EBR	.01*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.71		.59

General Plan/Proposed Circ.

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	1	1700	80	.05*	130	.08*
NBT	2	3400	60	.02	10	.00
NBR	f		110		1550	
SBL	1	1700	20	.01	20	.01
SBT	2	3400	170	.09*	20	.01*
SBR	0	0	120		130	.08
EBL	1	1700	120	.07*	10	.01
EBT	3	5100	500	.15	1870	.37*
EBR	0	0	350	.21	30	
WBL	2	3400	1230	.36	180	.05*
WBT	3	5100	2330	.46*	740	.15
WBR	0	0	10		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.72		.56

General Plan Alt./MPAH Network

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	1	1700	40	.02	120	.07*
NBT	2	3400	150	.04*	20	.01
NBR	f		110		1480	
SBL	1	1700	100	.06*	170	.10
SBT	2	3400	130	.04	150	.09*
SBR	0	0	20		150	
EBL	1	1700	100	.06	10	.01
EBT	3	5100	410	.12*	1720	.34*
EBR	0	0	310	.18	30	
WBL	2	3400	1420	.42*	160	.05*
WBT	3	5100	2300	.46	690	.14
WBR	0	0	30		10	
Right Turn Adjustment			EBR	.01*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.70		.60

General Plan Alt./Proposed Circ.

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	1	1700	80	.05*	130	.08*
NBT	2	3400	60	.02	10	.00
NBR	f		110		1520	
SBL	1	1700	10	.01	20	.01
SBT	2	3400	210	.09*	20	.01*
SBR	0	0	80		130	.08
EBL	1	1700	120	.07*	10	.01
EBT	3	5100	490	.14	1850	.37*
EBR	0	0	350	.21	30	
WBL	2	3400	1180	.35	180	.05*
WBT	3	5100	2370	.47*	730	.15
WBR	0	0	10		10	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.73		.56

20. Valencia & Birch/Rose

General Plan/MPAH Network

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	1	1700	50	.03*	150	.09
NBT	2	3400	160	.05	870	.26*
NBR	1	1700	50	.03	20	.01
SBL	1	1700	450	.26	320	.19*
SBT	2	3400	1350	.43*	50	.02
SBR	0	0	120		30	
EBL	1	1700	40	.02*	170	.10*
EBT	2	3400	790	.23	680	.20
EBR	1	1700	120	.07	60	.04
WBL	1	1700	10	.01	30	.02
WBT	2	3400	510	.23*	260	.15*
WBR	0	0	260		760	.45
Right Turn Adjustment					WBR	.16*
Clearance Interval				.05*		.05*

OTAL CAPACITY UTILIZATION .76 .91

General Plan/Proposed Circ.

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	1	1700	50	.03*	150	.09
NBT	2	3400	160	.05	890	.26*
NBR	1	1700	40	.02	10	.01
SBL	1	1700	500	.29	160	.09*
SBT	2	3400	1250	.40*	50	.02
SBR	0	0	120		30	
EBL	1	1700	40	.02	170	.10*
EBT	2	3400	790	.23*	720	.21
EBR	1	1700	120	.07	60	.04
WBL	1	1700	10	.01*	10	.01
WBT	2	3400	510	.21	330	.19*
WBR	0	0	200		670	.39
Right Turn Adjustment					WBR	.13*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .72 .82

General Plan Alt./MPAH Network

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	1	1700	50	.03*	150	.09
NBT	2	3400	160	.05	820	.24*
NBR	1	1700	50	.03	20	.01
SBL	1	1700	550	.32	320	.19*
SBT	2	3400	1240	.40*	50	.02
SBR	0	0	120		30	
EBL	1	1700	40	.02*	170	.10*
EBT	2	3400	730	.21	650	.19
EBR	1	1700	120	.07	60	.04
WBL	1	1700	10	.01	30	.02
WBT	2	3400	510	.23*	280	.16*
WBR	0	0	260		790	.46
ight Turn Adjustment					WBR	.16*
earance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .73 .90

General Plan Alt./Proposed Circ.

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	1	1700	50	.03*	150	.09
NBT	2	3400	160	.05	900	.26*
NBR	1	1700	40	.02	10	.01
SBL	1	1700	540	.32	170	.10*
SBT	2	3400	1220	.39*	50	.02
SBR	0	0	120		30	
EBL	1	1700	40	.02	170	.10*
EBT	2	3400	740	.22*	670	.20
EBR	1	1700	120	.07	60	.04
WBL	1	1700	10	.01*	10	.01
WBT	2	3400	510	.21	390	.23*
WBR	0	0	200		660	.39
Right Turn Adjustment					WBR	.08*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .70 .82

21. Valencia & Imperial Hwy

General Plan/MPAH Network

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	1	1700	100	.06	150	.09
NBT	2	3400	130	.04*	360	.11*
NBR	1	1700	120	.07	330	.19
SBL	1	1700	760	.45*	320	.19*
SBT	2	3400	360	.11	180	.05
SBR	1	1700	160	.09	160	.09
EBL	2	3400	250	.07*	140	.04*
EBT	3	5100	1350	.26	2250	.44
EBR	1	1700	70	.04	110	.06
WBL	1	1700	370	.22	150	.09
WBT	3	5100	2100	.44*	2420	.52*
WBR	0	0	130		210	
Clearance Interval				.05*		.05*

CAPACITY UTILIZATION 1.05 .91

General Plan/Proposed Circ.

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	1	1700	100	.06	150	.09
NBT	2	3400	130	.04*	390	.11*
NBR	1	1700	120	.07	330	.19
SBL	1	1700	640	.38*	310	.18*
SBT	2	3400	410	.12	180	.05
SBR	1	1700	160	.09	160	.09
EBL	2	3400	250	.07*	140	.04*
EBT	3	5100	1440	.28	2280	.45
EBR	1	1700	70	.04	110	.06
WBL	1	1700	370	.22	150	.09
WBT	3	5100	2080	.43*	2430	.52*
WBR	0	0	130		210	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .97 .90

General Plan Alt./MPAH Network

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	1	1700	100	.06	140	.08
NBT	2	3400	130	.04*	300	.09*
NBR	1	1700	120	.07	320	.19
SBL	1	1700	670	.39*	320	.19*
SBT	2	3400	350	.10	180	.05
SBR	1	1700	160	.09	160	.09
EBL	2	3400	250	.07*	140	.04*
EBT	3	5100	1440	.28	2260	.44
EBR	1	1700	70	.04	110	.06
WBL	1	1700	370	.22	140	.08
WBT	3	5100	2120	.44*	2390	.51*
WBR	0	0	140		210	
R Turn Adjustment					NBR	.02*
C ance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .99 .90

General Plan Alt./Proposed Circ.

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	1	1700	100	.06	150	.09
NBT	2	3400	130	.04*	400	.12*
NBR	1	1700	120	.07	330	.19
SBL	1	1700	620	.36*	310	.18*
SBT	2	3400	390	.11	180	.05
SBR	1	1700	160	.09	160	.09
EBL	2	3400	250	.07*	140	.04*
EBT	3	5100	1480	.29	2300	.45
EBR	1	1700	70	.04	110	.06
WBL	1	1700	370	.22	140	.08
WBT	3	5100	2110	.44*	2340	.50*
WBR	0	0	140		210	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .96 .89

30. Kraemer & Imperial Hwy

General Plan/MPAH Network

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	200	.06*	480	.14
NBT	3	5100	430	.11	1430	.30*
NBR	0	0	130		100	
SBL	2	3400	380	.11	630	.19*
SBT	3	5100	1560	.37*	940	.23
SBR	0	0	340		240	
EBL	2	3400	300	.09*	270	.08
EBT	3	5100	1370	.35	1560	.39*
EBR	0	0	430		420	
WBL	2	3400	110	.03	230	.07*
WBT	3	5100	1570	.31*	1740	.34
WBR	1	1700	420	.25	970	.57
Right Turn Adjustment					WBR	.05*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.88		1.05

General Plan/Proposed Circ.

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	210	.06*	520	.15
NBT	3	5100	460	.12	1430	.30*
NBR	0	0	130		100	
SBL	2	3400	330	.10	620	.18*
SBT	3	5100	1500	.38*	900	.23
SBR	0	0	460		270	
EBL	2	3400	290	.09	290	.09
EBT	3	5100	1480	.38*	1610	.40*
EBR	0	0	460		430	
WBL	2	3400	110	.03*	230	.07*
WBT	3	5100	1550	.30	1740	.34
WBR	1	1700	420	.25	980	.58
Right Turn Adjustment					WBR	.06*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.90		1.06

General Plan Alt./MPAH Network

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	190	.06*	540	.16
NBT	3	5100	470	.12	1420	.30*
NBR	0	0	130		100	
SBL	2	3400	510	.15	690	.20*
SBT	3	5100	1440	.35*	870	.22
SBR	0	0	340		240	
EBL	2	3400	300	.09*	270	.08
EBT	3	5100	1300	.35	1480	.38*
EBR	0	0	500		480	
WBL	2	3400	110	.03	230	.07*
WBT	3	5100	1590	.31*	1710	.34
WBR	1	1700	430	.25	960	.56
Right Turn Adjustment					WBR	.04*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.86		1.04

General Plan Alt./Proposed Circ.

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	220	.06*	470	.14
NBT	3	5100	460	.12	1430	.30*
NBR	0	0	130		100	
SBL	2	3400	500	.15	640	.19*
SBT	3	5100	1360	.34*	920	.23
SBR	0	0	370		270	
EBL	2	3400	290	.09*	270	.08
EBT	3	5100	1360	.37	1580	.40*
EBR	0	0	520		480	
WBL	2	3400	110	.03	230	.07*
WBT	3	5100	1580	.31*	1680	.33
WBR	1	1700	430	.25	940	.55
Right Turn Adjustment					WBR	.02*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.85		1.03

29. Placentia & Imperial Hwy

General Plan/MPAH Network

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	140	.08*	200	.12*
NBT	1	1700	50	.03	90	.05
NBR	1	1700	240	.14	210	.12
SBL	1	1700	10	.01	30	.02
SBT	1	1700	40	.04*	20	.02*
SBR	0	0	20		10	
EBL	1	1700	10	.01	10	.01
EBT	3	5100	2550	.50*	2190	.43*
EBR	1	1700	660	.39	210	.12
WBL	1	1700	180	.11*	180	.11*
WBT	3	5100	2330	.46	2150	.44
WBR	0	0	30		100	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.78		.73

General Plan/Proposed Circ.

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	140	.08*	180	.11*
NBT	1	1700	50	.03	90	.05
NBR	1	1700	240	.14	210	.12
SBL	1	1700	10	.01	30	.02
SBT	1	1700	40	.04*	20	.02*
SBR	0	0	20		10	
EBL	1	1700	10	.01	10	.01
EBT	3	5100	2720	.53*	2260	.44*
EBR	1	1700	580	.34	210	.12
WBL	1	1700	170	.10*	180	.11*
WBT	3	5100	2430	.48	2220	.45
WBR	0	0	20		100	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.80		.73

General Plan Alt./MPAH Network

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	140	.08*	180	.11*
NBT	1	1700	50	.03	90	.05
NBR	1	1700	240	.14	210	.12
SBL	1	1700	10	.01	30	.02
SBT	1	1700	50	.04*	20	.02*
SBR	0	0	20		10	
EBL	1	1700	10	.01	10	.01
EBT	3	5100	2540	.50*	2130	.42*
EBR	1	1700	650	.38	210	.12
WBL	1	1700	170	.10*	180	.11*
WBT	3	5100	2330	.46	2170	.45
WBR	0	0	20		110	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.77		.71

General Plan Alt./Proposed Circ.

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	140	.08*	180	.11*
NBT	1	1700	50	.03	90	.05
NBR	1	1700	240	.14	210	.12
SBL	1	1700	10	.01	30	.02
SBT	1	1700	50	.04*	20	.02*
SBR	0	0	20		10	
EBL	1	1700	10	.01	10	.01
EBT	3	5100	2620	.51*	2220	.44*
EBR	1	1700	630	.37	210	.12
WBL	1	1700	170	.10*	180	.11*
WBT	3	5100	2380	.47	2130	.44
WBR	0	0	20		110	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.78		.73

28. Associated & Imperial Hwy

General Plan/MPAH Network

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	280	.08*	490	.14*
NBT	2	3400	200	.06	330	.10
NBR	1	1700	30	.02	30	.02
SBL	2	3400	110	.03	170	.05
SBT	2	3400	270	.08*	230	.07*
SBR	1	1700	140	.08	260	.15
EBL	2	3400	150	.04	260	.08*
EBT	3	5100	2170	.45*	1980	.42
EBR	0	0	130		150	
WBL	2	3400	60	.02*	110	.03
WBT	3	5100	1960	.40	2550	.52*
WBR	0	0	60		110	
Right Turn Adjustment					SBR	.02*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.68		.88

General Plan/Proposed Circ.

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	280	.08*	500	.15*
NBT	2	3400	200	.06	330	.10
NBR	1	1700	30	.02	30	.02
SBL	2	3400	190	.06	170	.05
SBT	2	3400	320	.09*	230	.07*
SBR	1	1700	140	.08	240	.14
EBL	2	3400	150	.04	290	.09*
EBT	3	5100	2170	.45*	2050	.43
EBR	0	0	130		150	
WBL	2	3400	90	.03*	110	.03
WBT	3	5100	2030	.41	2570	.53*
WBR	0	0	60		150	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.70		.89

General Plan Alt./MPAH Network

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	290	.09*	450	.13*
NBT	2	3400	200	.06	330	.10
NBR	1	1700	40	.02	30	.02
SBL	2	3400	120	.04	170	.05
SBT	2	3400	260	.08*	230	.07*
SBR	1	1700	130	.08	230	.14
EBL	2	3400	150	.04	270	.08*
EBT	3	5100	2140	.45*	1950	.41
EBR	0	0	130		150	
WBL	2	3400	60	.02*	110	.03
WBT	3	5100	1960	.40	2500	.52*
WBR	0	0	60		130	
Right Turn Adjustment					SBR	.01*
earance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.69		.86

General Plan Alt./Proposed Circ.

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	290	.09*	480	.14*
NBT	2	3400	200	.06	330	.10
NBR	1	1700	30	.02	30	.02
SBL	2	3400	150	.04	170	.05
SBT	2	3400	310	.09*	230	.07*
SBR	1	1700	140	.08	240	.14
EBL	2	3400	150	.04	290	.09*
EBT	3	5100	2170	.45*	2030	.43
EBR	0	0	120		150	
WBL	2	3400	60	.02*	110	.03
WBT	3	5100	2010	.41	2500	.51*
WBR	0	0	60		120	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.70		.86

27. SR-57 NB Ramps & Imperial

General Plan/MPAH Network

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	820	.24	870	.26*
NBT	0.5	3400	80	{.25}*	40	{.02}
NBR	1.5		860		300	{.02}
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	2	3400	140	.04	370	.11
EBL	1	1700	130	.08*	270	.16*
EBT	3	5100	1690	.33	2140	.42
EBR	f		870		890	
WBL	0	0	0		0	
WBT	4	6800	1660	.33*	2380	.47*
WBR	0	0	720	.42	890	.52
Right Turn Adjustment			WBR	.09*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.80		.94

General Plan/Proposed Circ.

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	820	.24	910	.27*
NBT	0.5	3400	80	{.25}*	40	{.04}
NBR	1.5		860		300	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	2	3400	140	.04	370	.11
EBL	1	1700	130	.08*	270	.16*
EBT	3	5100	1700	.33	2220	.44
EBR	f		860		830	
WBL	0	0	0		0	
WBT	4	6800	1700	.33*	2320	.45*
WBR	0	0	730	.43	950	.56
Right Turn Adjustment			WBR	.10*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.81		.93

General Plan Alt./MPAH Network

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	820	.24	900	.26*
NBT	0.5	3400	80	{.25}*	40	{.03}
NBR	1.5		860		300	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	2	3400	140	.04	370	.11
EBL	1	1700	130	.08*	270	.16*
EBT	3	5100	1660	.33	2110	.41
EBR	f		870		810	
WBL	0	0	0		0	
WBT	4	6800	1610	.32*	2320	.45*
WBR	0	0	780	.46	840	.49
Right Turn Adjustment			WBR	.14*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.84		.92

General Plan Alt./Proposed Circ.

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	820	.24	950	.28*
NBT	0.5	3400	80	{.25}*	40	{.04}
NBR	1.5		860		300	
SBL	0	0	0		0	
SBT	0	0	0		0	
SBR	2	3400	140	.04	370	.11
EBL	1	1700	130	.08*	270	.16*
EBT	3	5100	1690	.33	2210	.43
EBR	f		860		820	
WBL	0	0	0		0	
WBT	4	6800	1610	.32*	2250	.44*
WBR	0	0	830	.49	930	.55
Right Turn Adjustment			WBR	.17*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.87		.93

26. SR-57 SB Ramps & Imperial

General Plan/MPAH Network

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1.5		1200		580	
SBT	0	5100	0	.50*	0	.34*
SBR	1.5		1340		1140	
EBL	0	0	0		0	
EBT	3	5100	1500	.29	2730	.54
EBR	f		1490		1370	
WBL	0	0	0		0	
WBT	3	5100	2240	.44*	3060	.60*
WBR	f		340		630	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.99		.99

General Plan/Proposed Circ.

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1.5		1180		630	
SBT	0	5100	0	.47*	0	.34*
SBR	1.5		1220		1080	
EBL	0	0	0		0	
EBT	3	5100	1520	.30	2690	.53
EBR	f		1460		1330	
WBL	0	0	0		0	
WBT	3	5100	2270	.45*	3050	.60*
WBR	f		350		630	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.97		.99

General Plan Alt./MPAH Network

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1.5		1130		530	.31*
SBT	0	5100	0	.48*	0	
SBR	1.5		1300		1110	.33
EBL	0	0	0		0	
EBT	3	5100	1530	.30	2650	.52
EBR	f		1470		1290	
WBL	0	0	0		0	
WBT	3	5100	2200	.43*	3030	.59*
WBR	f		360		570	
Right Turn Adjustment					SBR	.02*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.96		.97

General Plan Alt./Proposed Circ.

	LANES	CAPACITY	AM PK HOUR		PM PK HOUR	
			VOL	V/C	VOL	V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1.5		1160		620	
SBT	0	5100	0	.49*	0	.34*
SBR	1.5		1350		1100	
EBL	0	0	0		0	
EBT	3	5100	1530	.30	2680	.53
EBR	f		1550		1270	
WBL	0	0	0		0	
WBT	3	5100	2180	.43*	3000	.59*
WBR	f		350		630	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.97		.98

APPENDIX F-7

ICU/LOS CALCULATION WORKSHEETS
WITHOUT PROJECT
2021

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                    Level Of Service Computation Report
         ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #1 Valencia/Lambert Rd-CarbCyn Rd [2021 WITHOUT PROJECT AM PK HR]
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap. (X):        0.780
Loss Time (sec):       5 (Y+R =  0 sec) Average Delay (sec/veh):     xxxxxx
Optimal Cycle:        48               Level Of Service:                  C
******************************************************************************
Street Name:            Valencia Avenie          Lambert Road/Carbon Canyon Road
Approach:       North Bound      South Bound       East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Protected        Protected         Protected        Protected
Rights:           Ignore           Include           Include          Include
Min. Green:     0    0    0     0    0    0      0    0    0      0    0    0
Lanes:        1  0  2  0  1   1  0  1  1  0    1  0  2  1  0    2  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >>~~ Count Date: 6 Jan 2004~~ <<
Base Vol:      80   28  110     20   79  196     18  500  350   1230 2330   10
Growth Adj:  1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Initial Bse:   80   28  110     20   79  196     18  500  350   1230 2330   10
User Adj:    1.00 1.00 0.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Adj:     1.00 1.00 0.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
PHF Volume:    80   28    0     20   79  196     18  500  350   1230 2330   10
Reduct Vol:     0    0    0      0    0    0      0    0    0      0    0    0
Reduced Vol:   80   28    0     20   79  196     18  500  350   1230 2330   10
PCE Adj:     1.00 1.00 0.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
MLF Adj:     1.00 1.00 0.00   1.00 1.00 1.00   1.00 1.00 1.00   1.00 1.00 1.00
Final Vol.:    80   28    0     20   79  196     18  500  350   1230 2330   10
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1600 1600 1600   1600 1600 1600   1600 1600 1600   1600 1600 1600
Adjustment:  1.06 1.06 1.06   1.06 1.06 1.06   1.06 1.06 1.06   1.06 1.06 1.06
Lanes:       1.00 2.00 1.00   1.00 1.00 1.00   1.00 2.00 1.00   2.00 2.99 0.01
Final Sat.:  1700 3400 1700   1700 1700 1700   1700 3400 1700   3400 5078   22
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.01 0.00   0.01 0.05 0.12   0.01 0.15 0.21   0.36 0.46 0.46
Crit Moves:  ****                        ****             ****   ****
******************************************************************************
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                    Level Of Service Computation Report
         ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #2 Valencia Ave/Rose St-BirchStreet [2021 WITHOUT PROJECT-AM PEAK-P
********************************************************************************
Cycle (sec):        100             Critical Vol./Cap. (X):        0.693
Loss Time (sec):      5 (Y+R =  0 sec) Average Delay (sec/veh):    xxxxxx
Optimal Cycle:       36             Level Of Service:                  B
********************************************************************************
Street Name:           Valencia Avenue                 Rose St/BirchStreet
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:         1  0  2  0  1   1  0  1  1  0   1  0  2  0  1   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 WITHOUT AM PK HR-PROP CIRC
Base Vol:       50   66    40   498 1156   120   40  790   120   10  510   198
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    50   66    40   498 1156   120   40  790   120   10  510   198
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     50   66    40   498 1156   120   40  790   120   10  510   198
Reduct Vol:      0    0     0     0    0     0    0    0     0    0    0     0
Reduced Vol:    50   66    40   498 1156   120   40  790   120   10  510   198
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:     50   66    40   498 1156   120   40  790   120   10  510   198
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:   1.06 1.06  1.22  1.06 1.06  1.06  1.06 1.06  1.22  1.06 1.06  1.06
Lanes:        1.00 2.00  1.00  1.00 1.81  0.19  1.00 2.00  1.00  1.00 1.44  0.56
Final Sat.:   1700 3400  1955  1700 3080   320  1700 3400  1955  1700 2449   951
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.03 0.02  0.02  0.29 0.38  0.38  0.02 0.23  0.06  0.01 0.21  0.21
Crit Moves:   ****                  ****             ****        ****
********************************************************************************
```

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------------------------------------------------------------------------------
------------------------------------------------------------------------------
                      Level Of Service Computation Report
           ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #3 Valencia Avenue/Imperial Hwy. [2021 WITHOUT PROJECT-AM PEAK]
******************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        0.981
Loss Time (sec):        5 (Y+R =  0 sec) Average Delay (sec/veh):     xxxxxx
Optimal Cycle:        180               Level Of Service:                  E
******************************************************************************
Street Name:            Valencia Avenue                 Imperial Highway
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:       L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:          Protected        Protected        Protected        Protected
Rights:             Include          Include          Include          Include
Min. Green:     0     0     0   0     0     0   0     0     0   0     0     0
Lanes:          1  0  2  0  1   1  0  2  0  1   2  0  3  0  1   1  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 WITHOUT PROJECT-AM PEAK-PROP CI
Base Vol:     100   127   120   628   407    81    92  1440    70   370  2080   118
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  100   127   120   628   407    81    92  1440    70   370  2080   118
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:   100   127   120   628   407    81    92  1440    70   370  2080   118
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  100   127   120   628   407    81    92  1440    70   370  2080   118
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   100   127   120   628   407    81    92  1440    70   370  2080   118
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:    1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:  1.06  1.06  1.22  1.06  1.06  1.22  1.06  1.06  1.22  1.06  1.06  1.06
Lanes:       1.00  2.00  1.00  1.00  2.00  1.00  2.00  3.00  1.00  1.00  2.84  0.16
Final Sat.:  1700  3400  1955  1700  3400  1955  3400  5100  1955  1700  4826   274
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:     0.06  0.04  0.06  0.37  0.12  0.04  0.03  0.28  0.04  0.22  0.43  0.43
Crit Moves:              ****  ****                    ****        ****
******************************************************************************
```

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-------------------------------------------------------------------------------
-------------------------------------------------------------------------------

                     Level Of Service Computation Report
         ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #7 Imperial hwy & Kraemer Blvd [2021 WITHOUT PROJECT]
*******************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):        0.893
Loss Time (sec):       5 (Y+R =  4 sec) Average Delay (sec/veh):     xxxxxx
Optimal Cycle:        83              Level Of Service:                  D
*******************************************************************************
Street Name:              Kraemer Blvd.                 Imperial Hwy.
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  1  0    2  0  3  0  1
------------|----------------||----------------||----------------||----------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 WITHOUT PROJECT-AM PEAK-PROP CI
Base Vol:      210   460   125   330  1500   460   290  1406   460   105  1476   420
Growth Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   210   460   125   330  1500   460   290  1406   460   105  1476   420
User Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    210   460   125   330  1500   460   290  1406   460   105  1476   420
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   210   460   125   330  1500   460   290  1406   460   105  1476   420
PCE Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    210   460   125   330  1500   460   290  1406   460   105  1476   420
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:   1.06  1.06  1.06  1.06  1.06  1.22  1.06  1.06  1.06  1.06  1.06  1.22
Lanes:        2.00  2.36  0.64  2.00  2.30  0.70  2.00  2.26  0.74  2.00  3.00  1.00
Final Sat.:   3400  4010  1090  3400  3903  1376  3400  3843  1257  3400  5100  1955
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.06  0.11  0.11  0.10  0.38  0.33  0.09  0.37  0.37  0.03  0.29  0.21
Crit Moves:   ****                    ****              ****        ****
*******************************************************************************
```

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
          ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #7 Imperial Hwy & Placentia Ave [2021 WITHOUT PROJECT AM PK HR]
********************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):         0.799
Loss Time (sec):       5 (Y+R =  4 sec) Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        52              Level Of Service:                   C
********************************************************************************
Street Name:                Placentia Ave                    Imperial Hwy
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:       L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:          Protected        Protected        Protected        Protected
Rights:            Include          Include          Include          Include
Min. Green:     0     0     0   0     0     0   0     0     0   0     0     0
Lanes:          1  0  1  0  1   1  0  0  1  0   1  0  3  0  1   1  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 WITHOUT - PROP CIRC
Base Vol:      140    50   240    10    40    20    10  2646   580   170  2356    20
Growth Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   140    50   240    10    40    20    10  2646   580   170  2356    20
User Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    140    50   240    10    40    20    10  2646   580   170  2356    20
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   140    50   240    10    40    20    10  2646   580   170  2356    20
PCE Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    140    50   240    10    40    20    10  2646   580   170  2356    20
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:   1.06  1.06  1.22  1.06  1.06  1.06  1.06  1.06  1.22  1.06  1.06  1.06
Lanes:        1.00  1.00  1.00  1.00  0.67  0.33  1.00  3.00  1.00  1.00  2.97  0.03
Final Sat.:   1696  1696  1954  1696  1131   565  1696  5088  1954  1696  5045    43
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.08  0.03  0.12  0.01  0.04  0.04  0.01  0.52  0.30  0.10  0.47  0.47
Crit Moves:               ****  ****                    ****        ****
********************************************************************************
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                     Level Of Service Computation Report
         ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #6 Imperial hwy & Associated Road [2021 WITHOUT  PROJECT-AM PEAK]
*******************************************************************************
Cycle (sec):          100                Critical Vol./Cap. (X):        0.689
Loss Time (sec):        5 (Y+R =  4 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:         36                Level Of Service:                  B
*******************************************************************************
Street Name:               Associated Rd.                 Imperial Hwy.
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        2  0  2  0  1    2  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 W/PROJECT- PROP CIRC
Base Vol:      280  200   30   190  320  140   150 2096  130    90 1956   60
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   280  200   30   190  320  140   150 2096  130    90 1956   60
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:    280  200   30   190  320  140   150 2096  130    90 1956   60
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   280  200   30   190  320  140   150 2096  130    90 1956   60
PCE Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:    280  200   30   190  320  140   150 2096  130    90 1956   60
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1600 1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600
Adjustment:   1.06 1.06 1.06  1.06 1.06 1.22  1.06 1.06 1.22  1.06 1.06 1.06
Lanes:        2.00 2.00 1.00  2.00 2.00 1.00  2.00 2.82 0.18  2.00 2.91 0.09
Final Sat.:   3400 3400 1700  3400 3400 1955  3400 4802  343  3400 4948  152
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.08 0.06 0.02  0.06 0.09 0.07  0.04 0.44 0.38  0.03 0.40 0.40
Crit Moves:   ****                 ****            ****       ****
*******************************************************************************
```

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                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Imperial Hwy @ SR 57 SB Off-Ramp  [2021 WITHOUT PROJECT]
********************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        0.962
Loss Time (sec):        5 (Y+R =  0 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        147               Level Of Service:                  E
********************************************************************************
Street Name:                 SR 57 Off-Ramp                Imperial Highway
Approach:        North Bound      South Bound       East Bound        West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:         0  0  0  0  0    1  0  1! 0  1    0  0  3  0  0    0  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 WITH PROJECT-AM PEAK-PROP CIRC
Base Vol:      0     0     0 1159     0  1220     0  1520     0     0  2270     0
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   0     0     0 1159     0  1220     0  1520     0     0  2270     0
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:    0     0     0 1159     0  1220     0  1520     0     0  2270     0
Reduct Vol:    0     0     0    0     0     0     0     0     0     0     0     0
Reduced Vol:   0     0     0 1159     0  1220     0  1520     0     0  2270     0
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:    0     0     0 1159     0  1220     0  1520     0     0  2270     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06
Lanes:       0.00  0.00  0.00  1.46  0.00  1.54  0.00  3.00  0.00  0.00  3.00  0.00
Final Sat.:    0     0     0 2485     0  2615     0  5100     0     0  5100     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00  0.00  0.00  0.47  0.00  0.47  0.00  0.30  0.00  0.00  0.45  0.00
Crit Moves:                    ****              ****                    ****
********************************************************************************
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                     Level Of Service Computation Report
         ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #5 Imperial Hwy @NB57 Off-Ramp [2021 WITHOUT PROJECT]
********************************************************************************
Cycle (sec):        100              Critical Vol./Cap. (X):        0.804
Loss Time (sec):      5 (Y+R =  0 sec) Average Delay (sec/veh):    xxxxxx
Optimal Cycle:       53              Level Of Service:                  D
********************************************************************************
Street Name:           SR57 NB Off-Ramp                Imperial Highway
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include            Ovl            Ignore           Include
Min. Green:    0     0     0   0     0     0   0     0     0   0     0     0
Lanes:         2  0  0  1  1   0  0  0  0  2   1  0  3  0  1   0  0  3  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 WITHOUT PROJECT
Base Vol:      820    80   807     0     0   140   130  1679   860     0  1647   709
Growth Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   820    80   807     0     0   140   130  1679   860     0  1647   709
User Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
PHF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
PHF Volume:    820    80   807     0     0   140   130  1679     0     0  1647   709
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   820    80   807     0     0   140   130  1679     0     0  1647   709
PCE Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
MLF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
Final Vol.:    820    80   807     0     0   140   130  1679     0     0  1647   709
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:   1.06  1.06  1.22  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06
Lanes:        2.00  0.18  1.82  0.00  0.00  2.00  1.00  3.00  1.00  0.00  3.00  1.00
Final Sat.:   3400   307  3557     0     0  3400  1700  5100  1700     0  5100  1700
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.24  0.26  0.23  0.00  0.00  0.04  0.08  0.33  0.00  0.00  0.32  0.42
Crit Moves:         ****  ****              ****                          ****
********************************************************************************
```

APPENDIX F-8

ICU/LOS CALCULATION WORKSHEETS WITH PROJECT

2021

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                       Level Of Service Computation Report
          ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #1 Valencia/Lambert Rd-CarbCyn Rd [2021 WITH PROJECT AM PK HR]
*******************************************************************************
Cycle (sec):          100                 Critical Vol./Cap. (X):        0.807
Loss Time (sec):        5 (Y+R =  0 sec) Average Delay (sec/veh):       xxxxxx
Optimal Cycle:         54                 Level Of Service:                  D
*******************************************************************************
Street Name:              Valencia Avenie          Lambert Road/Carbon Canyon Road
Approach:           North Bound      South Bound       East Bound       West Bound
Movement:         L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:          Protected        Protected         Protected         Protected
Rights:             Ignore           Include           Include           Include
Min. Green:      0     0     0    0     0     0    0     0     0    0     0     0
Lanes:          1  0  2  0  1   1  0  1  1  0   1  0  2  1  0   2  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> ~~Count Date: 6 Jan 2004~~ <<
Base Vol:       80   220   110    20   271   214    70   500   350  1230  2330    10
Growth Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:    80   220   110    20   271   214    70   500   350  1230  2330    10
User Adj:     1.00  1.00  0.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:      1.00  1.00  0.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:     80   220     0    20   271   214    70   500   350  1230  2330    10
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:    80   220     0    20   271   214    70   500   350  1230  2330    10
PCE Adj:      1.00  1.00  0.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:      1.00  1.00  0.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:     80   220     0    20   271   214    70   500   350  1230  2330    10
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:   1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06
Lanes:        1.00  2.00  1.00  1.00  1.12  0.88  1.00  2.00  1.00  2.00  2.99  0.01
Final Sat.:   1700  3400  1700  1700  1900  1500  1700  3400  1700  3400  5078    22
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.05  0.06  0.00  0.01  0.14  0.14  0.04  0.15  0.21  0.36  0.46  0.46
Crit Moves:   ****                    ****                    ****  ****
*******************************************************************************
```

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--------------------------------------------------------------------------------

                      Level Of Service Computation Report
            ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #2 Valencia Ave/Rose St-BirchStreet [2021 WITH PROJECT-AM PEAK-PROP
********************************************************************************
Cycle (sec):           100              Critical Vol./Cap. (X):          0.748
Loss Time (sec):         5 (Y+R =  0 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:          43              Level Of Service:                    C
********************************************************************************
Street Name:          Valencia Avenue                 Rose St/BirchStreet
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       1  0  2  0  1    1  0  1  1  0    1  0  2  0  1    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> ~~Count Date: 6 Jan 2004~~ <<
Base Vol:      50  254    40   502 1344   120    40  790   120    10  510   202
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   50  254    40   502 1344   120    40  790   120    10  510   202
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    50  254    40   502 1344   120    40  790   120    10  510   202
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   50  254    40   502 1344   120    40  790   120    10  510   202
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    50  254    40   502 1344   120    40  790   120    10  510   202
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.06 1.06  1.22  1.06 1.06  1.06  1.06 1.06  1.22  1.06 1.06  1.06
Lanes:       1.00 2.00  1.00  1.00 1.84  0.16  1.00 2.00  1.00  1.00 1.43  0.57
Final Sat.:  1700 3400  1955  1700 3121   279  1700 3400  1955  1700 2435   965
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.07  0.02  0.30 0.43  0.43  0.02 0.23  0.06  0.01 0.21  0.21
Crit Moves:  ****                  ****             ****        ****
********************************************************************************
```

```
MITIG8 - Default Scenario  Tue Mar 2, 2004 18:26:34                 Page 1-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
         ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #3 Valencia Avenue/Imperial Hwy. [2021 WITH PROJECT-AM PEAK]
*******************************************************************************
Cycle (sec):        100               Critical Vol./Cap. (X):        1.027
Loss Time (sec):      5 (Y+R =  0 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:      180               Level Of Service:                  F
*******************************************************************************
Street Name:           Valencia Avenue                 Imperial Highway
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:       L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:          Protected        Protected        Protected        Protected
Rights:            Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:          1  0  2  0  1    1  0  2  0  1    2  0  3  0  1    1  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 WITH PROJECT-AM PEAK
Base Vol:      100  133   120   652  413   239   329 1440    70   370 2080   142
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   100  133   120   652  413   239   329 1440    70   370 2080   142
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    100  133   120   652  413   239   329 1440    70   370 2080   142
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   100  133   120   652  413   239   329 1440    70   370 2080   142
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    100  133   120   652  413   239   329 1440    70   370 2080   142
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:   1.06 1.06  1.22  1.06 1.06  1.22  1.06 1.06  1.22  1.06 1.06  1.06
Lanes:        1.00 2.00  1.00  1.00 2.00  1.00  2.00 3.00  1.00  1.00 2.81  0.19
Final Sat.:   1700 3400  1955  1700 3400  1955  3400 5100  1955  1700 4774   326
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.06 0.04  0.06  0.38 0.12  0.12  0.10 0.28  0.04  0.22 0.44  0.44
Crit Moves:              ****  ****             ****                   ****
*******************************************************************************
```

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
         ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #7 Imperial hwy & Kraemer Blvd [2021 WITH PROJECT]
********************************************************************************
Cycle (sec):        100                Critical Vol./Cap. (X):        0.925
Loss Time (sec):      5 (Y+R =  4 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:      104                Level Of Service:                  E
********************************************************************************
Street Name:              Kraemer Blvd.                 Imperial Hwy.
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 WITH PROJECT-AM PEAK-PROP CIRC
Base Vol:      210  460  135   330 1500  460   290 1554  460   115 1624  420
Growth Adj:   1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:   210  460  135   330 1500  460   290 1554  460   115 1624  420
User Adj:     1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:    210  460  135   330 1500  460   290 1554  460   115 1624  420
Reduct Vol:      0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   210  460  135   330 1500  460   290 1554  460   115 1624  420
PCE Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:    210  460  135   330 1500  460   290 1554  460   115 1624  420
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1600 1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600
Adjustment:   1.06 1.06 1.06  1.06 1.06 1.06  1.06 1.06 1.06  1.06 1.06 1.22
Lanes:        2.00 2.32 0.68  2.00 2.30 0.70  2.00 2.31 0.69  2.00 3.00 1.00
Final Sat.:   3400 3943 1157  3400 3903 1197  3400 3935 1165  3400 5100 1955
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.06 0.12 0.12  0.10 0.38 0.38  0.09 0.39 0.39  0.03 0.32 0.21
Crit Moves:   ****                 ****             ****      ****
********************************************************************************
```

```
MITIG8 - Default Scenario  Wed Mar 3, 2004 10:03:32              Page 1-1
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*****************************************************************************
Intersection #7 Imperial Hwy & Placentia Ave [2021 WITH PROJECT AM PK HR]
*****************************************************************************
Cycle (sec):         100              Critical Vol./Cap. (X):        0.828
Loss Time (sec):       5 (Y+R =  4 sec) Average Delay (sec/veh):     xxxxxx
Optimal Cycle:        59              Level Of Service:                  D
*****************************************************************************
Street Name:                Placentia Ave                  Imperial Hwy
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        1  0  1  0  1   1  0  0  1  0   1  0  3  0  1   1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 WITHOUT - PROP CIRC
Base Vol:     140    50   240    10    40    20    10  2794   580   170  2504    20
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  140    50   240    10    40    20    10  2794   580   170  2504    20
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:   140    50   240    10    40    20    10  2794   580   170  2504    20
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  140    50   240    10    40    20    10  2794   580   170  2504    20
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   140    50   240    10    40    20    10  2794   580   170  2504    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:  1.06  1.06  1.22  1.06  1.06  1.06  1.06  1.06  1.22  1.06  1.06  1.06
Lanes:       1.00  1.00  1.00  1.00  0.67  0.33  1.00  3.00  1.00  1.00  2.98  0.02
Final Sat.:  1696  1696  1954  1696  1131   565  1696  5088  1954  1696  5048    40
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08  0.03  0.12  0.01  0.04  0.04  0.01  0.55  0.30  0.10  0.50  0.50
Crit Moves:              ****  ****                    ****        ****
*****************************************************************************
```

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------

                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #6 Imperial hwy & Associated Road [2021 WITH  PROJECT-AM PEAK]
********************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        0.718
Loss Time (sec):        5 (Y+R =  4 sec) Average Delay (sec/veh):     xxxxxx
Optimal Cycle:         39               Level Of Service:                  C
********************************************************************************
Street Name:              Associated Rd.                   Imperial Hwy.
Approach:        North Bound      South Bound      East Bound       West Bound
Movement:       L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:          2  0  2  0  1   2  0  2  0  1   2  0  2  1  0   2  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: ~~>> Count Date: 1 Jan 2000~~ << 2021 W/PROJECT- PROP CIRC
Base Vol:       280  200   30   190  320  140   150 2244  130    90 2104   60
Growth Adj:    1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Initial Bse:    280  200   30   190  320  140   150 2244  130    90 2104   60
User Adj:      1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Adj:       1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
PHF Volume:     280  200   30   190  320  140   150 2244  130    90 2104   60
Reduct Vol:       0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:    280  200   30   190  320  140   150 2244  130    90 2104   60
PCE Adj:       1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
MLF Adj:       1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Final Vol.:     280  200   30   190  320  140   150 2244  130    90 2104   60
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:      1600 1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600
Adjustment:    1.06 1.06 1.22  1.06 1.06 1.22  1.06 1.06 1.22  1.06 1.06 1.06
Lanes:         2.00 2.00 1.00  2.00 2.00 1.00  2.00 2.84 0.16  2.00 2.92 0.08
Final Sat.:    3400 3400 1955  3400 3400 1955  3400 4821  321  3400 4959  141
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:       0.08 0.06 0.02  0.06 0.09 0.07  0.04 0.47 0.40  0.03 0.42 0.42
Crit Moves:    ****                 ****             ****      ****
********************************************************************************
```

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Imperial Hwy @ SR 57 SB Off-Ramp  [2021 WITH PROJECT]
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap. (X):        0.970
Loss Time (sec):       5 (Y+R =  0 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       162               Level Of Service:                  E
********************************************************************************
Street Name:                  SR 57 Off-Ramp                Imperial Highway
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        0  0  0  0  0    1  0  1! 0  1    0  0  3  0  0    0  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 WITH PROJECT-AM PEAK-PROP CIRC
Base Vol:       0     0     0 1201     0  1220     0  1520     0     0  2270     0
Growth Adj:  1.00  1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:    0     0     0 1201     0  1220     0  1520     0     0  2270     0
User Adj:    1.00  1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:     0     0     0 1201     0  1220     0  1520     0     0  2270     0
Reduct Vol:     0     0     0    0     0     0     0     0     0     0     0     0
Reduced Vol:    0     0     0 1201     0  1220     0  1520     0     0  2270     0
PCE Adj:     1.00  1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:     0     0     0 1201     0  1220     0  1520     0     0  2270     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600  1600  1600 1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:  1.06  1.06  1.06 1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06
Lanes:       0.00  0.00  0.00 1.49  0.00  1.51  0.00  3.00  0.00  0.00  3.00  0.00
Final Sat.:     0     0     0 2530     0  2570     0  5100     0     0  5100     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00  0.00  0.00 0.47  0.00  0.47  0.00  0.30  0.00  0.00  0.45  0.00
Crit Moves:                   ****                ****                    ****
********************************************************************************
```

```
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #5 Imperial Hwy @NB57 Off-Ramp [2021 WITH PROJECT]
********************************************************************************
Cycle (sec):         100                 Critical Vol./Cap. (X):        0.860
Loss Time (sec):       5 (Y+R =  0 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        69                 Level Of Service:                  D
********************************************************************************
Street Name:           SR57 NB Off-Ramp                  Imperial Highway
Approach:      North Bound       South Bound       East Bound        West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|-----------------||-----------------||-----------------||-----------------|
Control:        Protected         Protected         Protected         Protected
Rights:           Include            Ovl              Ignore            Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:        2  0  0  1  1    0  0  0  0  2    1  0  3  0  1    0  0  3  1  0
------------|-----------------||-----------------||-----------------||-----------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 WITH PROJECT-AM PEAK
Base Vol:      820    80   913     0     0   140   130  1721   860     0  1753   751
Growth Adj:   1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:   820    80   913     0     0   140   130  1721   860     0  1753   751
User Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
PHF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
PHF Volume:    820    80   913     0     0   140   130  1721     0     0  1753   751
Reduct Vol:      0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   820    80   913     0     0   140   130  1721     0     0  1753   751
PCE Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
MLF Adj:      1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  1.00  1.00  1.00
Final Vol.:    820    80   913     0     0   140   130  1721     0     0  1753   751
------------|-----------------||-----------------||-----------------||-----------------|
Saturation Flow Module:
Sat/Lane:     1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:   1.06  1.06  1.22  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06
Lanes:        2.00  0.16  1.84  0.00  0.00  2.00  1.00  3.00  1.00  0.00  3.00  1.00
Final Sat.:   3400   274  3595     0     0  3400  1700  5100  1700     0  5100  1700
------------|-----------------||-----------------||-----------------||-----------------|
Capacity Analysis Module:
Vol/Sat:      0.24  0.29  0.25  0.00  0.00  0.04  0.08  0.34  0.00  0.00  0.34  0.44
Crit Moves:         ****        ****              ****                          ****
********************************************************************************
```

APPENDIX F-9

ICU/LOS CALCULATION WORKSHEETS PROJECT MITIGATION

```
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*****************************************************************************
Intersection #7 Imperial hwy & Kraemer Blvd [2021 W/PROJECT W/MITIG]
*****************************************************************************
Cycle (sec):         100               Critical Vol./Cap. (X):        0.882
Loss Time (sec):       5 (Y+R =  4 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        77               Level Of Service:                   D
*****************************************************************************
Street Name:             Kraemer Blvd.                   Imperial Hwy.
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:   0     0     0   0     0     0   0     0     0   0     0     0
Lanes:        2  0  2  1  0   2  0  2  1  0   2  0  3  0  1   2  0  3  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module: >> Count Date: 1 Jan 2000 << 2021 WITH PROJECT-AM PEAK-PROP CIRC
Base Vol:     210   460   135   330  1500   460   290  1554   460   115  1624   420
Growth Adj:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Initial Bse:  210   460   135   330  1500   460   290  1554   460   115  1624   420
User Adj:    1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
PHF Volume:   210   460   135   330  1500   460   290  1554   460   115  1624   420
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  210   460   135   330  1500   460   290  1554   460   115  1624   420
PCE Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
MLF Adj:     1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Final Vol.:   210   460   135   330  1500   460   290  1554   460   115  1624   420
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.06  1.22
Lanes:       2.00  2.32  0.68  2.00  2.30  0.70  2.00  3.00  1.00  2.00  3.18  0.82
Final Sat.:  3400  3943  1157  3400  3903  1197  3400  5100  1700  3400  5403  1607
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06  0.12  0.12  0.10  0.38  0.38  0.09  0.30  0.27  0.03  0.30  0.26
Crit Moves:  ****                    ****        ****                    ****
*****************************************************************************
```

```
MITIG8 - Default Scenario  Wed Mar 3, 2004 10:40:23                Page 1-1
---------------------------------------------------------------------------
---------------------------------------------------------------------------
                    Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
***************************************************************************
Intersection #3 Valencia Avenue/Imperial Hwy. [2021 W/ PROJECT-AM PK-WITH MITIG.
***************************************************************************
Cycle (sec):          100               Critical Vol./Cap. (X):        0.836
Loss Time (sec):        5 (Y+R =  0 sec) Average Delay (sec/veh):     xxxxxx
Optimal Cycle:         61               Level Of Service:                  D
***************************************************************************
Street Name:             Valencia Avenue                Imperial Highway
Approach:       North Bound      South Bound      East Bound       West Bound
Movement:      L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|----------------||----------------||----------------||----------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:         1  0  2  0  1    2  0  1  1  0    2  0  3  0  1    1  0  2  1  0
------------|----------------||----------------||----------------||----------------|
Volume Module: >> ~~Count Date: 1 Jan 2000~~ << 2021 WITH PROJECT-AM PEAK
Base Vol:      100  133   120   652  413   239   329 1440    70   370 2080   142
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   100  133   120   652  413   239   329 1440    70   370 2080   142
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    100  133   120   652  413   239   329 1440    70   370 2080   142
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   100  133   120   652  413   239   329 1440    70   370 2080   142
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Final Vol.:    100  133   120   652  413   239   329 1440    70   370 2080   142
------------|----------------||----------------||----------------||----------------|
Saturation Flow Module:
Sat/Lane:     1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:   1.06 1.06  1.22  1.06 1.06  1.22  1.06 1.06  1.22  1.06 1.06  1.06
Lanes:        1.00 2.00  1.00  2.00 1.27  0.73  2.00 3.00  1.00  1.00 2.81  0.19
Final Sat.:   1700 3400  1955  3400 2154  1433  3400 5100  1955  1700 4774   326
------------|----------------||----------------||----------------||----------------|
Capacity Analysis Module:
Vol/Sat:      0.06 0.04  0.06  0.19 0.19  0.17  0.10 0.28  0.04  0.22 0.44  0.44
Crit Moves:              ****  ****             ****                   ****
***************************************************************************
```

Fair Share Analysis

Valencia Avenue @ Imperial Highway

Total of Project Trips (Figure 5.4-8)

79+3+12+12+79+3=188

Existing Traffic (Figure 5.4-4)

182+179+126+183+1483+117+88+171+92+238+856+55=3,770

Future (Figure 5.4-11)

160+410+640+130+2080+370+250+1440+70+100+130+120=5,810

PerCent Share = 188/(5810-3770)=0.092

Percent Share = 9.2%

APPENDIX G
AIR QUALITY ANALYSIS

AIR QUALITY ANALYSIS

REGIONAL LANDFILL OPTIONS FOR ORANGE COUNTY

OLINDA ALPHA LANDFILL EXPANSION

Submitted to:

County of Orange Integrated Waste Management Department

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LSA

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1.0 INTRODUCTION

1.1 OVERVIEW

The Regional Landfill Options for Orange County (RELOOC) effort is a long-range strategic planning program initiated by the County of Orange's (County) Integrated Waste Management Department (IWMD). The purpose of RELOOC is to assess the County's existing disposal system capabilities and develop viable short- and long-term solid waste disposal options for the County. As part of that endeavor, the County is considering a number of short-term improvements to existing municipal solid waste landfills operated by the County's IWMD. The proposed project includes the vertical and horizontal expansion of the Olinda Alpha Landfill to meet the County's short-term solid waste disposal needs.

The air quality impact analysis analyzes the potential air quality impacts associated with the proposed continued operation of the Olinda Alpha Landfill from 2013 to the estimated horizon of year 2021. The potential environmental impacts associated with the current landfill operations through 2013 were analyzed in the Final EIR for the North Orange County Landfill and Alternatives Technology Study (NOCLATS) certified in 1992.

1.2 OLINDA ALPHA LANDFILL

The Olinda Alpha Landfill is located at 1942 N. Valencia Avenue in northern Orange County immediately north of the City of Brea. This landfill opened in 1960. The site is comprised of 565 acres with approximately 420 acres permitted for refuse disposal. The landfill is open Monday through Saturday from 6:00 a.m. to 7:00 a.m. for transfer trucks only and 7:00 a.m. to 4:00 p.m. for all commercial and non-commercial deliveries. Commercial haulers based both within and outside the County deliver to the site. Refuse disposal by private citizens is allowed and is limited to Orange County residents. Only municipal solid waste (MSW) is accepted at the landfill, although limited special wastes (i.e., tires) also are accepted. Hazardous materials such as asbestos, batteries, chemicals, paints, non-autoclaved medical waste and other substances considered hazardous are not accepted at this landfill.

A Memorandum of Understanding (MOU) between the County and the City of Brea limits daily waste disposal to an annual average of 7,000 tons per day (TPD). However, the Olinda Alpha Landfill's Solid Waste Facility Permit (SWFP) currently allows a daily maximum of 8,000 TPD of MSW.

The landfill is required to comply with numerous landfill regulations from federal, State, and local regulatory agencies. The landfill is also subject to regular inspections from the California Integrated Waste Management Board (CIWMB), the Board's Local Enforcement Agency (LEA), the Regional Water Quality Control Board (RWQCB), and the South Coast Air quality Management Board (SCAQMD) to assure compliance with applicable regulations. The current closure date for the landfill is December 2013.

2.0 DESCRIPTION OF PROJECT ALTERNATIVES

2.1 INTRODUCTION

The objectives of the proposed project to expand the Olinda Alpha Landfill were derived from the RELOOC study goals and objectives and the RELOOC planning process and are as follows:

- Define future waste disposal system by 2004 to provide a basis for renegotiation of WDAs with Orange County cities, franchised haulers and Districts.
- Ensure that the County’s near term waste disposal needs are met.
- Maximize capacity of the existing Olinda Alpha Landfill.
- Maintain adequate revenues and local control of waste disposal to provide consistent and reliable public rates and fees
- Maintain efficient, cost effective and high quality IWMD operations.
- Minimize adverse environmental impacts associated with solid waste disposal.

2.2 PROPOSED PROJECT

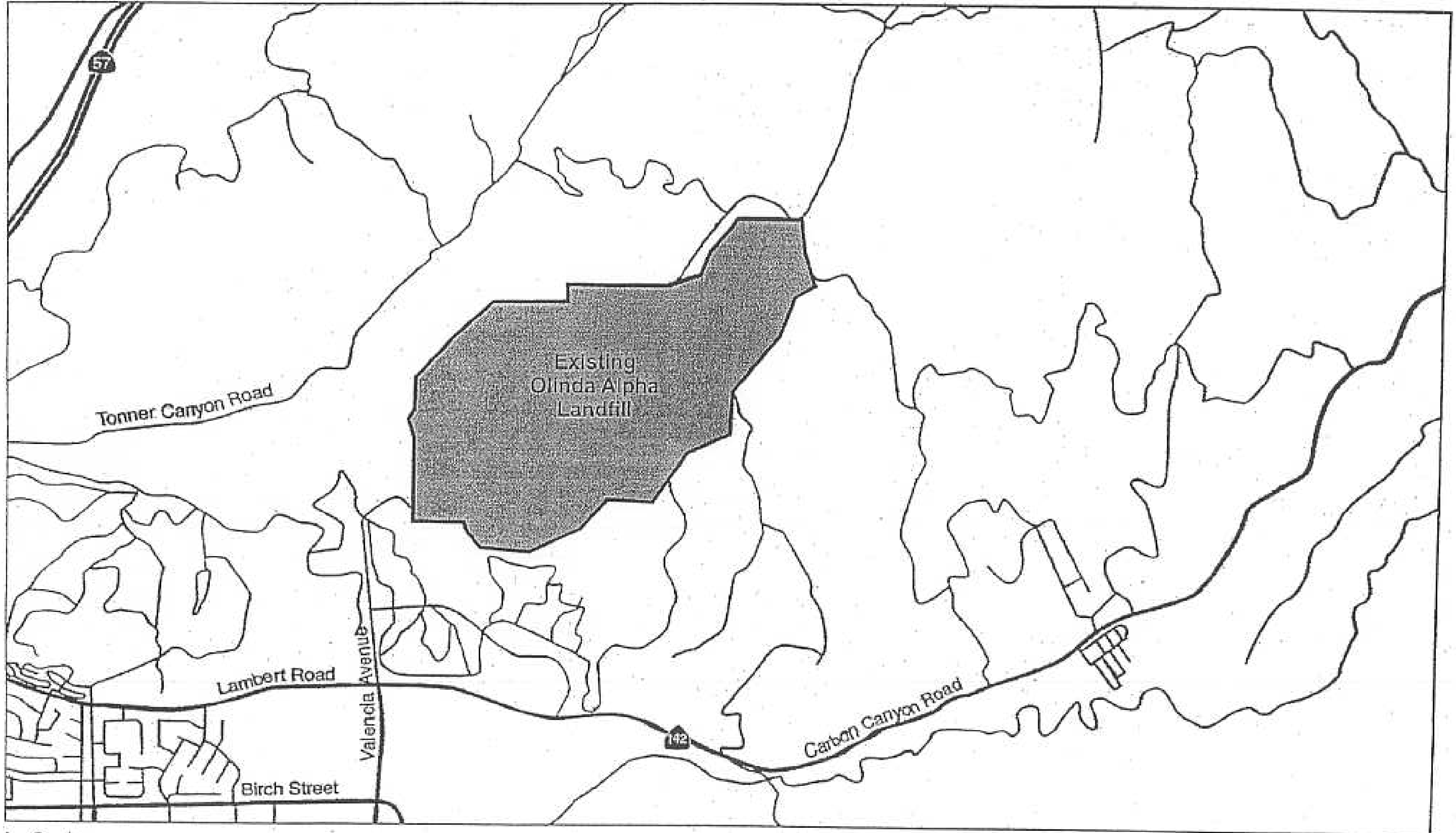
Project Location

The Olinda Alpha Landfill is located at 1942 N. Valencia Avenue in northern Orange County, immediately north of the City of Brea. Figure 1 shows the location of the Olinda Alpha Landfill.

Project Description

The proposed project includes both a vertical and horizontal expansion of Olinda Alpha Landfill disposal prism. No change in the landfill property boundary is proposed.

Proposed Modifications. As proposed, the height of Olinda Alpha Landfill would be increased from its current permitted level of 1,300 feet above mean sea level (amsl) to 1,415 feet above amsl, or a net vertical increase of 115 feet. The horizontal expansion would include landform modifications to the northeast part of the landfill site. This modification would expand the existing refuse footprint approximately 33 acres within the existing property boundary of the Olinda Alpha Landfill. Parts of the horizontal expansion would occur only in areas that have already been disturbed by landfill operations. Figure 2 shows the current permitted vertical and horizontal limits of Olinda Alpha Landfill. Figure 3 shows the proposed limits of the vertical and horizontal expansions at the landfill under the proposed project.



LSA

FIGURE 1

Relooc Strategic Plan

Location Map

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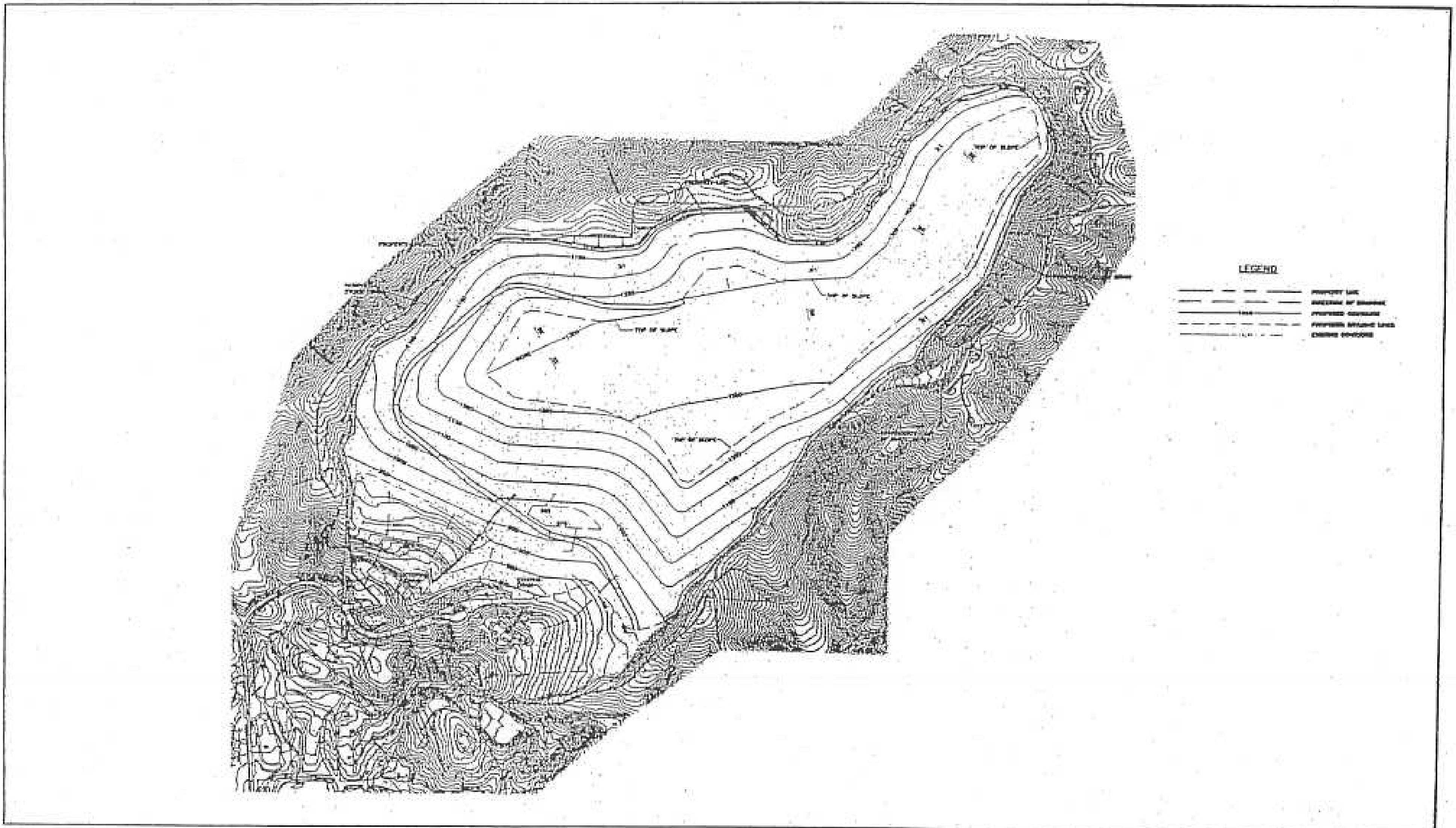

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FIGURE 2

N

0 600 1200
FEET

SOURCE: Bryan A. Stirrat & Associates

Relooc Strategic Plan
Current Permitted Limits

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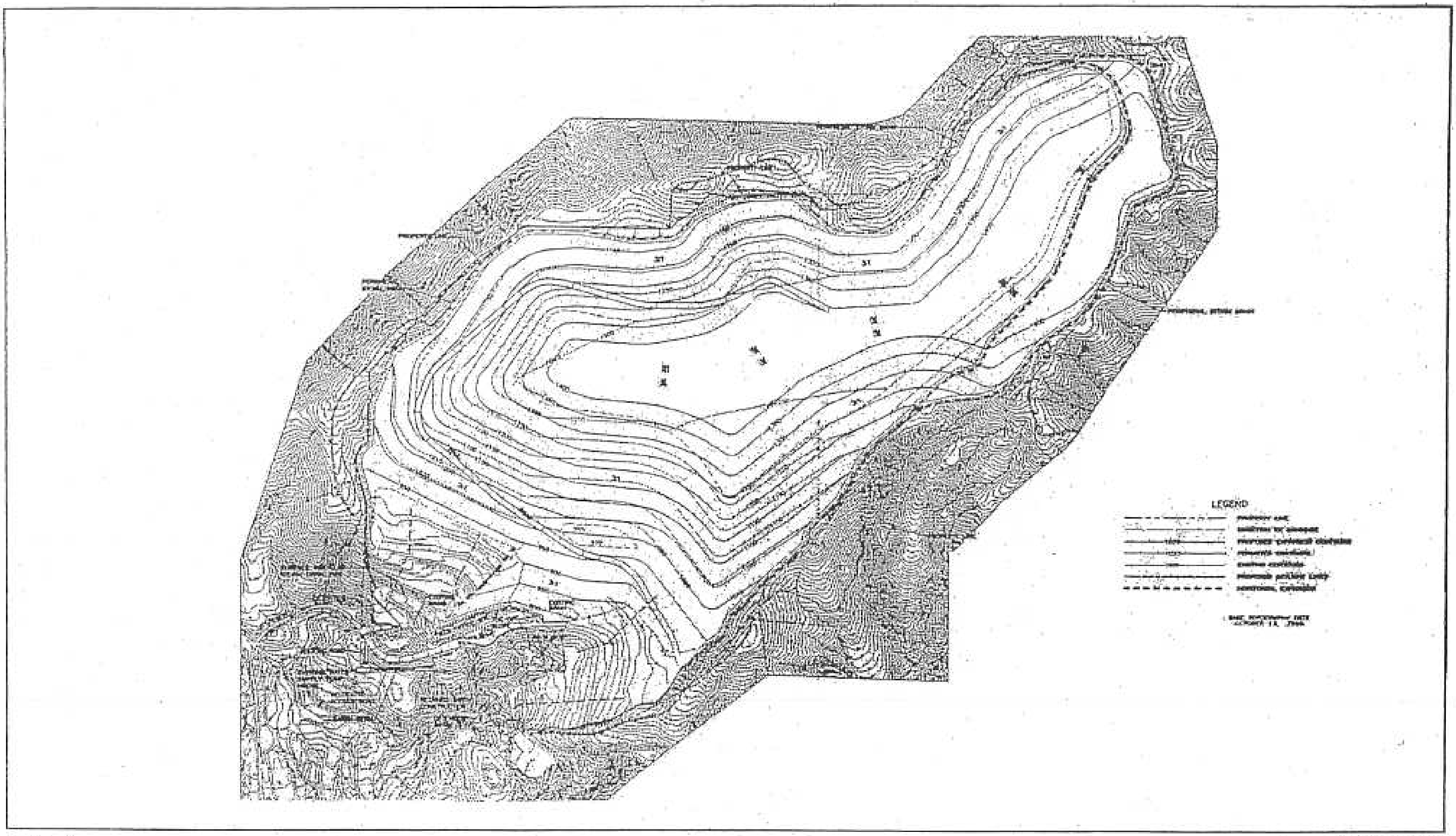

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FIGURE 3

0 500 1200
FEET

SOURCE: Bryan A. Stirrat & Associates

Relooc Strategic Plan

Proposed Expansion Plan Map

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The expanded landfill would ultimately accommodate disposal of an additional 14.2 million tons (MT) of MSW assuming a 5:1 refuse-to-soil ratio and 1,333 lb/cy refuse density. This additional capacity would extend the life of the Olinda Alpha Landfill from its permitted closure date of 2013 to approximately 2021, based on current population projections, daily tonnage, compaction densities, approved landfill elevations and existing disposal technologies. The proposed project would not result in any increase to either the maximum daily permitted tonnage or the annual average daily tonnage limits for this landfill.

Phasing. The expansion of the Olinda Alpha Landfill would be implemented in phases and would not disturb all parts of the landfill site at once. On-site soil to be utilized for daily cover, road construction, and other related uses is available at the Olinda Alpha Landfill through 2015. The site currently accepts dirt and continues to stockpile on site for future cover use. When on-site soil for cover is depleted at the Olinda Alpha Landfill, soil will need to be imported to the site. Truck traffic associated with soil import is anticipated to be less than or equal to import refuse truck traffic, which will cease in 2015. Fill and cover techniques at the landfill would be similar to the methods currently employed. Waste would be deposited, compacted, and covered daily using appropriate landfilling methods.

Waste Composition. The waste composition at the Olinda Alpha Landfill under the proposed project would not differ from that currently received at this landfill. Non-hazardous MSW would comprise the waste stream, and existing screening safety mechanisms would continue to be employed to ensure that hazardous materials are not accepted. Access to Olinda Alpha Landfill would remain unchanged, with access provided via Valencia Avenue. The total number of trips per day to the landfill for MSW disposal would not increase under the proposed project because the permitted daily tonnage accepted at Olinda Alpha Landfill would not increase compared to existing conditions. The additional traffic associated with soil import for cover use at Olinda Alpha Landfill by the year 2015 would be offset by the cessation of refuse importation.

Other Project Features. The project may require that additional buildings and structures be constructed at the Olinda Alpha Landfill and may include additional gas control facilities. However, the number of employees at the landfill will not change with implementation of the proposed project. Employees would continue to perform landfill operations including administration, landfill cover operations, and other landfill-related operations. The number and types of equipment utilized at the Olinda Alpha Landfill also would remain unchanged. The operating schedule at the landfill would remain unchanged after implementation of the proposed project.

Surface water drainage systems, landfill gas collection and control systems, and leachate collection and recovery systems will be expanded, as necessary, to accommodate expansion of the Olinda Alpha Landfill.

PROJECT ALTERNATIVES

Alternative 1—No Project (No Action) Alternative

The No Project Alternative would include no action by the County of Orange. Under this Alternative, neither the vertical nor horizontal expansion at the Olinda Alpha Landfill would occur. The landfill would continue to operate at its existing permitted capacity with no increase in long term physical capacity or daily tonnage received. As such, under this Alternative, the Olinda Alpha Landfill would continue to receive up to an annual average of 7,000 TPD of MSW under an MOU between the City of Brea and IWMD and would operate until its permitted closure date of 2013. Under this Alternative, importation of waste into the Orange County disposal system will end in 2013 when landfilling at the Olinda Alpha Landfill terminates. Upon its closure, approximately 1,000 TPD of MSW, which is in excess of what could be accommodated at the Frank R. Bowerman (FRB) and Prima Deshecha Landfills, would have to be accommodated at landfills outside of Orange County. The projected excess TPD of MSW to be exported out of County is based on population projections for the system demand by 2021 (the horizon year for this EIR).

Out-of-County landfills would have to be permitted to accept the excess tonnage from Orange County and may include El Sobrante Landfill in Riverside County, the Mid-Valley Landfill in San Bernardino County and/or a rail haul facility.

Alternative 2—Two-Landfill System In 2013 (Prima Deschecha Daily Tonnage Increase)

Assumptions

- Increase permitted TPD at Prima Deshecha Landfill from 4,000 TPD to 5,000 TPD when Olinda Alpha Landfill closes in 2013.
- Permitted TPD at FRB Landfill will remain at 8,500 TPD when Olinda Alpha Landfill closes in 2013.
- Olinda Alpha Landfill continues to accept an annual average of 7,000 TPD until its closure date in 2013.
- No expansion at Olinda Alpha Landfill, present capacity unchanged through remaining life.
- County importation at all three Orange County landfills ceases in 2013, with a net reduction of approximately 2,075 TPD imported to Olinda Alpha Landfill; approximately 830 TPD imported into FRB Landfill and approximately 920 TPD imported into Prima Deshecha Landfill (projected amount for 2013 according to County of Orange - RELOOC Demand Model Runs R1-R5).

Alternative 2 proposes increasing the current permitted TPD at Prima Deshecha Landfill from 4,000 to 5,000 TPD when Olinda Alpha Landfill closes at its permitted closure date of 2013. This increase would accommodate projections for the system demand in 2021 based on forecasted population growth and factors in the lower total tonnage with importation ceasing in 2013. At FRB Landfill, the permitted TPD received would remain unchanged at 8,500 TPD. Based on the RELOOC Demand model approximately 4,900 TPD of Olinda Alpha Landfill MSW would be diverted to the FRB and Prima Deshecha landfills under Alternative 2.

Under Alternative 2, no expansion or extension of the Olinda Alpha Landfill closure date would occur. All importation of out-of-County MSW would cease in 2013 when there is no longer capacity in the system to accommodate imported waste. The Prima Deshecha Landfill 2001 General Development Plan (GDP) remaining refuse capacity would remain unchanged at 77.6 million tons (MT) as of 2001 GDP. However, the incremental increase of the Prima Deshecha Landfill in-flow waste stream from 4,000 TPD to a permitted limit of 5,000 TPD would accelerate its anticipated closure date from 2067 to approximately 2056 based on current population projections and existing disposal technologies. The accelerated closure date to 2056 results in a net reduction of 11 years in the life of Prima Deshecha Landfill under Alternative 2.

Under Alternative 2, the number of truck trips to Prima Deshecha Landfill would increase although the period over which those would occur would be reduced by 11 years because the life of the landfill would be shortened under this Alternative.

Under Alternative 2, the existing County MOU with the City of San Juan Capistrano would need to be amended prior to 2013 to provide for the increase in permitted daily tonnage. Similarly, permits currently in-place with the California Integrated Waste Management Board (CIWMB) and other regulatory agencies with jurisdictional oversight for Prima Deshecha Landfill would need to be amended.

Alternative 3—Two Landfill System In 2013 (Frank R. Bowerman Daily Tonnage Increase)

Assumptions

- Increase permitted TPD at FRB Landfill from 8,500 TPD to 9,500 TPD when Olinda Alpha Landfill closes in 2013.
- Permitted TPD at Prima Deshecha Landfill remains at 4,000 TPD when Olinda Alpha Landfill closes in 2013.
- Olinda Alpha Landfill continues to accept up to 7,000 TPD until its closure date in 2013.
- No expansion at Olinda Alpha Landfill, present capacity unchanged through remaining life.
- County importation at all three Orange County landfills ceases in 2013, with a net reduction of approximately 2,075 TPD imported to Olinda Alpha Landfill; approximately 830 TPD imported into FRB Landfill and approximately 920 TPD imported into Prima Deshecha Landfill (projected amount for 2013 according to County of Orange - RELOOC Demand Model Runs R1-R5).

Alternative 3 proposes increasing the current permitted TPD at FRB Landfill from 8,500 TPD to 9,500 TPD when Olinda Alpha Landfill closes on its permitted closure date in 2013. This increase would accommodate projections for the system demand in 2021 based on forecasted population growth and factors in the lower total tonnage with importation ceasing in 2013. The permitted TPD at Prima Deshecha Landfill would remain unchanged at 4,000 TPD. Based on the RELOOC Demand model, approximately 4,900 TPD of Olinda Alpha Landfill MSW would be diverted to the FRB and Prima Deshecha landfills under Alternative 3.

Under Alternative 3, no expansion or extension of Olinda Alpha Landfill's closure date would occur. All out-of-County importation of MSW would cease in 2013 when there no longer is capacity in the system to accommodate imported waste.

At present, the permitted closure date of FRB Landfill is 2022. Alternative 3 would accelerate the closure date to 2021 based on current population projections and existing disposal technologies. This accelerated closure date for the FRB Landfill results in a net reduction of one year of life at this landfill which just meets the horizon year goal of 2021 for this EIR. After 2021, the County would have one remaining landfill in their system. Under Alternative 3, the number of truck trips to the FRB Landfill would increase although the duration of the trips would be reduced because the life of the landfill would be shortened by one year.

Under Alternative 3, the County's existing Settlement Agreement with the City of Irvine would need to be amended prior to 2013 to provide for the increased permitted daily tonnage. Similarly, existing permits with the CIWMB and other regulatory agencies with jurisdictional oversight for these landfills would need to be amended.

3.0 EXISTING CONDITIONS

3.1 AFFECTED ENVIRONMENT

3.1.1 Regional Air Quality

The project site is located in northern Orange County, which is part of the South Coast Air Basin (SCAB or Basin), and is under the jurisdiction of the SCAQMD. Therefore, the impact analysis contained in this section was prepared in accordance with the methodologies provided by the SCAQMD in its 1993 *CEQA Air Quality Handbook* and the California Department of Transportation (Caltrans) *Transportation Project Level Carbon Monoxide Protocol* (Caltrans, May 1996, updated December 1997).

Both the State of California and the federal government have established health-based ambient air quality standards (AAQS) for six air pollutants. As shown in Table 3.A, these pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), suspended coarse particulate matter equal to or less than 10 microns in diameter (PM_{10}), and lead. In July 1997, the Environmental Protection Agency (EPA) adopted new standards for eight-hour O_3 levels and for fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

In addition to setting out primary and secondary AAQS, the State of California has established a set of episode criteria for O_3, CO, NO_2, SO_2, and particulate matter. These criteria refer to episode levels representing periods of short-term exposure to air pollutants that actually threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage One to Stage Three. Table 3.B lists the health effects of these criteria pollutants and their potential sources. These health effects would not occur unless the standards were exceeded by a large margin or for a prolonged period of time. The State AAQS are more stringent than the federal AAQS.

The California Clean Air Act (CCAA) provides the SCAQMD with the authority to manage transportation activities at indirect sources. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. Examples of this would be motor vehicles at an intersection, a mall, and on highways. The SCAQMD also regulates stationary sources of pollution throughout its jurisdictional area. Direct emissions from motor vehicles are regulated by the California Air Resources Board (ARB).

Table 3.A: State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[2,5]	Secondary[2,6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	0.12 ppm (235 µg/m^3)[8]	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	–		0.08 ppm (157 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation*	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3*		50 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		65 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3*	Gravimetric or Beta Attenuation*	15 µg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Nondispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Nondispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	–	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.25 ppm (470 µg/m^3)		–		
Lead	30-day average	1.5 µg/m^3	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m^3	Same as Primary Standard	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	–	Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	–	
	3-Hour	–		–	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		–	–	
Visibility-Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates	24-Hour	25 µg/m3	Ion Chromatography*			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m3)	Ultraviolet Fluorescence			
Vinyl Cloride[9]	24-Hour	0.01 ppm (26 µg/m3)	Gas Chromatography			

Source: ARB (July 2003).

Footnotes:

[1] California standards for ozone; carbon monoxide (except Lake Tahoe); sulfur dioxide (1 and 24 hour); nitrogen dioxide; suspended particulate matter, PM_{10}, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth-highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current federal policies.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25º C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25º C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent procedure that can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.

[8] New federal eight-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18, 1997. Contact the U.S. EPA for further clarification and current federal policies.

[9] The ARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Table 3.B: Health Effects Summary of the Major Criteria Air Pollutants

Pollutants	**Sources**	**Primary Effects**
Ozone (O_3)	Atmospheric reaction of organic gases with nitrogen oxides in the presence of sunlight.	Aggravation of respiratory and cardiovascular diseases. Irritation of eyes. Impairment of cardiopulmonary function. Plant leaf injury.
Nitrogen Dioxide (NO_2)	Motor vehicle exhaust. High temperature stationary combustion. Atmospheric reactions.	Aggravation of respiratory illness. Reduced visibility. Reduced plant growth. Formation of acid rain.
Carbon Monoxide (CO)	By-products from incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. Natural Events, such as decomposition of organic matter.	Reduced tolerance for exercise. Impairment of mental function. Impairment of fetal development. Death at high levels of exposure. Aggravation of some heart diseases (angina).
Suspended Particulate Matter ($PM_{2.5}$ and PM_{10})	Stationary combustion of solid fuels. Construction activities. Industrial processes. Atmospheric chemical reactions.	Reduced lung function. Aggravation of the effects of gaseous pollutants. Aggravation of respiratory and cardiorespiratory diseases. Increased cough and chest discomfort. Soiling. Reduced visibility.
Sulfur Dioxide (SO_2)	Combustion of sulfur-containing fossil fuels. Smelting of sulfur-bearing metal ores. Industrial processes.	Aggravation of respiratory diseases (asthma, emphysema). Reduced lung function. Irritation of eyes. Reduced visibility. Plant injury. Deterioration of metals, textiles, leather, finishes, coatings, etc.
Lead (Pb)	Contaminated soil (e.g., from leaded fuels and lead-based paints).	Impairment of blood function and nerve construction. Behavioral and hearing problems in children.

Source: ARB 2001.

3.1.2 Climate/Meteorology

Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.), but also by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall, etc.

The combination of topography, low mixing height, abundant sunshine, and emissions from the second largest urban area in the United States gives the SCAB the worst air pollution problem in the nation.

Climate in the SCAB is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern border, and high mountains surround the rest of the SCAB. The SCAB lies in the semi-permanent high pressure zone of the eastern Pacific; the resulting climate is mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms, or Santa Ana wind conditions do occur.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s measured in degrees Fahrenheit. With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station closest to the site is the Yorba Linda station (Brea).[1] The monthly average maximum temperature recorded at the Yorba Linda station from July 1948 to July 2003, ranged from 67.4° F in January to 89.2° F in August, with an annual average maximum of 77.5° F. The monthly average minimum temperature recorded at the Yorba Linda station from July 1948 to July 2003 ranged from 42.0° F in January to 58.7° F in August, with an annual average minimum of 49.6° F. January is typically the coldest month and August the warmest in this area of the Basin.

The majority of annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and is generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the Basin and along the coastal side of the mountains. The Yorba Linda climatological station also monitors precipitation. Average monthly rainfall measured in Yorba Linda from July 1948 to July 2003 varied from 3.36 inches in January to 0.27 inch or less between May and October, with an annual total of 13.89 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

Although the SCAB has a semiarid climate, air near the surface is generally moist because of the presence of a shallow marine layer. With very low average wind speeds, there is a limited capacity to disperse air contaminants horizontally. The dominant daily wind pattern is an onshore 8 to 12 miles per hour (mph) daytime breeze and an offshore 3 to 5 mph nighttime breeze. The typical wind flow pattern fluctuates only with occasional winter storms or strong northeasterly (Santa Ana) winds from the mountains and deserts northeast of the SCAB. Summer wind flow patterns represent worst-case conditions, as this is the period of higher temperatures and more sunlight, which results in ozone formation.

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[1] Western Regional Climate Center, wrcc@dri.edu.

During spring and early summer, pollution produced during any one day is typically blown out of the SCAB through mountain passes or lifted by warm vertical currents adjacent to mountain slopes. Air contaminants can be transported 60 miles or more from the SCAB by ocean air during the afternoons. From early fall to winter, the transport is less pronounced because of slower average wind speed and the appearance of drainage winds earlier in the day. During stagnant wind conditions, offshore drainage winds may begin by late afternoon. Pollutants remaining in the SCAB are trapped and begin to accumulate during the night and the following morning. A low morning wind speed in pollutant source areas is an important indicator of air stagnation and the build-up potential for primary air contaminants.

Temperature normally decreases with altitude, and a reversal of this atmospheric state, where temperature increases with altitude, is called an inversion. The height from the earth to the inversion base is known as the mixing height. Persistent low inversions and cool coastal air tend to create morning fog and low stratus clouds. Cloudy days are less likely in the eastern portions of the SCAB, and are about 25 percent more likely along the coast. The vertical dispersion of air pollutants in the SCAB is limited by temperature inversions in the atmosphere close to the earth's surface.

Inversions are generally lower in the nighttime when the ground is cool than during daylight hours when the sun warms the ground and, in turn, the surface air layer. As this heating process continues, the temperature of the surface air layer approaches the temperature of the inversion base, causing heating along its lower edge. If enough warming takes place, the inversion layer becomes weak and opens up to allow the surface air layers to mix upward. This can be seen in the middle to late afternoon on a hot summer day when the smog appears to clear up suddenly. Winter inversions typically break earlier in the day, preventing excessive contaminant build-up.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino counties. In the winter, the greatest pollution problem is accumulation of carbon monoxide and oxides of nitrogen due to extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and oxides of nitrogen to form photochemical smog.

3.1.3 Air Pollution Constituents and Attainment Status

The following describes the six criteria air pollutants and their attainment status in the SCAB based on ARB's Area Designations, Activities, and Maps (ARB 2003). Table 3.C summarizes the attainment status in the South Coast Air Basin for these criteria pollutants.

Table 3.C: Criteria Pollutants Attainment Status in the South Coast Air Basin

	State	Federal
Ozone (one-hour)	Nonattainment	Extreme Nonattainment
Ozone (eight-hour)	Not Applicable	Nonattainment (Preliminary)
PM_{10}	Nonattainment	Serious Nonattainment
$PM_{2.5}$	Not Applicable	Nonattainment (Preliminary)
CO	Nonattainment (Los Angeles County only)	Nonattainment
NO_2	Attainment	Attainment/Maintenance
Lead	Attainment	Attainment
All others	Attainment/Unclassified	Attainment/Unclassified

Source: California Air Resources Board 2003.

Ozone. O_3 (smog) is formed by photochemical reactions between oxides of nitrogen and reactive organic gases rather than being directly emitted from a source. O_3 is a pungent colorless gas typical of Southern California smog. Elevated ozone concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, the elderly, and young children. O_3 levels peak during summer and early fall. The entire SCAB is designated as a nonattainment area for both the federal and State one-hour O_3 standards. The EPA has classified the SCAB as an "extreme" nonattainment area for O_3 and has mandated that the SCAB achieve attainment by 2010. The entire SCAB is expected to be designated as a nonattainment area for the federal eight-hour O_3 standard based on the collected ambient air quality data.

Carbon Monoxide. Carbon monoxide (CO) is formed by the incomplete combustion of fossil fuels and is generated almost entirely from automobiles. It is a colorless odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The entire SCAB is designated as a nonattainment area for federal CO AAQS. However, Orange County has not exceeded the federal CO standards in the past five years. Orange County has been designated by ARB to be an attainment area for State CO AAQS.

Nitrogen Oxides. Nitrogen dioxide (NO_2), a reddish-brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NO_X. NO_X is a primary component of photochemical smog. It also contributes to other pollution, including a high concentration of fine particulate matter, poor visibility, and acid deposition (acid rain). NO_2 decreases lung function and may reduce resistance to infection. The entire SCAB has not exceeded either federal or State AAQS for NO_X in the past five years according to published monitoring data. It is designated as a maintenance area under the federal AAQS and an attainment area under the State AAQS.

Sulfur Dioxide. Sulfur dioxide (SO_2) is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The entire SCAB is in attainment with both federal and State SO_2 AAQS.

Lead. Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The entire SCAB is in attainment for the federal and State AAQS for lead.

Particulate Matter. Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles (all particles less than or equal to 10 micrometers in diameter, or PM_{10}) are derived from a variety of sources, including windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for fine particle (less than 2.5 microns in diameter, or $PM_{2.5}$) levels. Fine particles can also be formed in the atmosphere through chemical reactions. Coarse particles (PM_{10}) can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that fine particles ($PM_{2.5}$), that penetrate deeply into the lungs are more likely than coarse particles to contribute to the health effects listed in a number of recently-published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. The entire SCAB is a nonattainment area for the federal and State PM_{10} AAQS. The attainment status of $PM_{2.5}$ in the SCAB is expected to be designated by the EPA as nonattainments, based on the collected ambient air quality data.

3.1.4 Local Air Quality

Ambient Air Pollutant Concentrations. The SCAQMD, together with the California ARB, maintain ambient air quality monitoring stations in the SCAB. The air quality monitoring stations closest to the Olinda Alpha Landfill site are the La Habra (O_3, CO, and NO_2), Anaheim (PM_{10} and $PM_{2.5}$), and Costa Mesa (SO_2) stations. The air quality trends at these monitoring stations are representative of the ambient air quality in the City of Brea and surrounding areas. The pollutants monitored at these stations are (1-hour and 8-hour) CO, (1-hour and 8-hour) O_3, NO_2, and (fine and coarse) suspended particulate matter.[1] SO_2 concentrations in the entire State have been below the federal and State AAQS in the past 10 years.

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[1] Air quality data, 2000, 2001, and 2002; California Air Resources Board Web site.

The ambient air quality data in Tables 3.D and 3.E show that SO_2, NO_2, and CO levels are below the applicable State and federal AAQS at these stations. O_3 levels exceeded the State (3 to 8 days a year) and federal (once in 2000 only) one-hour AAQS in the past three years at the La Habra station. O_3 levels exceeded the federal eight-hour AAQS twice each year in 2000 and 2001 and did not exceed the federal AAQS in 2002 at the La Habra station. The PM_{10} level exceeded the State AAQS in each of the past three years (5 to 8 days a year), but has not exceeded the federal AAQS at the Anaheim station. $PM_{2.5}$ levels monitored at the Anaheim station exceeded the federal AAQS one to six days a year for the last three years.

Carbon Monoxide (CO) Hot Spots. The primary mobile source pollutant of local concern is CO. CO is a direct function of vehicle idling time and, thus, traffic flow conditions. CO transport is extremely limited; it disperses rapidly with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations proximate to a congested roadway or intersection may reach unhealthful levels affecting local sensitive receptors (residents, school children, the elderly, hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. In areas with high ambient background CO concentration, modeling is recommended to determine a project's effect on local CO levels.

An assessment of project-related impacts on localized ambient air quality requires that future ambient air quality levels be projected. Existing CO concentrations in the immediate project vicinity are not available. Ambient CO levels monitored at the La Habra station, the closest station with monitored CO data, showed a highest recorded one-hour concentration of 13.8 ppm (State standard is 20 ppm) and a highest eight-hour concentration of 6.2 ppm (State standard is 9 ppm) during the past five years (see Tables 3.D and 3.E).

The highest CO concentrations would occur during peak traffic hours; hence, CO impacts calculated under peak traffic conditions represent a worst-case analysis. Modeling of the CO hot spots analysis was based on traffic volumes generated by the project traffic study (Bryan A. Stirrat & Associates, February 2004), which identified the peak traffic levels generated in the project area for the year 2004 as existing conditions.

The impact on local carbon monoxide levels was assessed with the ARB-approved CALINE4 air quality model, which allows microscale CO concentrations to be estimated along roadway corridors or near intersections. This model is designed to identify localized concentrations of CO, often termed "hot spots." A brief discussion of input to the CALINE4 model follows. The analysis was performed for the worst-case wind angle and wind speed condition and is based upon the following assumptions:

- Selected modeling locations represent the intersections closest to the project site, with the highest project-related vehicle turning movements and the worst level of service deterioration.
- Twenty receptor locations with the possibility of extended outdoor exposure from 12 to 19 meters of the roadway centerline near intersections were modeled to determine CO concentration. These receptor locations were selected based upon guidelines in the Caltrans Transportation Project-Level Carbon Monoxide Protocol, including receptors placed at 3 meters (or 10 feet) from the edge of the roadway.

Table 3.D: Ambient Air Quality at La Habra, Anaheim, and Costa Mesa Air Monitoring Stations

	One Hour Carbon Monoxide[1]		One Hour Ozone[2]		Coarse Suspended Particulate (PM$_{10}$)[3]		Nitrogen Dioxide[4]	
	Max. 1 Hour Conc. (ppm)	**Number of Days Exceeded**	**Max. 1 Hour Conc. (ppm)**	**Number of Days Exceeded**	**Max. 24 Hour Conc. (Φg/m^3)**	**Number of Days Exceeded**	**Max. 1 Hour Conc. (ppm)**	**Number of Days Exceeded**
State Stds.	> 20 ppm/1 hr		> .09 ppm/1 hr		> 50 Φg/m^3, 24 hrs		> .25 ppm/1 hr	
2002	10.2	0	0.12	3	69	5	0.12	0
2001	10.7	0	0.11	4	93	6	0.13	0
2000	13.8	0	0.14	8	126	8	0.12	0
MAXIMUM	**13.8**		**0.14**		**126**		**0.13**	
Federal Stds.	> 35 ppm/1 hr		> .12 ppm/1 hr		> 150 Φg/m^3, 24 hrs		0.053 ppm, annual average	
2002	10.2	0	0.12	0	69	0	0.025	0
2001	10.7	0	0.11	0	93	0	0.027	0
2000	13.8	0	0.14	1	126	0	ND[5]	0
MAXIMUM	**13.8**		**0.14**		**126**		**0.027**	

Source: ARB, 2000 to 2002.

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[1] Data taken from the La Habra monitoring station.

[2] Data taken from the La Habra monitoring station.

[3] Data taken from the Anaheim monitoring station.

[4] Data taken from the La Habra monitoring station.

[5] No data available for this pollutant in this year.

Table 3.E: Ambient Air Quality at La Habra, Anaheim, and Costa Mesa Air Monitoring Stations

	Eight Hour Carbon Monoxide[1]		**Eight Hour Ozone[2]**		**Fine Suspended Particulate ($PM_{2.5}$)[3]**		**Sulfur Dioxide[4]**	
	Max. 8 Hour Conc. (ppm)	**Number of Days Exceeded**	**Max. 8 Hour Conc. (ppm)**	**Number of Days Exceeded**	**Max. 24 Hour Conc. (Φg/m^3)**	**Number of Days Exceeded**	**Max. 24 Hour Conc. (ppm)**	**Number of Days Exceeded**
State Stds.	∃ 9.0 ppm/8 hr		No State Standard		No State Standard		> .04 ppm/24 hr	
2002	4.5	0	0.08	NA[5]	68.6	NA	0.011	0
2001	4.7	0	0.09	NA	70.8	NA	0.005	0
2000	6.2	0	0.10	NA	113.9	NA	0.006	0
MAXIMUM	**6.2**		**0.10**		**113.9**		**0.011**	
Federal Stds.	∃ 9.0 ppm/8 hr		> .08 ppm/8 hr		> 65 Φg/m^3, 24 hrs		0.14 ppm/24 hr	
2002	4.5	0	0.08	0	68.6	1	0.002	0
2001	4.7	0	0.09	2	70.8	1	0.001	0
2000	6.2	0	0.10	2	113.9	6	0.002	0
MAXIMUM	**6.2**		**0.10**		**113.9**		**0.002**	

Source: ARB, 2000 to 2002.

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[1] Data taken at the La Habra monitoring station.
[2] Data taken from the La Habra monitoring station.
[3] Data taken from the Anaheim monitoring station.
[4] Data taken from the Costa Mesa monitoring station.
[5] No State standard.

Table 3.F: Existing Vehicular Traffic Intersection CO Concentrations

Intersection	Distance to Receptor Location from Roadway Centerline (meters)	2004 1 Hr CO Concentration[1] (ppm)	2004 8 Hr CO Concentration[2] (ppm)	Exceeds State Standards 1 hr	Exceeds State Standards 8 hr
Associated Road & Imperial Highway	14	12.4	6.1	No	No
	14	12.4	6.1	No	No
	15	12.4	6.1	No	No
	16	12.4	6.1	No	No
Placentia Avenue & Imperial Highway	12	12.4	6.1	No	No
	12	12.2	5.9	No	No
	14	12.2	5.9	No	No
	14	12.2	5.9	No	No
Kraemer Boulevard & Imperial Highway	17	12.4	6.1	No	No
	17	12.4	6.1	No	No
	19	12.4	6.1	No	No
	20	12.4	6.0	No	No
Rose Drive & Imperial Highway	14	12.8	6.4	No	No
	14	12.8	6.4	No	No
	15	12.8	6.4	No	No
	16	12.6	6.2	No	No
Valencia Avenue & Birch Street	14	11.6	5.5	No	No
	14	11.6	5.5	No	No
	14	11.5	5.5	No	No
	14	11.5	5.5	No	No
Valencia Avenue & Carbon Canyon Road	14	11.7	5.6	No	No
	14	11.5	5.5	No	No
	15	11.4	5.4	No	No
	17	11.4	5.4	No	No
Valencia Avenue & Imperial Highway	15	11.9	5.7	No	No
	15	11.9	5.7	No	No
	16	11.8	5.7	No	No
	17	11.8	5.7	No	No

Source: LSA Associates, Inc., February 2004.

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[1] Includes ambient one-hour CO concentration of 10.0 ppm. The State=s one-hour CO AAQS is 20 ppm. CO concentrations at all receptor locations would be the same with or without project.

[2] Includes ambient eight-hour CO concentration of 4.4 ppm. The State=s eight-hour CO AAQS is 9.0 ppm. CO concentrations at all receptor locations would be the same with or without project.

- The calculations assume a meteorological condition of almost no wind (0.5 meter/ second), a suburban topographical condition between the source and receptor, and a mixing height of 1,000 meters, representing a worst-case scenario for CO concentrations.
- CO concentrations are calculated for the one-hour averaging period and then compared to the one-hour standards. CO eight-hour averages are extrapolated using techniques outlined in the SCAQMD's *California Environmental Quality Act (CEQA) Air Quality Handbook*, October 1993, and compared to the eight-hour standards; a persistence factor of 0.7 was used to predict the eight-hour concentration in a nonattainment area.
- Concentrations are given in ppm at each of the receptor locations.
- The "at-grade" link option with speed adjusted based on average cruise speed and number of vehicles per lane per hour was used rather than the "intersection" link selection in the CALINE4 model. (Caltrans has suggested that the "intersection" link should not be used due to an inappropriate algorithm based on outdated vehicle distribution.) Emission factors from the EMFAC2002 model for all vehicles based on the adjusted speed for the year 2004 were used for the vehicle fleet.
- The highest of the second-highest CO concentrations monitored at the La Habra station in the past three years were used as background concentrations as recommended by the EPA for an area without projected future background concentrations. The "background" concentrations are then added to the model results for future with and without the proposed project conditions. The monitored CO concentrations are 10.0 ppm for the one-hour CO and 4.4 ppm for the eight-hour CO. No rolled-back factor was applied for future scenarios for a worst-case scenario, as suggested by the SCAQMD staff.

Table 3.F shows that existing CO levels at or near intersections along the access roads to Olinda Alpha Landfill are below both the one-hour and eight-hour federal and State AAQS. No exceedance of the AAQS has been recorded in the past three years.

Existing On Site Dust Control. The IWMD has implemented a dust control program at the Olinda Alpha Landfill to minimize particulate matter entering the air during existing landfilling operations. The following activities are included in this program: asphalt paving of the main internal haul roads; watering and proper maintenance of haul roads; water spraying of soil stockpiles; applying water or planting temporary vegetation on intermediate soil cover; and planting and maintaining a vegetative cover on completed fill and excavation slopes. Fugitive dust control measures are implemented in compliance with the site-specific SCAQMD Rule 403 compliance plan, which is further described in Section 6.0 (Mitigation Measures).

Screening Health Risk Analysis. The primary health risk from heavy-duty trucks is diesel particulate exhaust. As will be discussed later in the Methodology and Thresholds section, a screening-level health risk analysis was conducted for existing and proposed homes along Valencia Avenue north of Carbon Canyon Road leading to the project site. The results of the screening-level analysis show that existing and proposed residences along Valencia Avenue would be exposed to an unmitigated inhalation cancer risk of one to two in a million assuming a five-year exposure period, which is lower than the ten-in-a-million threshold. With up to twenty years of exposure (the project proposes the continuation of the landfill for eight years), the risk would go up to eight in a million, still below the ten in a million threshold. No significant health risk would occur for existing and proposed residences along Valencia Avenue leading to the Olinda Alpha Landfill from landfill-related truck traffic.

In addition, a screening level health risk assessment was conducted for the on-site landfill gas flare system and equipment exhaust. Based on the current landfill operations, the inhalation carcinogenic health risk was found to be less than one in a million at a distance of 500 feet. The closest existing or planned residences are more than 1,500 feet from the flare system, and more than 4,200 feet from the future expansion area. This range of health risk is lower than the ten-in-a-million threshold recommended for residential uses.

3.1.5 Regulatory Settings

Federal Regulations/Standards. Pursuant to the federal Clean Air Act (CAA) of 1970, the U.S. Environmental Protection Agency (EPA) established national AAQS (NAAQS). The NAAQS were established for six major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established AAQS, or criteria, for outdoor concentrations in order to protect public health.

Data collected at permanent monitoring stations are used by the EPA to classify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA.

The EPA has designated the Southern California Association of Governments (SCAG) as the Metropolitan Planning Organization (MPO) responsible for ensuring compliance with the requirements of the CAA for the SCAB.

The EPA established new NAAQS for ground level ozone and fine particulate matter in 1997. On May 14, 1999, the Court of Appeals for the District of Columbia Circuit issued a decision ruling that the Clean Air Act, as applied in setting the new public health standards for ozone and particulate matter, was unconstitutional as an improper delegation of legislative authority to the EPA. On February 27, 2001, the U.S. Supreme Court upheld the way the government sets AAQS under the Clean Air Act. The court unanimously rejected industry arguments that the EPA must consider financial cost as well as health benefits in writing standards. The justices also rejected arguments that the EPA took too much lawmaking power from Congress when it set tougher standards for ozone and soot in 1997. Nevertheless, the court threw out the EPA's policy for implementing new ozone rules, saying the agency ignored a section of the law that restricts its decision making authority. It ordered the agency to come up with a more "reasonable" interpretation of the law.

State Regulations/Standards. The State of California began to set California AAQS (CAAQS) in 1969 under the mandate of the Mulford-Carrell Act. The CAAQS are generally more stringent than the NAAQS. In addition to the six criteria pollutants covered by the NAAQS, there are CAAQS for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. The CAAQS are listed in Table 3.A.

Originally, there were no attainment deadlines for the CAAQS. However, the California Clean Air Act (CCAA) of 1988 provided a time frame and a planning structure to promote their attainment. The CCAA required nonattainment areas in the State to prepare attainment plans and proposed to classify each such area on the basis of the submitted plan, as follows: moderate, if CAAQS attainment could not occur before December 31, 1994; serious, if CAAQS attainment could not occur before December 31, 1997; and severe, if CAAQS attainment could not be conclusively demonstrated at all.

The attainment plans are required to achieve a minimum five percent annual reduction in the emissions of nonattainment pollutants unless all feasible measures have been implemented. The Basin is currently classified as a nonattainment area for three criteria pollutants: ozone, carbon monoxide, and coarse particulates.

3.1.6 Regional Air Quality Planning Framework

The 1976 Lewis Air Quality Management Act established the SCAQMD and other air districts throughout the State. The Federal Clean Air Act Amendments of 1977 required that each state adopt a State Implementation Plan (SIP) outlining pollution control measures to attain the AAQS in nonattainment areas of the state.

The ARB coordinates and oversees both State and federal air pollution control programs in California. ARB oversees activities of local air quality management agencies and is responsible for incorporating air quality management plans for local air basins into a SIP for EPA approval. ARB maintains air quality monitoring stations throughout the State in conjunction with local air districts. Data collected at these stations are used by ARB to classify air basins as “attainment” or “nonattainment” with respect to each pollutant and to monitor progress in attaining the AAQS. ARB has divided the State into 15 air basins. Significant authority for air quality control within these air basins has been given to local air districts that regulate stationary source emissions and develop local nonattainment plans.

Regional Air Quality Management Plan. The SCAQMD and Southern California Association of Governments (SCAG) are responsible for formulating and implementing the Air Quality Management Plan (AQMP) for the Basin. Regional AQMPs were adopted for the Basin for 1979, 1982, 1989, 1991, 1994, 1997, and 2003. Compliance with the provisions of the federal Clean Air Act and California Clean Air Act is the primary focus of the AQMP.

The 1997 AQMP was prepared pursuant to federal and State clean air legislation and addresses 1990 Clean Air Act (CAA) requirements with respect to particulate matter AAQS. Under the CAA, the AQMP must demonstrate attainment of PM_{10} AAQS by 2006 for both 24-hour and annual average AAQS. The 1997 AQMP responds to this requirement, relying mostly on the control measures outlined in the 1994 AQMP. The 1997 AQMP also updates the demonstration of attainment of the federal ozone and CO AAQS, and includes a maintenance plan for NO_2, as the Basin now qualifies for attainment of the federal NO_2 AAQS.

According to the 1997 AQMP, attainment of all federal AAQS was to occur no later than the year 2000 for carbon monoxide, the year 2006 for PM_{10}, and the year 2010 for ozone. State AAQS were proposed to be attained no later than the year 2000 for carbon monoxide. State AAQS for ozone and PM_{10} would not be required to be achieved until after the year 2010.

The 1997 AQMP carried forward the approach and key elements in the 1994 AQMP by focusing on market based strategies and incentives versus command and control regulations. New elements to the 1997 Plan included: 1) improved emission inventory and current air quality information; 2) refined control strategy, which allows for alternative approaches; 3) elimination of future indirect source measures; 4) amendments to the federal post-1996 Rate of Progress Plan and Federal Attainment Plans for ozone and CO; 5) a maintenance plan for NO_X; and 6) an attainment demonstration and SIP revision for PM_{10}.

Implementation of the AQMP is based on a series of control measures that vary by source type, such as stationary or mobile, as well as by the pollutant targeted. Similar to the 1994 AQMP, the Plan proposed two tiers of control measures, based on the availability and readiness of technology. Short and immediate term measures rely on known technologies and are expected to be implemented between 1997 and 2005. Long-term measures rely on the advancement of technologies and control methods that can be reasonably expected to occur between 2000 and 2010.

Control measures focus on adoption of new regulations or enhancement of existing regulations for stationary sources, implementation/facilitation of advanced transportation technologies (i.e., telecommunication, zero emission and alternative fuel vehicles and infrastructure, and both capital and noncapital based transportation improvements). Capital based improvements consist of high occupancy vehicle (HOV) lanes, transit improvements, traffic flow improvements, park and ride and intermodal facilities, and urban freeway, bicycle, and pedestrian facilities. Noncapital based improvements consist of rideshare matching and CMP based transportation demand management activities.

The SCAQMD governing board approved the 1997 AQMP on November 15, 1996. After approval, the AQMP was submitted to the ARB for its review and approval. ARB approved the ozone and PM_{10} parts of the 1997 AQMP on January 23, 1997, and submitted the AQMP to the EPA as proposed revisions to the SIP. The EPA rejected the District's revision of its 1997 AQMP in January 1999. The rejection, however, covers only the provisions of the AQMP designed to attain the federal ozone AAQS. Separate parts of the 1997 AQMP relating to carbon monoxide and nitrogen dioxide have previously been approved, and the EPA has yet to act on that portion of the 1997 AQMP related to PM_{10}. As a result of the rejection, SCAQMD prepared a draft "Proposed 1999 Amendment to the 1997 Ozone SIP Revision for the South Coast Air Basin" on October 7, 1999, for public review and comment. The 1999 Amendment proposed to revise the ozone part of the 1997 AQMP that was submitted to the EPA as a revision to the Basin portion of the 1994 California Ozone SIP. The SCAQMD governing board adopted the "1999 Amendment to the 1997 Ozone SIP Revision for the South Coast Air Basin" on December 10, 1999. The EPA approved the 1999 Amendment for Ozone in 2001, and currently there is no approved SIP for CO and PM_{10}. In addition, the SCAQMD governing board settled with three environmental organizations on its litigation of the 1994 Ozone SIP.

The SCAQMD adopted a comprehensive plan update, the 2003 Air Quality Management Plan for the South Coast Air Basin, in August 2003. The 2003 AQMP seeks to demonstrate attainment with the State and federal AAQS and incorporates a revised emissions inventory, the latest modeling techniques, and updated control measures remaining from the 1997/1999 SIP and new control measures. The ARB approved the 2003 AQMP, with minor modifications. The ARB forwarded the modified 2003 AQMP to the EPA for approval in October 2003.

4.0 METHODOLOGY AND THRESHOLDS

4.1 METHODOLOGY

A number of air quality modeling tools are available to assess air quality impacts of projects. In addition, certain air districts, such as the SCAQMD, have created guidelines and requirements to conduct air quality analyses. SCAQMD's current guidelines, *CEQA Air Quality Handbook*, *1993*, were adhered to in the assessment of air quality impacts for the proposed Olinda Alpha Landfill expansion project.

The air quality assessment for the proposed project includes estimating emissions associated with short-term construction and long-term operation of the proposed project. Sources of on-site stationary emissions include landfill gas, the gas-to-energy facility, and the flare system. Mobile emissions include vehicle trips to and from the landfills considered in this analysis. In addition, localized air quality impacts (i.e., carbon monoxide concentrations [CO hot spots] at intersections in the project area), would potentially be affected due to the proposed changes. Caltrans Transportation Project-Level Carbon Monoxide Protocol (December 1997) was used in this air quality analysis for CO hot spot analysis.

Onsite Operations Emissions. The project would have heavy-duty equipment operating during the work hours. Emissions associated with landfill operations were calculated based on current operational information that is expected to continue after year 2013, when the project begins.

Vehicular Emissions. The project would have refuse trucks and other vehicles to and from the project site. Emissions associated with these trips were calculated based on the number of trips and average trip lengths provided for landfill-related vehicle trips (including haul trucks), and emission factors derived from the ARB's EMFAC 2002 model.

Carbon Monoxide (CO) Hot Spots. The CALINE4 model is used to assess air quality impacts near transportation facilities. The air model estimates the CO concentration near intersections or along roadway segments based on traffic volume, roadway geometry, topography, and meteorological data. To assess the impact on local air quality, CO concentrations in the year 2013 were evaluated. It is anticipated that emission factors will decrease in the future due to advanced technology.

The results from the air quality modeling of CALINE4 were used to determine the level of significance and impact on local air quality. Output sheets from the air quality model runs are contained in Appendix B.

Screening Level Health Risk Analysis. Air dispersion modeling using the ISCST3 model was conducted to develop spatial relationships between truck traffic traveling on Valencia Avenue north of Carbon Canyon Road and the existing/proposed houses in the Olinda Ranch development. Minimum distance from any house to the mid-lane distance of the road is 8 meters. An array of volume sources was arranged along the north and south bound lanes of Valencia Avenue, pacing them at 5-meter intervals and defining them as the width of the lane and at the height of the exhaust stacks (plus a few feet above the trucks to account for upward momentum). Using historical traffic volume data from IWMD and non-landfill traffic for current traffic levels and emission factors from EMFAC2002, an emission factor was developed for diesel particulate that represents all the categories of vehicles and trucks traveling on Valencia Avenue north of Carbon Canyon Road.

A screening level health risk assessment modeling was conducted for emissions associated with the on-site landfill gas flare system (approximately 1,590 feet from the nearest residences in Olinda Ranch) and heavy-duty, diesel-driven landfill equipment exhaust in the future expansion area (approximately 4,250 feet from the nearest residences in Olinda Ranch) in the northeast portion of the landfill.

The OEHHA technique for estimating potential health risks, as described in Appendix I of the Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA, August 2003), was used to determine the carcinogenic and chronic health risks to individuals living in the existing and proposed houses along Valencia Avenue north of Carbon Canyon Road. The modeled results were added to the ambient diesel particulate concentration of 2.2 $\mu g/m^3$ for outdoors and 1.47 $\mu g/m^3$ for indoors (as published in Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, California Environmental Protection Agency, June, 1998) and proportioned for a daily exposure of 10 hours indoors and 14 hours outdoor every day for 70 years.

4.2 CEQA THRESHOLD OF SIGNIFICANCE

South Coast Air Quality Management District CEQA Threshold of Significance

A project would normally be considered to have a significant effect on air quality if the project would violate any AAQS, contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutants concentrations, or conflict with adopted environmental plans and goals of the community in which it is located.

Impacts may be derived from short-term activities associated with the construction of new facilities within the site boundary and long-term impacts associated with ongoing operations on the site. An air quality impact analysis is generally structured to address activities that have quantifiable levels of air pollutant emissions that can be compared to clean air standards after those emissions are carried off-site by prevailing winds. Because many pollutants require considerable time to undergo chemical reactions and because the SCAB routinely exceeds AAQS for a reactive pollutant such as ozone (O_3), there is no currently available reasonable mechanism to explicitly quantify "… contributes substantially to an existing violation…" as described in the CEQA Guidelines. To assist determination of the potential significance of air quality impacts, the SCAQMD has published de minimis emission levels that are considered to be the levels below which an air quality impact is not significant. The SCAQMD has established the following emission thresholds its CEQA Air Quality Handbook (SCAQMD, April 1993).

Emissions Thresholds for Construction . The following CEQA significance thresholds for construction emissions have been established for the Basin:

- 75 pounds per day or 2.5 tons per quarter of reactive organic compounds (ROC)
- 100 pounds per day or 2.5 tons per quarter of oxides of nitrogen (NO_X)
- 550 pounds per day or 24.75 tons per quarter of carbon monoxide (CO)
- 150 pounds per day or 6.75 tons per quarter of coarse particulate (PM_{10})
- 150 pounds per day or 6.75 tons per quarter of sulfur oxides (SO_X)

Projects in the Basin with construction-related emissions that exceed any of the emission thresholds should be considered to be significant under CEQA.

Thresholds for Operational Emissions. The daily operational emissions "significance" thresholds for the Basin are as follows.

X Emissions Thresholds for Pollutants with Regional Effects
    N 55 pounds per day of ROC
    N 55 pounds per day of NO_X
    N 550 pounds per day of CO
    N 150 pounds per day of PM_{10}
    N 150 pounds per day of SO_X.

Projects with operation related emissions that exceed any of the above listed emission thresholds are considered to result in significant adverse impacts under CEQA.

\$ Concentration Standards for Pollutants with Local Effects
    N California State one-hour CO standard of 20.0 ppm
    N California State eight-hour CO standard of 9.0 ppm

The significance of localized project impacts under CEQA depends on whether ambient CO levels in the vicinity of the project are above or below State and federal CO AAQS. If ambient levels are below the AAQS, a project is considered to have a significant adverse impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a State or federal AAQS, project emissions are considered significant if they increase one-hour CO concentrations by 1.0 part per million (ppm) or more or eight-hour CO concentrations by 0.45 ppm or more. There are no local emission concentration standards for other criteria pollutants.

4.3 THRESHOLD OF SIGNIFICANCE FOR AIR EMISSIONS NOT REQUIRED BY CEQA

Health Risk Analysis Thresholds. For pollutants without defined significance standards or air contaminants not covered by the standard criteria cited above, the definition of substantial pollutant concentrations varies. For toxic air contaminants, "substantial" is taken to mean that the individual cancer risk exceeds a threshold considered to be a prudent risk management level. If best available control technology for toxics (T-BACT) has been applied, the individual cancer risk to the maximum exposed individual (MEI) must not exceed ten in one million in order for an impact to be determined not to be significant.

Airborne impacts are also derived from materials considered to be a nuisance for which there may not be associated standards. Odors or the deposition of large diameter dust particles outside the PM_{10} size range would be included in this category. It is considered a significant impact for odors and large diameter dust particles if the SCAQMD nuisance (Rule 402) would be potentially violated.

The following limits for maximum individual cancer risk (MICR), cancer burden, and noncancer acute and chronic hazard index (HI) from project emissions of toxic air contaminants have been established for the Basin:

- MICR and Cancer Burden

  The cumulative increase in MICR which is the sum of the calculated MICR values for all toxic air contaminants emitted from the project will not result in any of the following:

  (A) an increased MICR greater than one in one million (1.0×10^{-6}) at any receptor location, if the project is constructed without T-BACT

  (B) an increased MICR greater than ten in one million (1.0×10^{-5}) at any receptor location, if the project is constructed with T-BACT;

  (C) a cancer burden greater than 0.5

- Chronic Hazard Index

  The cumulative increase in total chronic HI for any target organ system due to total emissions from the project will not exceed 1.0 at any receptor location.

- Acute Hazard Index

  The cumulative increase in total acute HI for any target organ system due to total emissions from the project will not exceed 1.0 at any receptor location.

- Risk per year

  The risk per year shall not exceed 1/70 of the maximum allowable risk specified above at any receptor locations in residential areas.

MAXIMUM INDIVIDUAL CANCER RISK (MICR) is the estimated probability of a potential maximally exposed individual contracting cancer as a result of exposure to toxic air contaminants over a period of 70 years for residential and 46 years for worker receptor locations. The MICR calculations shall include multipathway consideration, if applicable. CANCER BURDEN means the estimated increase in the occurrence of cancer cases in a population subject to a MICR of greater than or equal to one in one million (1.0 x 10^{-6}) resulting from exposure to toxic air contaminants. INDIVIDUAL SUBSTANCE CHRONIC HAZARD INDEX (HI) is the ratio of the estimated long-term level of exposure to a toxic air contaminant for a potential maximally exposed individual to its chronic reference exposure level. The chronic hazard index calculations shall include multipathway consideration, if applicable. INDIVIDUAL SUBSTANCE ACUTE HAZARD INDEX (HI) is the ratio of the estimated maximum one-hour concentration of a toxic air contaminant for a potential maximally exposed individual to its acute reference exposure level.

5.0 IMPACTS ON AIR QUALITY

5.1 GENERAL OVERVIEW OF IMPACTS

The proposed project would extend the operations of Olinda Alpha Landfill from year 2013 to approximately year 2021. The existing landfill operations generate air emissions from on-site operations and from off-site waste/refuse truck trips. The proposed landfill expansion would result in the continuation of the same impacts as existing related to air emissions from landfilling, vehicular trips, and stationary sources over a longer period of time.

5.2 IMPACTS OF THE PROPOSED PROJECT

5.2.1 Short-Term Impacts

Air quality impacts would occur during the construction of the required prescriptive or alternative liner systems, surface water drainage systems, subdrain system, LFG collection and control systems, and leachate collection and recovery systems to accommodate expansion of the Olinda Alpha Landfill. Major sources of emissions during construction include exhaust emissions from construction vehicles and equipment and fugitive dust generated by construction vehicles and equipment traveling over exposed surfaces, as well as by soil disturbances from excavation and backfilling.

Construction Emissions. Construction activities would cause combustion emissions from heavy-duty construction vehicles, haul trucks, and vehicles transporting the construction crew. Exhaust emissions during construction activities envisioned on site would vary daily as construction activity levels change. It is anticipated that peak excavation days would generate a larger amount of air pollutants than during other project construction days, due to larger amount of soil to be excavated and removed from the site.

Fugitive Dust. Fugitive dust emissions are generally associated with excavation, windblown unpaved areas, vehicle and equipment travel on unpaved roads, and dirt/debris pushing. Dust generated during construction activities would vary substantially depending on the level of activity, the specific operations, and weather conditions.

The SCAQMD estimates that each acre of graded surface creates about 26.4 pounds of PM_{10} per workday during the construction phase of the project and 21.8 pounds of PM_{10} per hour from dirt/debris pushing per dozer. It is assumed that up to a maximum of one acre of land would be disturbed on any one day. It is also assumed that four pieces of earthmoving equipment would be used up to ten hours per day. It is assumed that there would be a maximum of 0.5 acre of open stock piles on the project site, which will generate 42.8 pounds per day (ppd) of windblown PM_{10}. Therefore, approximately 941 ppd of PM_{10} would be generated from soil disturbance before mitigation during the peak construction phase. This level of dust emission would exceed the SCAQMD threshold of 150 ppd.

The project will comply with regional rules, which would assist in reducing the short-term air pollutant emissions. Fugitive dust from a construction site must be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. Dust suppression techniques like the existing dust control program would continue to be implemented at the landfill under the expansion plan to prevent fugitive dust from creating a nuisance off site. Implementation of these dust suppression techniques can reduce the fugitive dust generation (and thus the PM_{10} component) by 50 percent or more. Assuming a mitigating efficiency of 50 percent by implementation of the standard measures, PM_{10} emissions from soil disturbance under the proposed project would be reduced to approximately 471 ppd. Compliance with these rules would reduce dust impacts of the proposed project on sensitive receptors in the project vicinity. However, the fugitive dust emissions will continue to exceed the SCAQMD threshold.

It is further assumed that on a peak day, a total of 14 workers would be working in the construction area and five truck loads of materials would be delivered to the project site. Assuming an average trip length of 25 miles each way, emissions from the daily 700 miles of travel by workers and the 250 miles traveled by the delivery trucks would generate approximately 9.6 ppd of CO, 0.5 ppd of ROC, 7.2 ppd of NO_X, 0.1 ppd of SO_X, and 0.2 ppd of PM_{10} from vehicle exhaust and tire wear.

Construction Emissions Summary. As shown in Table 5.A, the peak-day construction emissions under the proposed expansion project would exceed the SCAQMD daily threshold for PM_{10} after implementation of standard dust suppression measures. Emissions associated with project construction would contribute to regional emissions. When combined with emissions from construction of other projects in the region, construction emissions would be considered cumulatively significant.

5.2.2 Long-Term Impacts

Long-term air emission impacts are those associated with stationary sources and mobile sources related to the proposed project. Because of the characteristics of the proposed project, i.e., the expansion of an existing landfill, the project related emissions are the emissions associated with current operations at the project site. In addition, the proposed project would result in the continued landfill related vehicular trips, including waste/refuse trucks. Therefore, current mobile source emissions from the vehicle use associated with the landfill would be the mobile source emissions associated with the proposed project between year 2013 and year 2021.

Table 5.A: Peak Day Construction Emissions (Pounds per Day)

Number and Equipment Type[1]	Hours of Operation	Pollutants				
		CO	ROC	NO_X	SO_X	PM_{10}
1 Excavator	10	3.6	0.3	7.8	0.6	0.5
1 Motor Grader	10	1.5	0.4	7.1	0.9	0.6
1 Tracked Loader	10	2.0	1.0	8.3	0.8	0.6
1 Wheeled Tractor	10	35.8	1.8	12.7	0.9	1.4
1 Miscellaneous[2]	10	6.8	1.5	17.0	1.4	1.4
2 On-Site Haul Trucks	10	9.2	0.9	7.0	0.1	0.3
Delivery Truck Trips[3]		3.2	0.3	6.3	0.1	0.1
Worker Commute Exhaust[4]		6.4	0.2	0.9	0.0	0.1
Subtotal Exhaust Emission		**68.5**	**6.4**	**67.1**	**4.8**	**5**
Fugitive Dust Emissions						
Open Stock Pile[5]						42.8
Dirt/Debris Pushing[6]						872.0
Graded/Exposed Surface[7]						26.4
TOTAL GRADING NO MITIGATION		**68.5**	**6.4**	**67.1**	**4.8**	**941.2**
TOTAL GRADING WITH MITIGATION[8]		**68.5**	**6.4**	**67.1**	**4.8**	**475.6**
SCAQMD Threshold		**550**	**75**	**100**	**150**	**150**
Significant?		**NO**	**NO**	**NO**	**NO**	**YES**

Notes:

[1] Emission factors based on SCAQMD, *1993 CEQA Air Quality Handbook*, Tables A9-8-A and A9-9.

[2] A water truck.

[3] Based on a haul length of 25 miles each way and five loads per day using EMFAC2002 emission rates.

[4] Based on a commute length of 25 miles each way for 14 workers.

[5] Emissions from one-half acre of open stock piles.

[6] Emissions by four vehicles operating eight hours per day.

[7] Emissions from one acre of graded/exposed surface.

[8] Assumes 50 percent effectiveness for dust suppression measures.

Source: LSA (2004).

Regional Pollutants Projections

Landfill Operations. Based on the data collected by the IWMD, on-site equipment used at the landfill to dispose of an annual average of 7,000 TPD of MSW and 3,000 to 4,000 TPD exempt commodity on a daily basis includes the following shown in Table 5.B:

Table 5.B: Olinda Alpha Landfill List of Operating Equipment

Quantity	Description	Uses
5	Dozer	Push, compact, grade and cover refuse. Walk-in slopes, miscellaneous earthwork.
2	Compactor	Refuse and cover compaction.
2	Scraper	Haul earth for cut and cover operations.
2	Water Truck	Control cover soil moisture content and dust control, landscape irrigation, and fire fighting.
1	Motor Grader	Grade unloading deck, maintain internal roads and drainage control of decks.
1	Backhoe	Load, dig, and trench earthen material.
1	Dump Truck	Move and haul miscellaneous materials such as broken asphalt, silt, earth cover, etc.
2	Wheel Dozer	Clean the roads and maintain trash areas.

Source: County of Orange Integrated Waste Management Department, January 2004.

Based on information provided by the County of Orange IWMD, there are currently 61 total landfill personnel on the Olinda Alpha Landfill site to conduct the daily operations.

It was assumed that on-site dozers and compactors are used 10 hours per day and all other equipment is used for 8 hours per day when the landfill is open for business. It should be noted that emissions from on-site equipment used in landfill operations would continue from 2013 through 2021, and would cease to occur after year 2021. Table 5.C lists the estimated existing emissions from daily on-site equipment usage described above as well as waste/refuse trucks to and from the Olinda Alpha Landfill.

Waste/Refuse Transfer Trucks. Based on the data collected by the IWMD, waste/refuse trucks coming to the Olinda Alpha Landfill are from both in-County and out-of-County sources. Table 5.C lists emissions associated with haul trucks to and from the Olinda Alpha Landfill. It should be noted that emissions from waste/refuse transfer trucks coming to the Olinda Alpha Landfill would continue from 2013 through 2021, and would be diverted to other landfilling destinations after 2021. Diverted landfilling destinations would involve greater transportation related emissions as compared to the OAL site due to greater travel distances from the source area of MSW generation.

Table 5.C: Landfill Operations Emissions (Pounds per Day)

Source[1]	No. of Units	Hours of Operation	NO_X	ROC	PM_{10}	SO_X	CO
Waste Truck Trips[2]	1,784		516.1	24.2	10.9	5.8	259.1
Other deliveries[3]	384		10.0	1.2	0.3	0.1	31.7
Motor Grader	1	8	5.7	0.3	0.5	0.7	1.2
Loader	1	8	6.6	0.8	0.5	0.6	1.6
Compactor	2	10	34.0	3.0	2.8	2.9	13.5
Scrapers	2	8	61.4	4.3	6.6	7.4	20.0
Water Trucks	2	8	18.2	1.0	2.6	8.6	6.4
Dozer	5	10	63.0	6.0	5.6	7.0	17.5
Backhoe	1	8	13.6	1.2	1.1	1.1	5.4
Service Trucks	3	8	1.4	0.6	0.0	0.1	5.4
Wheel Dozer	2	10	69.5	6.6	1.7	6.6	33.1
Employee Commute/ Visitor Trips[4]	122		4.0	0.9	0.2	0.0	27.8
Subtotal Vehicular Emissions			**803.5**	**50.1**	**32.8**	**40.9**	**422.7**
Landfill Gas Fugitive[5]				533			
Gas-to-energy Facility[6]			216.0	65.0	3.0	22.0	438.0
Flare System[7]			196.1	9.4	77.5	48.2	48.6
Subtotal Stationary Source Emissions			**412.1**	**607.4**	**80.5**	**70.2**	**486.6**
Total Vehicular and Stationary Source Emissions			**1,215.6**	**657.5**	**113.3**	**111.1**	**909.3**
SCAQMD Threshold			**55**	**55**	**150**	**150**	**550**
Exceed Threshold?			**Yes**	**Yes**	**No**	**No**	**Yes**

Source: Bryan A. Stirrat & Associates and LSA Associates, Inc., April 2004.

Notes:

[1] Emission factors based on SCAQMD, *1993 CEQA Air Quality Handbook*, Tables A9-8-A and A9-9. Based on the USEPA's AP-42 emission factors.

[2] Based on an average haul length of 11.4 miles each way using EMFAC2002 emission rates.

[3] Based on an average haul length of nine miles each way using EMFAC2002 emission rates

[4] Based on a commute length of 25 miles each way.

[5] Assumes that 70 percent of the landfill gas will be captured by the landfill gas collection system. This is based on generally accepted methods of estimating landfill gas generation rates.

[6] 2004 Measured Emissions. Maximum permitted emissions are: 96 lb/day ROC, 822 lb/day NO_X, 550 lb/day CO, 36 lb/day SO_X and 3 lb/day PM_{10}.

[7] Emissions from most current (2003) flare source test. Emissions vary year to year. Maximum permitted emissions are: 93.6 lb/day, ROC, 339.4 lb/day NO_X, 106.1 lb/day SO_X, 407.4 lb/day CO, and 136.6 lb/day PM_{10}

On-Site Landfill Gas and Flare System. The Olinda Alpha Landfill is a Class III landfill permitted for the disposal of non-hazardous municipal solid waste (MSW). The SCAQMD regulates landfill operations related to landfill gas emissions, subsurface gas migration, and fugitive dust control for Orange County landfills. The CIWMB and LEA also regulate LFG subsurface migration. Environmental monitoring of air, landfill gas (LFG), and groundwater is conducted at all the sites to detect LFG migration or groundwater contamination. An existing LFG extraction system and flare station is located at the Olinda Alpha Landfill for LFG control. In addition, utilization of LFG for energy production currently is being conducted at Olinda Alpha Landfill. Table 5.C lists the emissions associated with fugitive landfill gas (30 percent of total generated) and emissions from the flare system (based on the most recent source testing results) and the gas-to-energy facility.

Emissions associated with on-site LFG and flare systems for waste deposited through 2013 would continue to occur at the Olinda Alpha Landfill even if the project is not implemented. Emissions associated with LFG and flare systems from waste deposited between 2013 and 2021 would extend the local emissions by eight years. These additional LFG and flare system emissions would occur regardless of which project alternative is selected because landfill gas emissions associated with decomposition of MSW are not site-specific and would continue to be generated as long as there is MSW generation and deposition in landfills. As such, there would be no increase in regional LFG associated with the proposed project as compared to existing conditions or the No Project Alternative. However, the proposed project would extend the LFG peak year from 2017 to 2023 and increase the maximum amount of methane produced from 8,000 SCFM to 9,000 SCFM. No additional flares beyond the third flare will be required to accommodate the additional LFG produced. Therefore, the increase in emissions will not exceed the levels required for the permitted landfill operations.

Table 5.C shows that emissions associated with current landfill operations exceed the SCAQMD daily emission thresholds for three of the five criteria pollutants. These landfill operations related emissions would continue from year 2013 to approximately 2021 as a result of the proposed project. Because these emissions cannot be feasibly reduced to below the SCAQMD emission thresholds, the proposed project would have a significant long-term air quality impact. It should be noted that this significant impact to air quality would occur regardless of whether the project is developed or not (if the MSW that is currently disposed of at OAL is disposed of within the south coast air basin), simply because there will continue to be MSW generation and air pollutant emissions associated with the need to dispose of it. These SCAQMD emission thresholds signal that this is a significant emission source. Because these emissions will occur regardless of whether the project is developed or not, consideration of the magnitude of air pollution generated by MSW disposal under the different project alternatives should be considered in the evaluation of regional air pollution and is further discussed in Section 5.3.

In terms of local concentrations from Olinda Alpha Landfill, monthly monitoring of all occupied structures within the landfill boundary is performed utilizing an Organic Vapor Analyzer (OVA). Off-site receptors are at least 1,950 feet away from these site structures; therefore, no impact would occur for off-site receptors. IWMD P&P require remedial action/measures when methane registers equal to or greater than 500 ppm in a structure.

Microscale Projections

Localized air quality impacts would occur when emissions from vehicular traffic increase as a result of the proposed project.

Carbon Monoxide (CO) Hot Spots. CO poses a threat to human health in high concentrations. CO tends to be concentrated at the point of emission and disperses with distance from the source. CO generated from the flares and internal combustion engines is located more than 1,590 feet from the closest existing and proposed residence. Caltrans CO assessment protocol for traffic sources requires modeling of traffic 10 feet from the edge of congested intersections. Due to the large distance between the on-site sources and the closest residences, CO from these sources are not anticipated to result in significant concentrations of CO that would exceed ambient air quality standards.

The proposed project would result in the continuation of landfill related traffic to and from the Olinda Alpha Landfill. Vehicle turn volumes at intersections used for landfill-related traffic would be lower without the proposed project. The following CO hot spot analysis applies to the proposed project. The increase in carbon monoxide (CO) emissions or concentrations is 0.1 ppm or less as a result of the project. CO hot spot analyses were conducted for year 2013 conditions. Year 2013 is the year with project (landfill expansion) beginning, which would have the highest emission factors between year 2013 and year 2021. The highest CO concentrations would occur during peak traffic hours; hence, CO impacts calculated under peak traffic conditions represent a worst case analysis. Modeling of the CO hot spot analysis was based on traffic volumes generated by the project traffic study (Bryan A. Stirrat & Associates, February 2004), which identified the peak traffic levels generated in the project area for the year 2013.

Table 5.D shows the projected CO levels in the future (year 2013). For the future conditions, there is no exceedance of either the state or federal CO AAQS for the one-hour or eight-hour durations. The one-hour CO concentration ranges from 10.8 to 11.4 ppm in year 2013. The eight-hour CO concentration ranges from 5.0 to 5.4 ppm in year 2013. They are all below the federal and State AAQS. CALINE4 model printouts are included in Appendix A. Because no future CO levels would exceed the federal and State one-hour and eight-hour AAQS, no CO hot spots would occur.

These future opening year conditions show that the project area would not have CO hot spots, with or without the project. The proposed project would not have a significant impact on local air quality for CO, and no mitigation measures would be required.

Screening Health Risk Analysis. The primary health risk from heavy-duty trucks is diesel particulate exhaust. A screening level health risk analysis was conducted for existing and proposed homes along Valencia Avenue north of Carbon Canyon Road leading to the project site. The results of the screening level analysis show that existing and proposed residences along Valencia Avenue would be exposed to an unmitigated inhalation cancer risk of one to two in a million assuming a five year exposure period, which is lower than the ten in a million threshold. With up to 20 years of exposure in 5-year increments, the risk would go up to 8 in a million, still below the 10 in a million threshold. Exposure of less than 20 years would result in a risk of less than 8 in a million. Because the proposed project would extend the landfill operation by eight years (2013 to approximately 2021), no significant health risk would occur for existing and proposed residences along Valencia Avenue leading to the Olinda Alpha Landfill from landfill-related truck traffic.

Similarly, the screening level health risk assessment conducted for the on-site flare system and heavy-duty, diesel-driven equipment exhaust showed that the level of health risk is less than one in a million for all receptors with a distance of 500 feet or more from these activities. Because the closest existing and proposed residences are more than 1,590 feet from the flare system and more than 4,200 feet from the future expansion area, potential health risks for these residents would be small and less than significant. No mitigation is necessary.

Odor Impact Analysis. The proposed project would continue landfill activities at the same rate as that which exists under current conditions and would not increase the potential for odor impacts.

Potential odor impacts associated with landfilling include the odors of fresh refuse and/or LFG. Landfill odors consist of two main types of odors. Fresh trash has a "wet paper" characteristic odor that occurs during initial oxygen-sufficient decomposition. After several weeks, the character of the odor changes to a "sickly sweet" odor typical of LFG. The conversion from one type of odor to the other depends on the nature of the refuse and the amount of moisture available in the landfill. A wet landfill creates an LFG odor impact much sooner than a dry landfill.

Throughout the operating day or at the end of each operating day, sufficient cover material is transported by scrapers to the working face and is placed by either a crawler tractor or scrapers to cover all exposed refuse with a minimum six-inch-thick cover of soil or alternative daily covers. The purpose of daily cover soil or an equivalent alternative daily cover material approved by the Local Enforcement Agency (LEA) is to provide a suitable barrier to the emergence of flies, prevent windblown refuse and debris, minimize the escape of odor, prevent excess infiltration of surface water runoff, and hinder the progress of fires within the landfill.

Odors from refuse are controlled by the operation of a comprehensive landfill gas collection and disposal system. Odors are further controlled by the application of daily soil or alternative cover and chemical cover over the refuse. Intermediate cover is applied as soon as possible on areas required by Title 27. In addition, the active working face is contained in as small an area as practicable to help control odors.

Odors Associated with Fresh Refuse. Fresh refuse is the odor one associates with household waste from a trash can when it is placed at the curb for collection. Unless the refuse contains materials that are very rapidly putrescible (i.e., prone to rotting) such as uncooked meat products or yard waste that has begun composting in the collection container, there is normally sufficient oxygen present to keep odor production at a slow rate during storage prior to pickup for disposal. In addition to the nature of the refuse, moisture and heat will also accelerate oxygen-sufficient (aerobic) decay and turn the process into oxygen-deficient (anaerobic) decay.

As the refuse packer truck blends an occasional barrel of foul-smelling trash with less offensive trash, most truckloads of refuse take on a fairly similar odor character. The odor is generally unpleasant near the source, but daytime mixing dilutes the odor with clean air to a level at which off-site complaints are infrequent and ultimately to where people with even a high sensitivity to such odors can no longer detect the odor.

Under worst-case conditions, the NOCLATS (1989) indicated a fresh trash odor detectability of up to one-half mile. The Puente Hills Landfill Expansion EIR (Los Angeles County Sanitation District, 1992) predicted no odor detectability for fresh refuse within 1,250 feet of schools and homes. A study (Giroux and Associates, 1997) of trainloads of fresh trash in Napa, California, found detectable odor no farther than 600 feet from the trains. A consensus value for the outer limits of the odor envelope from fresh rubbish is then one-quarter mile (i.e., 1,320 feet) from the landfill working face. Except under unusual circumstances, the limit of offensive odor, defined as odor strength 10 times the minimum detection threshold, is perhaps 500 feet from the source.

With prevailing daytime southwest to northeast winds at the Olinda Alpha Landfill, occasional fresh trash detection would be confined to on-site locations away from any off-site existing or planned homes. Consequently, daytime odors from landfilling are not expected to have any significant odor impact on off-site sensitive receptor populations. Control of the size of the working face as a means of fresh trash odor control would minimize odor detectability for off-site sensitive receptor locations.

Odor Associated with LFG. Odor impacts at Southern California landfills became most noticeable in the 1970s and early 1980s. Previous to that time, burning was used to destroy a substantial part of the biodegradable trash in the refuse stream. Conversion to sanitary landfills in response to prohibitions on burning both in backyard incinerators and at landfills led to accumulations of organic material in the waste disposed of in landfills. In the dry tombs of Southern California landfills, the decay lifetime of such material is 30 to 40 years. Material placed in the 1960s is only now reaching the end of this decay cycle.

Passive systems of LFG dispersal (cover soil and vent pipes) were ineffective in preventing off-site odor detectability, especially as refuse was consolidated into fewer, larger landfills instead of many smaller ones. Active LFG collections and disposal systems became mandatory for larger landfills in Southern California. Retrofit systems were installed in older sections of landfills. For current landfill operations, the collection system is installed concurrently with the refuse filling operations and at specific intervals. The collection efficiency of such newer systems tends to be higher than for retrofit systems because there are fewer “dead spots.”

Landfill odor has historically been detectable three to five miles from a site when winds are light and low-level inversion traps odors in a shallow layer of air next to the surface of the landfill. This condition typically occurs at night and is called “night time drainage.” With the installation of a comprehensive LFG collection and disposal system, odor complaints are minimized. Modern odor-control technology thus appears capable of maintaining a very limited LFG odor footprint around a well-operated landfill.

The proposed expansion area is to the northeast, away from nearby homes and well beyond the zone of probable odor impact.

As stated previously, the project proposes to continue landfill activities at the same rate as under existing conditions. Under the proposed project, the landfill will result in a maximum vertical increase of 115 feet and a maximum horizontal expansion of approximately 33 acres within the existing property boundary of Olinda Alpha Landfill. The proposed vertical expansion is to the north and the horizontal expansion area is to the northeast, away from nearby residences and well beyond the zone of probable odor impact. Therefore, the proposed expansion project is not anticipated to increase the potential for odor impacts.

With prevailing daytime southwest-to-northeast winds at Olinda Alpha Landfill, occasional fresh trash detection would be confined to on site locations away from any off-site existing or planned residences. Consequently, daytime odors from landfilling are not expected to have any substantial impacts on any off-site sensitive receptor population. Control of the size of the working face as a means of fresh trash odor control would minimize odor detectability for any off-site sensitive receptor locations.

The combination of favorable daytime meteorology, a substantial nocturnal buffer zone for future operations in the expansion area, and the effectiveness of mandatory LFG collection/disposal systems will combine to create a less than significant odor impact for future Olinda Alpha landfilling activities.

Operations at the landfill would continue to generate odors even though no waste would be left uncovered at the end of daily operations. However, because the minimum distance from the expansion area to the nearest off-site residences is more than 4,250 feet, no impacts from on-site odors due to the proposed expansion project would occur.

Table 5.D: Future Without/With Project Vehicular Traffic Intersection CO Concentrations

Intersection	Distance to Receptor Location from Roadway Centerline (meters)	2004 1 Hr CO Concentration[6] (ppm)	2004 8 Hr CO Concentration[7] (ppm)	Exceeds State Standards 1 hr	8 hr
Associated Road & Imperial Highway	19 19 20 20	11.2/11.2 11.1/11.2 11.1/11.1 11.1/11.1	5.2/5.2 5.2/5.2 5.2/5.2 5.2/5.2	No No No No	No No No No
Placentia Avenue & Imperial Highway	12 12 14 14	11.4/11.4 11.4/11.4 11.4/11.4 11.3/11.3	5.4/5.4 5.4/5.4 5.4/5.4 5.3/5.3	No No No No	No No No No
Kraemer Boulevard & Imperial Highway	20 20 20 21	11.4/11.4 11.3/11.3 11.2/11.3 11.2/11.2	5.4/5.4 5.3/5.3 5.2/5.3 5.2/5.2	No No No No	No No No No
Valencia Avenue & Imperial Highway	15 15 16 17	11.1/11.2 11.0/11.0 11.0/11.0 11.0/11.0	5.2/5.2 5.1/5.1 5.1/5.1 5.1/5.1	No No No No	No No No No
Valencia Avenue & Birch Street	12 12 14 15	11.0/11.0 10.9/10.9 10.9/10.9 10.8/10.9	5.1/5.1 5.0/5.0 5.0/5.0 5.0/5.0	No No No No	No No No No
Valencia Avenue & Carbon Canyon Road	14 14 15 16	11.2/11.2 11.1/11.2 11.1/11.1 11.1/11.1	5.2/5.2 5.2/5.2 5.2/5.2 5.2/5.2	No No No No	No No No No

Source: LSA Associates, Inc., February 2004.

5.3 IMPACTS OF ALTERNATIVE 1 (NO PROJECT ALTERNATIVE)

5.3.1 Short-Term Impacts

Because no construction would occur on the Olinda Alpha Landfill under this project alternative, no construction air quality impacts would occur at this landfill.

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[6] Includes ambient one-hour CO concentration of 7.4 ppm. The State's one-hour CO AAQS is 20 ppm. CO concentrations at all receptor locations would be the same with or without project.

[7] Includes ambient eight-hour CO concentration of 4.8 ppm. The State's eight-hour CO AAQS is 9.0 ppm. CO concentrations at all receptor locations would be the same with or without project.

5.3.2 Long-Term Impacts

Under this project alternative, it would result in the need to divert waste/refuse trucks to other in-County or out-of-County landfills, therefore increasing the total daily vehicle miles traveled by these trucks. Because vehicle emissions are partly proportional to their vehicle miles traveled (VMT), higher VMT would result in higher vehicle emissions. Therefore, long-term air quality impacts would be worse than the proposed project and would be negative for the region.

5.4 IMPACTS OF ALTERNATIVE 2 (TWO LANDFILL SYSTEM—FRB)

5.4.1 Short-Term Impacts

Because no construction would occur on the Olinda Alpha Landfill under this project alternative, no construction air quality impacts would occur at this landfill. However, construction may be needed at the Frank R. Bowerman Landfill to accommodate the additional daily waste/refuse intake at this landfill.

5.4.2 Long-Term Impacts

Under this project alternative, it would result in the need to divert waste/refuse trucks to the FRB Landfill, therefore increasing the total daily vehicle miles traveled by these trucks. Because vehicle emissions are partly proportional to their VMT, higher VMT would result in higher vehicle emissions. Therefore, long-term air quality impacts would be worse than the proposed project and would be negative for the region.

5.5 IMPACTS OF ALTERNATIVE 3 (TWO LANDFILL SYSTEM—PRIMA DESCHECHA)

5.5.1 Short-Term Impacts

Because no construction would occur on the Olinda Alpha Landfill under this project alternative, no construction air quality impacts would occur at this landfill. However, construction may be needed at the Prima Deschecha Landfill to accommodate the additional daily waste/refuse intake at this landfill.

5.5.2 Long-Term Impacts

Under this project alternative, it would result in the need to divert waste/refuse trucks to the Prima Deschecha Landfills, therefore increasing the total daily vehicle miles traveled by these trucks. Because vehicle emissions are partly proportional to their VMT, higher VMT would result in higher vehicle emissions. Therefore, long-term air quality impacts would be worse than the proposed project and would be negative for the region.

6.0 MITIGATION MEASURES

6.1 STANDARD CONDITIONS AND MITIGATION MEASURES

6.1.1 Standard Conditions

The project will be required to comply with regional rules that assist in reducing short-term air pollutant emissions. SCAQMD Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rule 402 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off site.

AQ-1 Applicable dust suppression techniques from Rule 403 are summarized below. Additional dust suppression measures in the SCAQMD CEQA Air Quality Handbook are included as part of the project's mitigation. Implementation of these dust suppression techniques will reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules would reduce impacts on nearby sensitive receptors.

Applicable Rule 403 Measures:

- Apply nontoxic chemical soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
- Water active sites at least twice daily. (Locations where grading is to occur will be thoroughly watered prior to earth moving).
- All trucks hauling dirt, sand, soil, or other loose materials are to be covered, or should maintain at least two feet of freeboard in accordance with the requirements of California Vehicle Code (CVC) section 23114 (freeboard means vertical space between the top of the load and top of the trailer).
- Pave construction access roads at least 100 feet onto the site from main road.
- Traffic speeds on all unpaved roads shall be reduced to 15 mph or less.

Additional SCAQMD *CEQA Air Quality Handbook* Dust Measures:

- Revegetate disturbed areas as quickly as possible.
- All excavating and grading operations shall be suspended when wind speeds (as instantaneous gusts) exceed 25 miles per hour (mph) and dust plumes are visible.
- All on-site streets shall be swept once a day if visible soil materials are carried to adjacent streets (recommend water sweepers with reclaimed water).

- Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash trucks and any equipment leaving the site each trip.

AQ-2 Dust generated by the construction activities shall be retained on site and kept to a minimum by following the dust control measures listed below.

a. During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems shall be used to prevent dust from leaving the site and to create a crust after each day's activities cease.

b. During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the late morning and after work is completed for the day and whenever wind exceeds 15 miles per hour.

c. Immediately after clearing, grading, earthmoving, or excavation is completed, the entire area of disturbed soil shall be treated until the area is paved or otherwise developed so that dust generation will not occur.

d. Soil stockpiled for more than two days shall be covered, kept moist, or treated with soil binders to prevent dust generation.

e. Trucks transporting soil, sand, cut or fill materials, and/or construction debris to or from the site shall be tarped or maintain 6 inches of freeboard from the point of origin.

6.1.2 Mitigation Measures

No mitigation measures are feasible to reduce the operational emissions to less than significant.

6.2 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Implementation of Measures AQ-1 and AQ-2 would reduce construction-related emissions further, as required by SCAQMD. However, after mitigation fugitive dust emissions will remain above the SCAQMD's daily construction emission threshold. Therefore, construction of the project would have a significant short-term adverse impact on regional air quality.

In the operational phase, the project would result in a significant unavoidable air quality impact.

7.0 CUMULATIVE IMPACTS

7.1 POTENTIAL FOR CUMULATIVE IMPACTS RELATED TO AIR QUALITY

The proposed project would have the following cumulative air quality impacts:

The proposed project would result in emissions from construction equipment and grading activities. These emissions, together with emissions from other construction activities in the project vicinity and in the Basin, would add to the Basin's daily emissions and contribute to the existing exceedance of air quality standards. This is a potentially significant short-term cumulative air quality impact.

The proposed project would result in the continued operations at Olinda Alpha Landfill until year 2021. The emissions generated by the project operation would exceed the SCAQMD's significance thresholds. Therefore, the project would contribute cumulatively to local and regional air quality degradation.

8.0 REFERENCES AND PERSONAL COMMUNICATIONS

8.1 REFERENCES

Bryan A. Stirrat & Associates, Traffic Study, February 2004.

California Air Resources Board, *Annual Air Quality Data*, 2000 through 2002.

California Department of Transportation, *Transportation Project-Level Carbon Monoxide Hot Spot Analysis*, June, 1996.

OEHHA, Air Toxics Hot Spots Program Risk Assessment Guidelines, August 2003, Appendix I.

Southern California Association of Governments, *Air Quality Management Plan*, 1997.

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APPENDIX A

CO HOT SPOT MODEL PRINTOUTS

OLINDA ALPHA LANDFILL EXPANSION

AIR QUALITY CO HOT SPOT ANALYSIS

CALINE4 MODEL PRINTOUTS

EXISTING (2004) CONDITIONS

```
     CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
              JUNE 1989 VERSION
              PAGE   1

          JOB: Olinda 2004 NP1
          RUN: Hour 1                 (WORST CASE ANGLE)
    POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

       U=     .5 M/S              Z0= 100. CM            ALT=    360. (M)
     BRG= WORST CASE              VD=    .0 CM/S
    CLAS=      7 (G)              VS=    .0 CM/S
    MIXH= 1000. M                AMB=    .0 PPM
   SIGTH=    10. DEGREES        TEMP=   8.3 DEGREE (C)


  II.  LINK VARIABLES

       LINK         *  LINK COORDINATES (M)   *                EF      H      W
    DESCRIPTION     *   X1     Y1    X2    Y2 * TYPE  VPH  (G/MI)   (M)    (M)
 ------------------*------------------------*------------------------------
 A. Assoc NBA       *     7   -150     7     0 *  AG    346    6.2     .0   10.0
 B. Assoc NBD       *     7      0     7   150 *  AG    527    6.2     .0   10.0
 C. Assoc NBL       *     5   -150     0     0 *  AG    195    6.2     .0   10.0
 D. Assoc SBA       *    -9    150    -9     0 *  AG    608    6.2     .0   10.0
 E. Assoc SBD       *    -9      0    -9  -150 *  AG    572    6.2     .0   10.0
 F. Assoc SBL       *    -5    150     0     0 *  AG    170    6.2     .0   10.0
 G. Imper EBA       *  -150     -9     0    -9 *  AG   1510    6.2     .0   10.0
 H. Imper EBD       *     0     -9   150    -9 *  AG   1625    6.2     .0   10.0
 I. Imper EBL       *  -150     -5     0     0 *  AG    210    6.2     .0   10.0
 J. Imper WBA       *   150      9     0     9 *  AG   1571    6.2     .0   10.0
 K. Imper WBD       *     0      9  -150     9 *  AG   2031    6.2     .0   10.0
 L. Imper WBL       *   150      5     0     0 *  AG    145    6.2     .0   10.0
 M. Assoc NBAX      *     7   -750     7  -150 *  AG    541    6.2     .0   10.0
 N. Assoc NBDX      *     7    150     7   750 *  AG    527    6.2     .0   10.0
 O. Assoc SBAX      *    -9    750    -9   150 *  AG    778    6.2     .0   10.0
 P. Assoc SBDX      *    -9   -150    -9  -750 *  AG    572    6.2     .0   10.0
 Q. Imper EBAX      *  -750     -9  -150    -9 *  AG   1720    6.2     .0   10.0
```

```
R. Imper EBDX   *   150    -9   750     -9 *  AG   1625   6.2      .0  10.0
S. Imper WBAX   *   750     9   150      9 *  AG   1716   6.2      .0  10.0
T. Imper WBDX   *  -150     9  -750      9 *  AG   2031   6.2      .0  10.0
```

```
         CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                  JUNE 1989 VERSION
                  PAGE   2

             JOB: Olinda 2004 NP1
             RUN: Hour 1             (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


III.  RECEPTOR LOCATIONS

                *    COORDINATES (M)
  RECEPTOR      *    X       Y       Z
----------------*---------------------
 1. SE          *     14     -16    1.8
 2. NW          *    -17      16    1.8
 3. SW          *    -15     -17    1.8
 4. NE          *     14      17    1.8
 5. ES mdblk    *    150     -16    1.8
 6. WN mdblk    *   -150      16    1.8
 7. WS mdblk    *   -150     -17    1.8
 8. EN mdblk    *    150      17    1.8
 9. SE mdblk    *     14    -150    1.8
10. NW mdblk    *    -17     150    1.8
11. SW mdblk    *    -15    -150    1.8
12. NE mdblk    *     14     150    1.8
13. ES blk      *    600     -16    1.8
14. WN blk      *   -600      16    1.8
15. WS blk      *   -600     -17    1.8
16. EN blk      *    600      17    1.8
17. SE blk      *     14    -600    1.8
18. NW blk      *    -17     600    1.8
19. SW blk      *    -15    -600    1.8
20. NE blk      *     14     600    1.8
```

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        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   3

            JOB: Olinda 2004 NP1
            RUN: Hour 1              (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

               *       * PRED  *                   CONC/LINK
               *  BRG  * CONC  *                     (PPM)
 RECEPTOR      * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
-------------*-------*-------*---------------------------------------
  1. SE        *  278. *   2.4 *   .1   .0   .0   .0   .1   .0  1.0   .1
  2. NW        *   98. *   2.4 *   .0   .1   .0   .2   .0   .0   .0   .2
  3. SW        *   82. *   2.2 *   .0   .0   .0   .0   .2   .0   .0  1.0
  4. NE        *  262. *   2.4 *   .0   .2   .0   .1   .0   .0   .2   .0
  5. ES mdblk  *  278. *   2.2 *   .0   .0   .0   .0   .0   .0   .1  1.2
  6. WN mdblk  *   98. *   2.4 *   .0   .0   .0   .0   .0   .0   .2   .2
  7. WS mdblk  *   82. *   2.0 *   .0   .0   .0   .0   .0   .0  1.0   .1
  8. EN mdblk  *  262. *   2.0 *   .0   .0   .0   .0   .0   .0   .2   .2
  9. SE mdblk  *  353. *   1.2 *   .3   .0   .1   .1   .1   .0   .0   .0
 10. NW mdblk  *  172. *   1.2 *   .0   .0   .0   .4   .0   .0   .0   .0
 11. SW mdblk  *    6. *   1.3 *   .0   .0   .0   .0   .5   .0   .0   .0
 12. NE mdblk  *  187. *   1.2 *   .0   .5   .0   .1   .0   .0   .0   .0
 13. ES blk    *  277. *   2.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 14. WN blk    *   98. *   2.3 *   .0   .0   .0   .0   .0   .0   .0   .0
 15. WS blk    *   82. *   2.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 16. EN blk    *  262. *   2.0 *   .0   .0   .0   .0   .0   .0   .0   .0
 17. SE blk    *  353. *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 18. NW blk    *  173. *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk    *    6. *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 20. NE blk    *  187. *   1.2 *   .0   .0   .0   .0   .0   .0   .0   .0
```

```
      CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
               JUNE 1989 VERSION
               PAGE   4

           JOB: Olinda 2004 NP1
           RUN: Hour 1            (WORST CASE ANGLE)
     POLLUTANT: Carbon Monoxide

  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)      (CONT.)

                *                        CONC/LINK
                *                          (PPM)
  RECEPTOR      *   I    J    K    L    M    N    O    P    Q    R    S    T
 ---------------*-------------------------------------------------------------
  1. SE         *   .0   .0   .3   .0   .0   .0   .0   .0   .2   .0   .0   .4
  2. NW         *   .0  1.0   .2   .0   .0   .0   .0   .0   .0   .3   .2   .0
  3. SW         *   .0   .2   .0   .0   .0   .0   .0   .0   .0   .2   .3   .0
  4. NE         *   .0   .0  1.2   .0   .0   .0   .0   .0   .3   .0   .0   .2
  5. ES mdblk   *   .0   .2   .2   .0   .0   .0   .0   .0   .0   .0   .0   .2
  6. WN mdblk   *   .0   .1  1.4   .0   .0   .0   .0   .0   .0   .2   .0   .0
  7. WS mdblk   *   .1   .2   .2   .0   .0   .0   .0   .0   .0   .0   .2   .0
  8. EN mdblk   *   .0  1.0   .1   .0   .0   .0   .0   .0   .2   .0   .0   .1
  9. SE mdblk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk     *   .0   .0   .0   .0   .0   .0   .0   .0   .0  1.3   .5   .0
 14. WN blk     *   .0   .0   .0   .0   .0   .0   .0   .0   .5   .0   .0  1.5
 15. WS blk     *   .0   .0   .0   .0   .0   .0   .0   .0  1.2   .0   .0   .6
 16. EN blk     *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .5  1.2   .0
 17. SE blk     *   .0   .0   .0   .0   .6   .0   .0   .2   .0   .0   .0   .0
 18. NW blk     *   .0   .0   .0   .0   .0   .2   .6   .0   .0   .0   .0   .0
 19. SW blk     *   .0   .0   .0   .0   .2   .0   .0   .6   .0   .0   .0   .0
 20. NE blk     *   .0   .0   .0   .0   .0   .6   .3   .0   .0   .0   .0   .0
```

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        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   1

            JOB: Olinda 2004 NP2
            RUN: Hour 1             (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

         U=     .5 M/S           Z0= 100. CM          ALT=   360. (M)
       BRG= WORST CASE           VD=    .0 CM/S
      CLAS=      7 (G)           VS=    .0 CM/S
      MIXH= 1000. M             AMB=    .0 PPM
     SIGTH=    10. DEGREES     TEMP=   8.3 DEGREE (C)


  II.  LINK VARIABLES

      LINK       *  LINK COORDINATES (M)   *                 EF     H     W
   DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH   (G/MI)  (M)   (M)
-----------------*-------------------------*------------------------------
 A. Place NBA    *     7  -150     7     0 *  AG    322    6.2     .0  10.0
 B. Place NBD    *     7     0     7   150 *  AG    145    6.2     .0  10.0
 C. Place NBL    *     5  -150     0     0 *  AG    199    6.2     .0  10.0
 D. Place SBA    *    -9   150    -9     0 *  AG     33    6.2     .0  10.0
 E. Place SBD    *    -9     0    -9  -150 *  AG    534    6.2     .0  10.0
 F. Place SBL    *    -5   150     0     0 *  AG     40    6.2     .0  10.0
 G. Imper EBA    *  -150    -9     0    -9 *  AG   1512    6.2     .0  10.0
 H. Imper EBD    *     0    -9   150    -9 *  AG   1558    6.2     .0  10.0
 I. Imper EBL    *  -150    -5     0     0 *  AG     18    6.2     .0  10.0
 J. Imper WBA    *   150     9     0     9 *  AG   1641    6.2     .0  10.0
 K. Imper WBD    *     0     9  -150     9 *  AG   1783    6.2     .0  10.0
 L. Imper WBL    *   150     5     0     0 *  AG    255    6.2     .0  10.0
 M. Place NBAX   *     7  -750     7  -150 *  AG    521    6.2     .0  10.0
 N. Place NBDX   *     7   150     7   750 *  AG    145    6.2     .0  10.0
 O. Place SBAX   *    -9   750    -9   150 *  AG     73    6.2     .0  10.0
 P. Place SBDX   *    -9  -150    -9  -750 *  AG    534    6.2     .0  10.0
 Q. Imper EBAX   *  -750    -9  -150    -9 *  AG   1530    6.2     .0  10.0
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```
R. Imper EBDX   *   150    -9   750    -9 *  AG   1558   6.2    .0  10.0
S. Imper WBAX   *   750     9   150     9 *  AG   1896   6.2    .0  10.0
T. Imper WBDX   *  -150     9  -750     9 *  AG   1782   6.2    .0  10.0
```

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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: Olinda 2004 NP2
              RUN: Hour 1              (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

                *    COORDINATES (M)
   RECEPTOR     *    X       Y      Z
 ---------------*---------------------
  1. SE         *     14     -15    1.8
  2. NW         *    -12      16    1.8
  3. SW         *    -12     -17    1.8
  4. NE         *     14      17    1.8
  5. ES mdblk   *    150     -15    1.8
  6. WN mdblk   *   -150      16    1.8
  7. WS mdblk   *   -150     -17    1.8
  8. EN mdblk   *    150      17    1.8
  9. SE mdblk   *     14    -150    1.8
 10. NW mdblk   *    -12     150    1.8
 11. SW mdblk   *    -12    -150    1.8
 12. NE mdblk   *     14     150    1.8
 13. ES blk     *    600     -15    1.8
 14. WN blk     *   -600      16    1.8
 15. WS blk     *   -600     -17    1.8
 16. EN blk     *    600      17    1.8
 17. SE blk     *     14    -600    1.8
 18. NW blk     *    -12     600    1.8
 19. SW blk     *    -12    -600    1.8
 20. NE blk     *     14     600    1.8
```

```
       CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   3

           JOB: Olinda 2004 NP2
           RUN: Hour 1            (WORST CASE ANGLE)
    POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

                *       * PRED  *                   CONC/LINK
                *  BRG  * CONC  *                     (PPM)
 RECEPTOR       * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
 ---------------*-------*-------*----------------------------------------
  1. SE         *  278. *   2.4 *   .1   .0   .0   .0   .1   .0  1.0   .3
  2. NW         *   98. *   2.1 *   .0   .0   .0   .0   .0   .0   .0   .2
  3. SW         *   81. *   2.2 *   .0   .0   .0   .0   .2   .0   .0  1.0
  4. NE         *  262. *   1.9 *   .0   .0   .0   .0   .0   .0   .2   .0
  5. ES mdblk   *  278. *   2.2 *   .0   .0   .0   .0   .0   .0   .1  1.3
  6. WN mdblk   *   98. *   2.1 *   .0   .0   .0   .0   .0   .0   .2   .2
  7. WS mdblk   *   82. *   1.9 *   .0   .0   .0   .0   .0   .0  1.0   .1
  8. EN mdblk   *  262. *   2.0 *   .0   .0   .0   .0   .0   .0   .2   .2
  9. SE mdblk   *  349. *    .9 *   .3   .0   .2   .0   .2   .0   .1   .0
 10. NW mdblk   *  177. *    .7 *   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk   *    6. *   1.3 *   .0   .0   .0   .0   .7   .0   .0   .0
 12. NE mdblk   *  185. *    .8 *   .0   .1   .0   .0   .0   .0   .0   .0
 13. ES blk     *  277. *   2.2 *   .0   .0   .0   .0   .0   .0   .0   .0
 14. WN blk     *   98. *   2.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 15. WS blk     *   82. *   1.9 *   .0   .0   .0   .0   .0   .0   .0   .0
 16. EN blk     *  262. *   2.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 17. SE blk     *  353. *   1.0 *   .0   .0   .0   .0   .0   .0   .0   .0
 18. NW blk     *  177. *    .5 *   .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk     *    4. *   1.3 *   .0   .0   .0   .0   .0   .0   .0   .0
 20. NE blk     *  185. *    .5 *   .0   .0   .0   .0   .0   .0   .0   .0
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   4

            JOB: Olinda 2004 NP2
            RUN: Hour 1            (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide

  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)      (CONT.)

                *                           CONC/LINK
                *                             (PPM)
  RECEPTOR      *    I    J    K    L    M    N    O    P    Q    R    S    T
 ---------------*-------------------------------------------------------------
  1. SE         *   .0   .0   .3   .0   .0   .0   .0   .0   .2   .0   .0   .3
  2. NW         *   .0  1.1   .1   .1   .0   .0   .0   .0   .0   .3   .2   .0
  3. SW         *   .0   .3   .0   .0   .0   .0   .0   .0   .0   .1   .3   .0
  4. NE         *   .0   .0  1.0   .0   .0   .0   .0   .0   .3   .0   .0   .2
  5. ES mdblk   *   .0   .2   .2   .0   .0   .0   .0   .0   .0   .0   .0   .2
  6. WN mdblk   *   .0   .1  1.2   .0   .0   .0   .0   .0   .0   .1   .1   .0
  7. WS mdblk   *   .0   .2   .2   .0   .0   .0   .0   .0   .0   .0   .2   .0
  8. EN mdblk   *   .0  1.0   .1   .1   .0   .0   .0   .0   .2   .0   .0   .1
  9. SE mdblk   *   .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk     *   .0   .0   .0   .0   .0   .0   .0   .0   .0  1.4   .5   .0
 14. WN blk     *   .0   .0   .0   .0   .0   .0   .0   .0   .5   .0   .0  1.4
 15. WS blk     *   .0   .0   .0   .0   .0   .0   .0   .0  1.1   .0   .0   .5
 16. EN blk     *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .5  1.3   .0
 17. SE blk     *   .0   .0   .0   .0   .6   .0   .0   .2   .0   .0   .0   .0
 18. NW blk     *   .0   .0   .0   .0   .0   .0   .2   .0   .0   .0   .0   .0
 19. SW blk     *   .0   .0   .0   .0   .2   .0   .0   .9   .0   .0   .0   .0
 20. NE blk     *   .0   .0   .0   .0   .0   .2   .0   .0   .0   .0   .0   .0
```

```
       CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   1

           JOB: Olinda 2004 NP3
           RUN: Hour 1              (WORST CASE ANGLE)
     POLLUTANT: Carbon Monoxide

  I.  SITE VARIABLES

       U=    .5 M/S            Z0= 100. CM           ALT=   360. (M)
     BRG= WORST CASE           VD=    .0 CM/S
    CLAS=     7 (G)            VS=    .0 CM/S
    MIXH= 1000. M             AMB=    .0 PPM
   SIGTH=   10. DEGREES      TEMP=   8.3 DEGREE (C)

  II.  LINK VARIABLES

        LINK       *  LINK COORDINATES (M)   *                 EF     H      W
     DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH   (G/MI)  (M)    (M)
 ------------------*-------------------------*-------------------------------
 A. Kraem NBA      *    11  -150    11     0 *  AG    627    6.2     .0   10.0
 B. Kraem NBD      *    11     0    11   150 *  AG    942    6.2     .0   10.0
 C. Kraem NBL      *     9  -150     0     0 *  AG    353    6.2     .0   10.0
 D. Kraem SBA      *   -12   150   -12     0 *  AG    700    6.2     .0   10.0
 E. Kraem SBD      *   -12     0   -12  -150 *  AG    947    6.2     .0   10.0
 F. Kraem SBL      *    -9   150     0     0 *  AG    248    6.2     .0   10.0
 G. Imper EBA      *  -150   -12     0   -12 *  AG   1397    6.2     .0   10.0
 H. Imper EBD      *     0   -12   150   -12 *  AG   1496    6.2     .0   10.0
 I. Imper EBL      *  -150    -9     0     0 *  AG    156    6.2     .0   10.0
 J. Imper WBA      *   150    12     0    12 *  AG   1614    6.2     .0   10.0
 K. Imper WBD      *     0    12  -150    12 *  AG   1918    6.2     .0   10.0
 L. Imper WBL      *   150     9     0     0 *  AG    208    6.2     .0   10.0
 M. Kraem NBAX     *    11  -750    11  -150 *  AG    980    6.2     .0   10.0
 N. Kraem NBDX     *    11   150    11   750 *  AG    942    6.2     .0   10.0
 O. Kraem SBAX     *   -12   750   -12   150 *  AG    948    6.2     .0   10.0
 P. Kraem SBDX     *   -12  -150   -12  -750 *  AG    947    6.2     .0   10.0
 Q. Imper EBAX     *  -750   -12  -150   -12 *  AG   1553    6.2     .0   10.0
```

```
R. Imper EBDX    *   150    -12    750    -12 *  AG    1496    6.2        .0  10.0
S. Imper WBAX    *   750     12    150     12 *  AG    1822    6.2        .0  10.0
T. Imper WBDX    *  -150     12   -750     12 *  AG    1918    6.2        .0  10.0





          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: Olinda 2004 NP3
              RUN: Hour 1             (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

                *     COORDINATES (M)
   RECEPTOR     *     X       Y       Z
 ------------*---------------------
 1. SE          *      17     -20     1.8
 2. NW          *     -21      20     1.8
 3. SW          *     -19     -21     1.8
 4. NE          *      17      21     1.8
 5. ES mdblk *     150     -20     1.8
 6. WN mdblk *    -150      20     1.8
 7. WS mdblk *    -150     -21     1.8
 8. EN mdblk *     150      21     1.8
 9. SE mdblk *      17    -150     1.8
10. NW mdblk *     -21     150     1.8
11. SW mdblk *     -19    -150     1.8
12. NE mdblk *      17     150     1.8
13. ES blk     *     600     -20     1.8
14. WN blk     *    -600      20     1.8
15. WS blk     *    -600     -21     1.8
16. EN blk     *     600      21     1.8
17. SE blk     *      17    -600     1.8
18. NW blk     *     -21     600     1.8
19. SW blk     *     -19    -600     1.8
20. NE blk     *      17     600     1.8
```

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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   3

              JOB: Olinda 2004 NP3
              RUN: Hour 1               (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

              *        * PRED  *                 CONC/LINK
              *  BRG   * CONC  *                   (PPM)
 RECEPTOR     * (DEG)  * (PPM) *   A    B    C    D    E    F    G    H
-------------*-------*-------*--------------------------------------------
  1. SE       *  279. *   2.4 *   .3   .0   .0   .0   .2   .0   .9   .2
  2. NW       *   99. *   2.4 *   .0   .2   .0   .3   .0   .0   .0   .2
  3. SW       *   81. *   2.3 *   .1   .0   .0   .0   .4   .0   .1   .9
  4. NE       *  261. *   2.4 *   .0   .4   .0   .1   .0   .0   .1   .0
  5. ES mdblk *  278. *   2.1 *   .0   .0   .0   .0   .0   .0   .1  1.1
  6. WN mdblk *   98. *   2.2 *   .0   .0   .0   .0   .0   .0   .0   .2
  7. WS mdblk *   81. *   1.9 *   .0   .0   .0   .0   .0   .0   .9   .0
  8. EN mdblk *  262. *   2.0 *   .0   .0   .0   .0   .0   .0   .2   .0
  9. SE mdblk *  352. *   1.6 *   .6   .0   .2   .1   .0   .0   .0   .0
 10. NW mdblk *  172. *   1.4 *   .1   .0   .0   .5   .0   .1   .0   .0
 11. SW mdblk *    8. *   1.7 *   .0   .2   .0   .0   .8   .0   .0   .0
 12. NE mdblk *  188. *   1.7 *   .0   .8   .0   .0   .2   .0   .0   .0
 13. ES blk   *  278. *   2.0 *   .0   .0   .0   .0   .0   .0   .0   .0
 14. WN blk   *   98. *   2.2 *   .0   .0   .0   .0   .0   .0   .0   .0
 15. WS blk   *   82. *   1.9 *   .0   .0   .0   .0   .0   .0   .0   .0
 16. EN blk   *  262. *   2.0 *   .0   .0   .0   .0   .0   .0   .0   .0
 17. SE blk   *  353. *   1.6 *   .0   .0   .0   .0   .0   .0   .0   .0
 18. NW blk   *  173. *   1.4 *   .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk   *    7. *   1.6 *   .0   .0   .0   .0   .0   .0   .0   .0
 20. NE blk   *  187. *   1.6 *   .0   .0   .0   .0   .0   .0   .0   .0
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   4

            JOB: Olinda 2004 NP3
            RUN: Hour 1           (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide

 IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

               *                          CONC/LINK
               *                            (PPM)
 RECEPTOR      *   I    J    K    L    M    N    O    P    Q    R    S    T
---------------*------------------------------------------------------------
 1. SE         *  .0   .0   .2   .0   .0   .0   .0   .0   .1   .0   .0   .4
 2. NW         *  .0   .9   .4   .0   .0   .0   .0   .0   .0   .3   .1   .0
 3. SW         *  .0   .2   .0   .0   .0   .0   .0   .0   .0   .1   .3   .0
 4. NE         *  .0   .1  1.1   .0   .0   .0   .0   .0   .3   .0   .0   .2
 5. ES mdblk   *  .0   .0   .2   .0   .0   .0   .0   .0   .0   .0   .0   .2
 6. WN mdblk   *  .0   .1  1.3   .0   .0   .0   .0   .0   .0   .2   .0   .0
 7. WS mdblk   *  .0   .2   .1   .0   .0   .0   .0   .0   .0   .0   .2   .0
 8. EN mdblk   *  .0  1.0   .1   .0   .0   .0   .0   .0   .2   .0   .0   .1
 9. SE mdblk   *  .0   .0   .0   .0   .0   .0   .1   .0   .0   .0   .0   .0
10. NW mdblk   *  .0   .0   .0   .0   .1   .0   .0   .0   .0   .0   .0   .0
11. SW mdblk   *  .0   .0   .0   .0   .0   .1   .0   .0   .0   .0   .0   .0
12. NE mdblk   *  .0   .0   .0   .0   .0   .0   .0   .1   .0   .0   .0   .0
13. ES blk     *  .0   .0   .0   .0   .0   .0   .0   .0   .0  1.2   .4   .0
14. WN blk     *  .0   .0   .0   .0   .0   .0   .0   .0   .4   .0   .0  1.5
15. WS blk     *  .0   .0   .0   .0   .0   .0   .0   .0  1.1   .0   .0   .4
16. EN blk     *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .4  1.3   .0
17. SE blk     *  .0   .0   .0   .0  1.0   .0   .0   .3   .0   .0   .0   .0
18. NW blk     *  .0   .0   .0   .0   .0   .3   .8   .0   .0   .0   .0   .0
19. SW blk     *  .0   .0   .0   .0   .3   .0   .0   .9   .0   .0   .0   .0
20. NE blk     *  .0   .0   .0   .0   .0   .9   .3   .0   .0   .0   .0   .0
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   1

            JOB: Olinda 2004 NP4
            RUN: Hour 1            (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

       U=    .5 M/S            Z0= 100. CM          ALT=   360. (M)
     BRG= WORST CASE           VD=    .0 CM/S
    CLAS=      7 (G)           VS=    .0 CM/S
    MIXH= 1000. M             AMB=    .0 PPM
   SIGTH=   10. DEGREES      TEMP=   8.3 DEGREE (C)


  II.  LINK VARIABLES

      LINK        *  LINK COORDINATES (M)    *                 EF      H     W
   DESCRIPTION    *   X1    Y1    X2    Y2   * TYPE  VPH    (G/MI)   (M)   (M)
------------------*--------------------------*-------------------------------
A. Valenc NBA     *     9  -150     9     0  *  AG    263     5.6     .0  10.0
B. Valenc NBD     *     9     0     9   150  *  AG    592     5.6     .0  10.0
C. Valenc NBL     *     5  -150     0     0  *  AG     88     5.6     .0  10.0
D. Valenc SBA     *    -9   150    -9     0  *  AG    361     5.6     .0  10.0
E. Valenc SBD     *    -9     0    -9  -150  *  AG    351     5.6     .0  10.0
F. Valenc SBL     *    -5   150     0     0  *  AG    126     5.6     .0  10.0
G. Imper EBA      *  -150   -14     0   -14  *  AG    911     5.6     .0  10.0
H. Imper EBD      *     0   -14   150   -14  *  AG   1074     5.6     .0  10.0
I. Imper EBL      *  -150    -9     0     0  *  AG    238     5.6     .0  10.0
J. Imper WBA      *   150     9     0     9  *  AG   1666     5.6     .0  10.0
K. Imper WBD      *     0     9  -150     9  *  AG   1753     5.6     .0  10.0
L. Imper WBL      *   150     5     0     0  *  AG    117     5.6     .0  10.0
M. Valenc NBAX    *     9  -750     9  -150  *  AG    351     5.6     .0  10.0
N. Valenc NBDX    *     9   150     9   750  *  AG    592     5.6     .0  10.0
O. Valenc SBAX    *    -9   750    -9   150  *  AG    487     5.6     .0  10.0
P. Valenc SBDX    *    -9  -150    -9  -750  *  AG    351     5.6     .0  10.0
Q. Imper EBAX     *  -750   -14  -150   -14  *  AG   1149     5.6     .0  10.0
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R. Imper EBDX     *   150   -14   750    -14 *  AG    1074    5.6        .0  10.0
S. Imper WBAX     *   750     9   150      9 *  AG    1783    5.6        .0  10.0
T. Imper WBDX     *  -150     9  -750      9 *  AG    1753    5.6        .0  10.0
```

```
              CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                       JUNE 1989 VERSION
                       PAGE   2

                  JOB: Olinda 2004 NP4
                  RUN: Hour 1           (WORST CASE ANGLE)
            POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

                 *    COORDINATES (M)
   RECEPTOR      *    X       Y      Z
 ------------*---------------------
  1. SE          *     17     -22    1.8
  2. NW          *    -17      16    1.8
  3. SW          *    -15     -24    1.8
  4. NE          *     15      17    1.8
  5. ES mdblk *    150     -22    1.8
  6. WN mdblk *   -150      16    1.8
  7. WS mdblk *   -150     -24    1.8
  8. EN mdblk *    150      17    1.8
  9. SE mdblk *     17    -150    1.8
 10. NW mdblk *    -17     150    1.8
 11. SW mdblk *    -15    -150    1.8
 12. NE mdblk *     15     150    1.8
 13. ES blk    *    600     -22    1.8
 14. WN blk    *   -600      16    1.8
 15. WS blk    *   -600     -24    1.8
 16. EN blk    *    600      17    1.8
 17. SE blk    *     17    -600    1.8
 18. NW blk    *    -17     600    1.8
 19. SW blk    *    -15    -600    1.8
 20. NE blk    *     15     600    1.8
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            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   3

                JOB: Olinda 2004 NP4
                RUN: Hour 1               (WORST CASE ANGLE)
          POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

                 *        * PRED  *                    CONC/LINK
                 *   BRG  * CONC  *                      (PPM)
  RECEPTOR       * (DEG)  * (PPM) *   A    B    C    D    E    F    G    H
-----------------*--------*-------*----------------------------------------
  1. SE          *  279.  *   1.4 *  .0   .0   .0   .0   .0   .0   .5   .0
  2. NW          *   98.  *   1.9 *  .0   .1   .0   .1   .0   .0   .0   .1
  3. SW          *   81.  *   1.4 *  .0   .0   .0   .0   .1   .0   .0   .6
  4. NE          *  262.  *   1.9 *  .0   .2   .0   .0   .0   .0   .0   .0
  5. ES mdblk    *  278.  *   1.4 *  .0   .0   .0   .0   .0   .0   .0   .6
  6. WN mdblk    *   98.  *   1.8 *  .0   .0   .0   .0   .0   .0   .0   .2
  7. WS mdblk    *   81.  *   1.2 *  .0   .0   .0   .0   .0   .0   .5   .0
  8. EN mdblk    *  262.  *   1.6 *  .0   .0   .0   .0   .0   .0   .1   .0
  9. SE mdblk    *  354.  *    .8 *  .2   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk    *  172.  *    .8 *  .0   .0   .0   .3   .0   .0   .0   .0
 11. SW mdblk    *    6.  *    .9 *  .0   .0   .0   .0   .3   .0   .0   .0
 12. NE mdblk    *  188.  *   1.0 *  .0   .5   .0   .0   .0   .0   .0   .0
 13. ES blk      *  278.  *   1.4 *  .0   .0   .0   .0   .0   .0   .0   .0
 14. WN blk      *   98.  *   1.8 *  .0   .0   .0   .0   .0   .0   .0   .0
 15. WS blk      *   82.  *   1.3 *  .0   .0   .0   .0   .0   .0   .0   .0
 16. EN blk      *  262.  *   1.6 *  .0   .0   .0   .0   .0   .0   .0   .0
 17. SE blk      *  354.  *    .6 *  .0   .0   .0   .0   .0   .0   .0   .0
 18. NW blk      *  173.  *    .8 *  .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk      *    6.  *    .7 *  .0   .0   .0   .0   .0   .0   .0   .0
 20. NE blk      *  187.  *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .0
```

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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   4

              JOB: Olinda 2004 NP4
              RUN: Hour 1               (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)      (CONT.)

               *                          CONC/LINK
               *                            (PPM)
  RECEPTOR     *   I    J    K    L    M    N    O    P    Q    R    S    T
 ------------*-------------------------------------------------------------
  1. SE        *  .0   .0   .2   .0   .0   .0   .0   .0   .1   .0   .0   .3
  2. NW        *  .0   .9   .2   .0   .0   .0   .0   .0   .0   .2   .2   .0
  3. SW        *  .0   .1   .0   .0   .0   .0   .0   .0   .0   .1   .3   .0
  4. NE        *  .0   .0   .9   .0   .0   .0   .0   .0   .2   .0   .0   .2
  5. ES mdblk  *  .0   .1   .2   .0   .0   .0   .0   .0   .0   .0   .0   .2
  6. WN mdblk  *  .0   .1  1.1   .0   .0   .0   .0   .0   .0   .1   .0   .0
  7. WS mdblk  *  .0   .2   .1   .0   .0   .0   .0   .0   .0   .0   .1   .0
  8. EN mdblk  *  .0   .9   .1   .0   .0   .0   .0   .0   .1   .0   .0   .0
  9. SE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .8   .4   .0
 14. WN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .3   .0   .0  1.3
 15. WS blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .7   .0   .0   .4
 16. EN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .3  1.1   .0
 17. SE blk    *  .0   .0   .0   .0   .3   .0   .0   .1   .0   .0   .0   .0
 18. NW blk    *  .0   .0   .0   .0   .0   .2   .4   .0   .0   .0   .0   .0
 19. SW blk    *  .0   .0   .0   .0   .1   .0   .0   .4   .0   .0   .0   .0
 20. NE blk    *  .0   .0   .0   .0   .0   .6   .2   .0   .0   .0   .0   .0
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

               JOB: Olinda 2004 NP5
               RUN: Hour 1              (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=    .5 M/S              Z0= 100. CM            ALT=   360. (M)
      BRG= WORST CASE             VD=    .0 CM/S
     CLAS=      7 (G)             VS=    .0 CM/S
     MIXH= 1000. M               AMB=    .0 PPM
    SIGTH=    10. DEGREES       TEMP=   8.3 DEGREE (C)


 II.  LINK VARIABLES

      LINK        *  LINK COORDINATES (M)    *                 EF      H      W
   DESCRIPTION    *   X1     Y1     X2     Y2  * TYPE  VPH   (G/MI)   (M)    (M)
 -----------------*--------------------------*-------------------------------
 A. Rose NBA      *     7   -150      7      0 *  AG    559    6.2      .0   10.0
 B. Rose NBD      *     7      0      7    150 *  AG    934    6.2      .0   10.0
 C. Rose NBL      *     5   -150      0      0 *  AG    243    6.2      .0   10.0
 D. Rose SBA      *    -9    150     -9      0 *  AG    370    6.2      .0   10.0
 E. Rose SBD      *    -9      0     -9   -150 *  AG    738    6.2      .0   10.0
 F. Rose SBL      *    -5    150      0      0 *  AG    754    6.2      .0   10.0
 G. Imper EBA     *  -150     -9      0     -9 *  AG   1607    6.2      .0   10.0
 H. Imper EBD     *     0     -9    150     -9 *  AG   2286    6.2      .0   10.0
 I. Imper EBL     *  -150     -5      0      0 *  AG     42    6.2      .0   10.0
 J. Imper WBA     *   150      9      0      9 *  AG   1568    6.2      .0   10.0
 K. Imper WBD     *     0      9   -150      9 *  AG   1361    6.2      .0   10.0
 L. Imper WBL     *   150      5      0      0 *  AG    176    6.2      .0   10.0
 M. Rose NBAX     *     7   -750      7   -150 *  AG    802    6.2      .0   10.0
 N. Rose NBDX     *     7    150      7    750 *  AG    934    6.2      .0   10.0
 O. Rose SBAX     *    -9    750     -9    150 *  AG   1124    6.2      .0   10.0
 P. Rose SBDX     *    -9   -150     -9   -750 *  AG    738    6.2      .0   10.0
 Q. Imper EBAX    *  -750     -9   -150     -9 *  AG   1649    6.2      .0   10.0
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```
R. Imper  EBDX  *   150    -9   750    -9 *  AG   2286   6.2     .0  10.0
S. Imper WBAX   *   750     9   150     9 *  AG   1744   6.2     .0  10.0
T. Imper WBDX   *  -150     9  -750     9 *  AG   1361   6.2     .0  10.0
```

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         CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                  JUNE 1989 VERSION
                  PAGE   2

             JOB: Olinda 2004 NP5
             RUN: Hour 1          (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
   RECEPTOR  *     X       Y      Z
------------*---------------------
 1. SE        *     14     -15    1.8
 2. NW        *    -17      16    1.8
 3. SW        *    -15     -17    1.8
 4. NE        *     14      17    1.8
 5. ES mdblk *    150     -15    1.8
 6. WN mdblk *   -150      16    1.8
 7. WS mdblk *   -150     -17    1.8
 8. EN mdblk *    150      17    1.8
 9. SE mdblk *     14    -150    1.8
10. NW mdblk *    -17     150    1.8
11. SW mdblk *    -15    -150    1.8
12. NE mdblk *     14     150    1.8
13. ES blk   *    600     -15    1.8
14. WN blk   *   -600      16    1.8
15. WS blk   *   -600     -17    1.8
16. EN blk   *    600      17    1.8
17. SE blk   *     14    -600    1.8
18. NW blk   *    -17     600    1.8
19. SW blk   *    -15    -600    1.8
20. NE blk   *     14     600    1.8
```

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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   3

              JOB: Olinda 2004 NP5
              RUN: Hour 1              (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

               *         * PRED  *                 CONC/LINK
               *   BRG   * CONC  *                   (PPM)
 RECEPTOR      * (DEG)   * (PPM) *   A    B    C    D    E    F    G    H
-------------*-------*-------*----------------------------------------------
  1. SE        *  352. *   2.8 *   .1   .7   .0   .0   .0   .3   .0   .9
  2. NW        *   98. *   2.6 *   .0   .2   .0   .1   .0   .2   .0   .3
  3. SW        *   82. *   2.6 *   .1   .0   .0   .0   .3   .0   .0  1.2
  4. NE        *  262. *   2.3 *   .0   .4   .0   .0   .0   .2   .2   .0
  5. ES mdblk  *  278. *   2.8 *   .0   .0   .0   .0   .0   .0   .1  1.8
  6. WN mdblk  *   97. *   2.1 *   .0   .0   .0   .0   .0   .0   .2   .3
  7. WS mdblk  *   82. *   2.1 *   .0   .0   .0   .0   .0   .0  1.0   .1
  8. EN mdblk  *  261. *   2.1 *   .0   .0   .0   .0   .0   .0   .2   .3
  9. SE mdblk  *  354. *   1.6 *   .5   .1   .2   .0   .1   .1   .0   .0
 10. NW mdblk  *  170. *   1.4 *   .0   .2   .0   .3   .0   .4   .0   .1
 11. SW mdblk  *    7. *   1.6 *   .0   .1   .0   .0   .7   .1   .0   .0
 12. NE mdblk  *  188. *   1.8 *   .0   .8   .0   .0   .1   .2   .0   .0
 13. ES blk    *  278. *   2.8 *   .0   .0   .0   .0   .0   .0   .0   .0
 14. WN blk    *   97. *   2.0 *   .0   .0   .0   .0   .0   .0   .0   .0
 15. WS blk    *   82. *   1.9 *   .0   .0   .0   .0   .0   .0   .0   .0
 16. EN blk    *  262. *   2.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 17. SE blk    *  353. *   1.4 *   .0   .0   .0   .0   .0   .0   .0   .0
 18. NW blk    *  173. *   1.5 *   .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk    *    7. *   1.4 *   .0   .0   .0   .0   .0   .0   .0   .0
 20. NE blk    *  187. *   1.6 *   .0   .0   .0   .0   .0   .0   .0   .0
```

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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   4

              JOB: Olinda 2004 NP5
              RUN: Hour 1            (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide

  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

               *                        CONC/LINK
               *                          (PPM)
  RECEPTOR     *   I    J    K    L    M    N    O    P    Q    R    S    T
  -------------*-------------------------------------------------------------
   1. SE       *  .0   .3   .0   .0   .0   .1   .2   .0   .0   .0   .0   .0
   2. NW       *  .0  1.0   .2   .0   .0   .0   .0   .0   .0   .4   .2   .0
   3. SW       *  .0   .2   .0   .0   .0   .0   .0   .0   .0   .2   .3   .0
   4. NE       *  .0   .0   .9   .0   .0   .0   .0   .0   .3   .0   .0   .2
   5. ES mdblk *  .0   .2   .2   .0   .0   .0   .0   .0   .0   .0   .0   .1
   6. WN mdblk *  .0   .1  1.0   .0   .0   .0   .0   .0   .0   .2   .1   .0
   7. WS mdblk *  .0   .2   .2   .0   .0   .0   .0   .0   .0   .1   .2   .0
   8. EN mdblk *  .0  1.0   .0   .1   .0   .0   .0   .0   .1   .0   .0   .0
   9. SE mdblk *  .0   .0   .0   .0   .0   .0   .1   .0   .0   .0   .0   .0
  10. NW mdblk *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  11. SW mdblk *  .0   .0   .0   .0   .0   .1   .0   .0   .0   .0   .0   .0
  12. NE mdblk *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  13. ES blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0  1.9   .5   .0
  14. WN blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .5   .0   .0  1.1
  15. WS blk   *  .0   .0   .0   .0   .0   .0   .0   .0  1.2   .0   .0   .4
  16. EN blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .6  1.2   .0
  17. SE blk   *  .0   .0   .0   .0   .8   .0   .0   .3   .0   .0   .0   .0
  18. NW blk   *  .0   .0   .0   .0   .0   .3   .9   .0   .0   .0   .0   .0
  19. SW blk   *  .0   .0   .0   .0   .3   .0   .0   .8   .0   .0   .0   .0
  20. NE blk   *  .0   .0   .0   .0   .0   .9   .4   .0   .0   .0   .0   .0
```

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        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   1

            JOB: Olinda 2004 NP6
            RUN: Hour 1                (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

        U=    .5 M/S             Z0= 100. CM           ALT=   360. (M)
      BRG= WORST CASE            VD=    .0 CM/S
     CLAS=      7 (G)            VS=    .0 CM/S
     MIXH= 1000. M              AMB=    .0 PPM
    SIGTH=    10. DEGREES      TEMP=   8.3 DEGREE (C)


  II.  LINK VARIABLES

       LINK        *  LINK COORDINATES (M)    *                EF     H      W
    DESCRIPTION    *   X1     Y1    X2     Y2 * TYPE  VPH   (G/MI)  (M)    (M)
-----------------*------------------------*-------------------------------
A. Valenc NBA    *      7  -150     7      0 *  AG    169    6.2     .0   10.0
B. Valenc NBD    *      7     0     7    150 *  AG    337    6.2     .0   10.0
C. Valenc NBL    *      5  -150     0      0 *  AG     31    6.2     .0   10.0
D. Valenc SBA    *     -7   150    -7      0 *  AG    679    6.2     .0   10.0
E. Valenc SBD    *     -7     0    -7   -150 *  AG    648    6.2     .0   10.0
F. Valenc SBL    *     -5   150     0      0 *  AG    553    6.2     .0   10.0
G. Birch EBA     *   -150    -7     0     -7 *  AG    476    6.2     .0   10.0
H. Birch EBD     *      0    -7   150     -7 *  AG    919    6.2     .0   10.0
I. Birch EBL     *   -150    -5     0      0 *  AG     39    6.2     .0   10.0
J. Birch WBA     *    150     7     0      7 *  AG    623    6.2     .0   10.0
K. Birch WBD     *      0     7  -150      7 *  AG    673    6.2     .0   10.0
L. Birch WBL     *    150     5     0      0 *  AG      7    6.2     .0   10.0
M. Valenc NBAX   *      7  -750     7   -150 *  AG    200    6.2     .0   10.0
N. Valenc NBDX   *      7   150     7    750 *  AG    337    6.2     .0   10.0
O. Valenc SBAX   *     -7   750    -7    150 *  AG   1232    6.2     .0   10.0
P. Valenc SBDX   *     -7  -150    -7   -750 *  AG    648    6.2     .0   10.0
Q. Birch EBAX    *   -750    -7  -150     -7 *  AG    515    6.2     .0   10.0
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```
 R. Birch EBDX   *   150     -7   750      -7 *  AG     919    6.2        .0  10.0
 S. Birch WBAX   *   750      7   150       7 *  AG     630    6.2        .0  10.0
 T. Birch WBDX   *  -150      7  -750       7 *  AG     673    6.2        .0  10.0




           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   2

               JOB: Olinda 2004 NP6
               RUN: Hour 1            (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


  III.  RECEPTOR LOCATIONS

                *    COORDINATES (M)
    RECEPTOR    *    X       Y      Z
  ------------*---------------------
  1. SE         *     14     -14    1.8
  2. NW         *    -14      14    1.8
  3. SW         *    -14     -14    1.8
  4. NE         *     14      14    1.8
  5. ES mdblk   *    150     -14    1.8
  6. WN mdblk   *   -150      14    1.8
  7. WS mdblk   *   -150     -14    1.8
  8. EN mdblk   *    150      14    1.8
  9. SE mdblk   *     14    -150    1.8
 10. NW mdblk   *    -14     150    1.8
 11. SW mdblk   *    -14    -150    1.8
 12. NE mdblk   *     14     150    1.8
 13. ES blk     *    600     -14    1.8
 14. WN blk     *   -600      14    1.8
 15. WS blk     *   -600     -14    1.8
 16. EN blk     *    600      14    1.8
 17. SE blk     *     14    -600    1.8
 18. NW blk     *    -14     600    1.8
 19. SW blk     *    -14    -600    1.8
 20. NE blk     *     14     600    1.8
```

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     CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
              JUNE 1989 VERSION
              PAGE   3

         JOB: Olinda 2004 NP6
         RUN: Hour 1           (WORST CASE ANGLE)
   POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

                *       * PRED  *                CONC/LINK
                *  BRG  * CONC  *                  (PPM)
  RECEPTOR      * (DEG) * (PPM) *  A    B    C    D    E    F    G    H
 -------------*-------*-------*-------------------------------------------
  1. SE         *  352. *   1.5 *  .0   .3   .0   .2   .0   .2   .0   .4
  2. NW         *   97. *   1.6 *  .0   .0   .0   .3   .0   .2   .0   .2
  3. SW         *    7. *   1.6 *  .0   .0   .0   .5   .0   .3   .2   .0
  4. NE         *  263. *   1.5 *  .0   .1   .0   .2   .0   .2   .1   .0
  5. ES mdblk   *  278. *   1.4 *  .0   .0   .0   .0   .0   .0   .0   .8
  6. WN mdblk   *   96. *   1.2 *  .0   .0   .0   .0   .0   .0   .0   .1
  7. WS mdblk   *   84. *   1.1 *  .0   .0   .0   .0   .0   .0   .4   .1
  8. EN mdblk   *  263. *   1.2 *  .0   .0   .0   .0   .0   .0   .0   .2
  9. SE mdblk   *  354. *    .9 *  .2   .0   .0   .1   .1   .0   .0   .0
 10. NW mdblk   *  171. *   1.4 *  .0   .0   .0   .6   .0   .4   .0   .0
 11. SW mdblk   *    6. *   1.2 *  .0   .0   .0   .0   .6   .0   .0   .0
 12. NE mdblk   *  188. *   1.0 *  .0   .3   .0   .2   .1   .2   .0   .0
 13. ES blk     *  277. *   1.4 *  .0   .0   .0   .0   .0   .0   .0   .0
 14. WN blk     *   96. *   1.1 *  .0   .0   .0   .0   .0   .0   .0   .0
 15. WS blk     *   83. *   1.1 *  .0   .0   .0   .0   .0   .0   .0   .0
 16. EN blk     *  263. *   1.2 *  .0   .0   .0   .0   .0   .0   .0   .0
 17. SE blk     *  354. *    .7 *  .0   .0   .0   .0   .0   .0   .0   .0
 18. NW blk     *  173. *   1.5 *  .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk     *    6. *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .0
 20. NE blk     *  187. *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .0
```

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      CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
               JUNE 1989 VERSION
               PAGE   4

          JOB: Olinda 2004 NP6
          RUN: Hour 1              (WORST CASE ANGLE)
    POLLUTANT: Carbon Monoxide


IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

               *                       CONC/LINK
               *                         (PPM)
 RECEPTOR      *   I    J    K    L    M    N    O    P    Q    R    S    T
 -------------*-----------------------------------------------------------
  1. SE        *  .0   .1   .0   .0   .0   .0   .2   .0   .0   .0   .0   .0
  2. NW        *  .0   .5   .0   .0   .0   .0   .0   .0   .0   .2   .1   .0
  3. SW        *  .0   .0   .2   .0   .0   .1   .2   .0   .0   .0   .0   .0
  4. NE        *  .0   .0   .5   .0   .0   .0   .0   .0   .1   .0   .0   .1
  5. ES mdblk  *  .0   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0
  6. WN mdblk  *  .0   .0   .6   .0   .0   .0   .0   .0   .0   .1   .0   .0
  7. WS mdblk  *  .0   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0
  8. EN mdblk  *  .0   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk  *  .0   .0   .0   .0   .0   .0   .1   .0   .0   .0   .0   .0
 10. NW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk  *  .0   .0   .0   .0   .0   .0   .1   .0   .0   .0   .0   .0
 12. NE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .9   .3   .0
 14. WN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .7
 15. WS blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .5   .0   .0   .3
 16. EN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .4   .7   .0
 17. SE blk    *  .0   .0   .0   .0   .2   .0   .0   .3   .0   .0   .0   .0
 18. NW blk    *  .0   .0   .0   .0   .0   .2  1.2   .0   .0   .0   .0   .0
 19. SW blk    *  .0   .0   .0   .0   .1   .0   .0   .7   .0   .0   .0   .0
 20. NE blk    *  .0   .0   .0   .0   .0   .4   .5   .0   .0   .0   .0   .0
```

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       CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   1

            JOB: Olinda 2004 NP7
            RUN: Hour 1            (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

       U=     .5 M/S             Z0= 100. CM             ALT=   360. (M)
     BRG= WORST CASE             VD=    .0 CM/S
    CLAS=      7 (G)             VS=    .0 CM/S
    MIXH= 1000. M               AMB=    .0 PPM
   SIGTH=    10. DEGREES       TEMP=   8.3 DEGREE (C)


 II.  LINK VARIABLES

       LINK       *  LINK COORDINATES (M)    *                    EF      H      W
    DESCRIPTION   *    X1     Y1     X2     Y2  * TYPE  VPH   (G/MI)   (M)    (M)
-----------------*--------------------------*-------------------------------
A. Valenc NBA    *      9   -150      9      0 *  AG    223    6.2      .0   10.0
B. Valenc NBD    *      9      0      9    150 *  AG    168    6.2      .0   10.0
C. Valenc NBL    *      5   -150      0      0 *  AG     87    6.2      .0   10.0
D. Valenc SBA    *     -7    150     -7      0 *  AG    358    6.2      .0   10.0
E. Valenc SBD    *     -7      0     -7   -150 *  AG   1168    6.2      .0   10.0
F. Valenc SBL    *     -5    150      0      0 *  AG      3    6.2      .0   10.0
G. Carbon EBA    *   -150     -9      0     -9 *  AG    522    6.2      .0   10.0
H. Carbon EBD    *      0     -9    150     -9 *  AG    289    6.2      .0   10.0
I. Carbon EBL    *   -150     -5      0      0 *  AG     59    6.2      .0   10.0
J. Carbon WBA    *    150     12      0     12 *  AG    740    6.2      .0   10.0
K. Carbon WBD    *      0     12   -150     12 *  AG   1025    6.2      .0   10.0
L. Carbon WBL    *    150      9      0      0 *  AG    658    6.2      .0   10.0
M. Valenc NBAX   *      9   -750      9   -150 *  AG    310    6.2      .0   10.0
N. Valenc NBDX   *      9    150      9    750 *  AG    168    6.2      .0   10.0
O. Valenc SBAX   *     -7    750     -7    150 *  AG    361    6.2      .0   10.0
P. Valenc SBDX   *     -7   -150     -7   -750 *  AG   1168    6.2      .0   10.0
Q. Carbon EBAX   *   -750     -9   -150     -9 *  AG    581    6.2      .0   10.0
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```
R. Carbon EBDX  *   150    -9    750     -9 *  AG    289    6.2       .0  10.0
S. Carbon WBAX  *   750    12    150     12 *  AG   1398    6.2       .0  10.0
T. Carbon WBDX  *  -150    12   -750     12 *  AG   1025    6.2       .0  10.0
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           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   2

               JOB: Olinda 2004 NP7
               RUN: Hour 1            (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

                *    COORDINATES (M)
   RECEPTOR     *     X      Y      Z
 ------------*---------------------
  1. SE         *     17    -16    1.8
  2. NW         *    -14     20    1.8
  3. SW         *    -14    -17    1.8
  4. NE         *     15     21    1.8
  5. ES mdblk   *    150    -16    1.8
  6. WN mdblk   *   -150     20    1.8
  7. WS mdblk   *   -150    -17    1.8
  8. EN mdblk   *    150     21    1.8
  9. SE mdblk   *     17   -150    1.8
 10. NW mdblk   *    -14    150    1.8
 11. SW mdblk   *    -14   -150    1.8
 12. NE mdblk   *     15    150    1.8
 13. ES blk     *    600    -16    1.8
 14. WN blk     *   -600     20    1.8
 15. WS blk     *   -600    -17    1.8
 16. EN blk     *    600     21    1.8
 17. SE blk     *     17   -600    1.8
 18. NW blk     *    -14    600    1.8
 19. SW blk     *    -14   -600    1.8
 20. NE blk     *     15    600    1.8
```

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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   3

              JOB: Olinda 2004 NP7
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

               *        * PRED  *                  CONC/LINK
               *  BRG   * CONC  *                    (PPM)
  RECEPTOR     * (DEG)  * (PPM) *   A    B    C    D    E    F    G    H
 -------------*-------*-------*----------------------------------------
  1. SE        *  278. *   1.3 *   .0   .0   .0   .0   .2   .0   .4   .0
  2. NW        *  174. *   1.7 *   .0   .0   .0   .0   .7   .0   .1   .0
  3. SW        *   80. *   1.4 *   .0   .0   .0   .0   .5   .0   .0   .2
  4. NE        *  188. *   1.3 *   .2   .0   .0   .0   .2   .0   .0   .0
  5. ES mdblk  *  278. *   1.0 *   .0   .0   .0   .0   .0   .0   .0   .3
  6. WN mdblk  *   97. *   1.3 *   .0   .0   .0   .0   .0   .0   .0   .0
  7. WS mdblk  *   82. *   1.0 *   .0   .0   .0   .0   .0   .0   .4   .0
  8. EN mdblk  *  261. *   1.3 *   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk  *  347. *    .8 *   .2   .0   .0   .0   .3   .0   .0   .0
 10. NW mdblk  *  175. *    .9 *   .0   .0   .0   .3   .1   .0   .0   .0
 11. SW mdblk  *    9. *   1.4 *   .0   .0   .0   .0  1.0   .0   .0   .0
 12. NE mdblk  *  186. *    .8 *   .0   .2   .0   .0   .2   .0   .0   .0
 13. ES blk    *  277. *    .9 *   .0   .0   .0   .0   .0   .0   .0   .0
 14. WN blk    *   97. *   1.3 *   .0   .0   .0   .0   .0   .0   .0   .0
 15. WS blk    *   83. *   1.0 *   .0   .0   .0   .0   .0   .0   .0   .0
 16. EN blk    *  263. *   1.4 *   .0   .0   .0   .0   .0   .0   .0   .0
 17. SE blk    *  352. *    .9 *   .0   .0   .0   .0   .0   .0   .0   .0
 18. NW blk    *  174. *    .7 *   .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk    *    7. *   1.5 *   .0   .0   .0   .0   .0   .0   .0   .0
 20. NE blk    *  186. *    .6 *   .0   .0   .0   .0   .0   .0   .0   .0
```

```
      CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
               JUNE 1989 VERSION
               PAGE   4

          JOB: Olinda 2004 NP7
          RUN: Hour 1             (WORST CASE ANGLE)
    POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

             *                          CONC/LINK
             *                            (PPM)
 RECEPTOR    *   I    J    K    L    M    N    O    P    Q    R    S    T
-------------*-------------------------------------------------------------
 1. SE       *  .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .2
 2. NW       *  .0   .0   .4   .0   .1   .0   .0   .2   .0   .0   .0   .0
 3. SW       *  .0   .1   .0   .2   .0   .0   .0   .0   .0   .0   .3   .0
 4. NE       *  .0   .3   .0   .2   .0   .0   .0   .2   .0   .0   .0   .0
 5. ES mdblk *  .0   .0   .2   .2   .0   .0   .0   .0   .0   .0   .0   .1
 6. WN mdblk *  .0   .0   .8   .1   .0   .0   .0   .0   .0   .0   .1   .0
 7. WS mdblk *  .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .2   .0
 8. EN mdblk *  .0   .5   .0   .3   .0   .0   .0   .0   .0   .0   .0   .0
 9. SE mdblk *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
10. NW mdblk *  .0   .0   .0   .0   .0   .0   .0   .1   .0   .0   .0   .0
11. SW mdblk *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
12. NE mdblk *  .0   .0   .0   .0   .0   .0   .0   .1   .0   .0   .0   .0
13. ES blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .3   .4   .0
14. WN blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .9
15. WS blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .5   .0   .0   .3
16. EN blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .1  1.0   .0
17. SE blk   *  .0   .0   .0   .0   .3   .0   .0   .4   .0   .0   .0   .0
18. NW blk   *  .0   .0   .0   .0   .0   .0   .4   .0   .0   .0   .0   .0
19. SW blk   *  .0   .0   .0   .0   .1   .0   .0  1.1   .0   .0   .0   .0
20. NE blk   *  .0   .0   .0   .0   .0   .2   .2   .0   .0   .0   .0   .0
```

OLINDA ALPHA LANDFILL EXPANSION

AIR QUALITY CO HOT SPOT ANALYSIS

CALINE4 MODEL PRINTOUTS

FUTURE (2013) BASELINE CONDITIONS

```
      CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
               JUNE 1989 VERSION
               PAGE   1

          JOB: Olinda 2013 NP1
          RUN: Hour 1            (WORST CASE ANGLE)
    POLLUTANT: Carbon Monoxide

  I.  SITE VARIABLES

       U=    .5 M/S            Z0= 100. CM           ALT=   360. (M)
     BRG= WORST CASE           VD=   .0 CM/S
    CLAS=     7 (G)            VS=   .0 CM/S
    MIXH= 1000. M             AMB=   .0 PPM
   SIGTH=   10. DEGREES      TEMP=  8.3 DEGREE (C)

 II.  LINK VARIABLES

     LINK        *  LINK COORDINATES (M)    *                  EF      H      W
  DESCRIPTION    *   X1    Y1    X2    Y2   * TYPE  VPH     (G/MI)  (M)    (M)
-----------------*--------------------------*------------------------------------
A. Assoc NBA     *    12  -150    12     0  *  AG    230      2.7     .0   10.0
B. Assoc NBD     *    12     0    12   150  *  AG    410      2.7     .0   10.0
C. Assoc NBL     *     9  -150     0     0  *  AG    280      2.7     .0   10.0
D. Assoc SBA     *   -12   150   -12     0  *  AG    460      2.7     .0   10.0
E. Assoc SBD     *   -12     0   -12  -150  *  AG    540      2.7     .0   10.0
F. Assoc SBL     *    -9   150     0     0  *  AG    190      2.7     .0   10.0
G. Imper EBA     *  -150   -12     0   -12  *  AG   2226      2.7     .0   10.0
H. Imper EBD     *     0   -12   150   -12  *  AG   2316      2.7     .0   10.0
I. Imper EBL     *  -150    -9     0     0  *  AG    150      2.7     .0   10.0
J. Imper WBA     *   150    12     0    12  *  AG   2016      2.7     .0   10.0
K. Imper WBD     *     0    12  -150    12  *  AG   2376      2.7     .0   10.0
L. Imper WBL     *   150     9     0     0  *  AG     90      2.7     .0   10.0
M. Assoc NBAX    *    12  -750    12  -150  *  AG    510      2.7     .0   10.0
N. Assoc NBDX    *    12   150    12   750  *  AG    410      2.7     .0   10.0
O. Assoc SBAX    *   -12   750   -12   150  *  AG    650      2.7     .0   10.0
P. Assoc SBDX    *   -12  -150   -12  -750  *  AG    540      2.7     .0   10.0
Q. Imper EBAX    *  -750   -12  -150   -12  *  AG   2376      2.7     .0   10.0
```

```
 R. Imper EBDX   *   150    -12    750    -12 *  AG    2316    2.7       .0  10.0
 S. Imper WBAX   *   750     12    150     12 *  AG    2106    2.7       .0  10.0
 T. Imper WBDX   *  -150     12   -750     12 *  AG    2376    2.7       .0  10.0
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: Olinda 2013 NP1
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  III.  RECEPTOR LOCATIONS

                *    COORDINATES (M)
   RECEPTOR     *    X       Y      Z
  ------------*---------------------
  1. SE         *     21     -20    1.8
  2. NW         *    -21      20    1.8
  3. SW         *    -19     -21    1.8
  4. NE         *     19      21    1.8
  5. ES mdblk *    150     -20    1.8
  6. WN mdblk *   -150      20    1.8
  7. WS mdblk *   -150     -21    1.8
  8. EN mdblk *    150      21    1.8
  9. SE mdblk *     21    -150    1.8
 10. NW mdblk *    -21     150    1.8
 11. SW mdblk *    -19    -150    1.8
 12. NE mdblk *     19     150    1.8
 13. ES blk     *    600     -20    1.8
 14. WN blk     *   -600      20    1.8
 15. WS blk     *   -600     -21    1.8
 16. EN blk     *    600      21    1.8
 17. SE blk     *     21    -600    1.8
 18. NW blk     *    -21     600    1.8
 19. SW blk     *    -19    -600    1.8
 20. NE blk     *     19     600    1.8
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   3

            JOB: Olinda 2013 NP1
            RUN: Hour 1            (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

               *        * PRED  *                CONC/LINK
               *  BRG   * CONC  *                  (PPM)
 RECEPTOR      * (DEG)  * (PPM) *   A    B    C    D    E    F    G    H
---------------*--------*-------*---------------------------------------
 1. SE         *  279.  *   1.2 *   .0   .0   .0   .0   .0   .0   .5   .2
 2. NW         *   99.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 3. SW         *   81.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .5
 4. NE         *  261.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 5. ES mdblk   *  279.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .7
 6. WN mdblk   *   99.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .1
 7. WS mdblk   *   81.  *   1.0 *   .0   .0   .0   .0   .0   .0   .6   .0
 8. EN mdblk   *  261.  *   1.0 *   .0   .0   .0   .0   .0   .0   .1   .0
 9. SE mdblk   *  351.  *    .4 *   .0   .0   .0   .0   .0   .0   .0   .0
10. NW mdblk   *  172.  *    .5 *   .0   .0   .0   .1   .0   .0   .0   .0
11. SW mdblk   *    7.  *    .5 *   .0   .0   .0   .0   .2   .0   .0   .0
12. NE mdblk   *  188.  *    .5 *   .0   .2   .0   .0   .0   .0   .0   .0
13. ES blk     *  278.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
14. WN blk     *   98.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
15. WS blk     *   82.  *   1.0 *   .0   .0   .0   .0   .0   .0   .0   .0
16. EN blk     *  262.  *   1.0 *   .0   .0   .0   .0   .0   .0   .0   .0
17. SE blk     *  353.  *    .4 *   .0   .0   .0   .0   .0   .0   .0   .0
18. NW blk     *  173.  *    .4 *   .0   .0   .0   .0   .0   .0   .0   .0
19. SW blk     *    7.  *    .5 *   .0   .0   .0   .0   .0   .0   .0   .0
20. NE blk     *  187.  *    .4 *   .0   .0   .0   .0   .0   .0   .0   .0
```

```
     CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
              JUNE 1989 VERSION
              PAGE   4

         JOB: Olinda 2013 NP1
         RUN: Hour 1            (WORST CASE ANGLE)
   POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

               *                         CONC/LINK
               *                           (PPM)
 RECEPTOR      *   I    J    K    L    M    N    O    P    Q    R    S    T
 ------------*--------------------------------------------------------------
  1. SE        *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .2
  2. NW        *  .0   .5   .2   .0   .0   .0   .0   .0   .0   .2   .0   .0
  3. SW        *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .2   .0
  4. NE        *  .0   .0   .5   .0   .0   .0   .0   .0   .2   .0   .0   .0
  5. ES mdblk  *  .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0
  6. WN mdblk  *  .0   .0   .7   .0   .0   .0   .0   .0   .0   .0   .0   .0
  7. WS mdblk  *  .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  8. EN mdblk  *  .0   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .7   .2   .0
 14. WN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .8
 15. WS blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .7   .0   .0   .2
 16. EN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .2   .6   .0
 17. SE blk    *  .0   .0   .0   .0   .2   .0   .0   .0   .0   .0   .0   .0
 18. NW blk    *  .0   .0   .0   .0   .0   .0   .2   .0   .0   .0   .0   .0
 19. SW blk    *  .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .0   .0
 20. NE blk    *  .0   .0   .0   .0   .0   .2   .0   .0   .0   .0   .0   .0
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: Olinda 2013 NP2
              RUN: Hour 1            (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

       U=    .5 M/S            Z0= 100. CM          ALT=   360. (M)
     BRG= WORST CASE           VD=    .0 CM/S
    CLAS=     7 (G)            VS=    .0 CM/S
    MIXH= 1000. M             AMB=    .0 PPM
   SIGTH=   10. DEGREES      TEMP=   8.3 DEGREE (C)


  II.  LINK VARIABLES

      LINK       *  LINK COORDINATES (M)    *                  EF     H     W
   DESCRIPTION   *   X1    Y1    X2    Y2   * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*--------------------------*-------------------------------
 A. Place NBA    *     7  -150     7     0  *  AG    290   2.7     .0  10.0
 B. Place NBD    *     7     0     7   150  *  AG     80   2.7     .0  10.0
 C. Place NBL    *     5  -150     0     0  *  AG    140   2.7     .0  10.0
 D. Place SBA    *    -5   150    -5     0  *  AG     60   2.7     .0  10.0
 E. Place SBD    *    -5     0    -5  -150  *  AG    790   2.7     .0  10.0
 F. Place SBL    *    -5   150     0     0  *  AG     10   2.7     .0  10.0
 G. Imper EBA    *  -150   -11     0   -11  *  AG   3226   2.7     .0  10.0
 H. Imper EBD    *     0   -11   150   -11  *  AG   2896   2.7     .0  10.0
 I. Imper EBL    *  -150    -5     0     0  *  AG     10   2.7     .0  10.0
 J. Imper WBA    *   150     9     0     9  *  AG   2376   2.7     .0  10.0
 K. Imper WBD    *     0     9  -150     9  *  AG   2516   2.7     .0  10.0
 L. Imper WBL    *   150     5     0     0  *  AG    170   2.7     .0  10.0
 M. Place NBAX   *     7  -750     7  -150  *  AG    430   2.7     .0  10.0
 N. Place NBDX   *     7   150     7   750  *  AG     80   2.7     .0  10.0
 O. Place SBAX   *    -5   750    -5   150  *  AG     70   2.7     .0  10.0
 P. Place SBDX   *    -5  -150    -5  -750  *  AG    790   2.7     .0  10.0
 Q. Imper EBAX   *  -750   -11  -150   -11  *  AG   3236   2.7     .0  10.0
```

```
R. Imper EBDX    *   150    -11    750    -11 *  AG    2896    2.7       .0  10.0
S. Imper WBAX    *   750      9    150      9 *  AG    2546    2.7       .0  10.0
T. Imper WBDX    *  -150      9   -750      9 *  AG    2516    2.7       .0  10.0




          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: Olinda 2013 NP2
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

               *    COORDINATES (M)
   RECEPTOR    *    X      Y      Z
 ------------*---------------------
 1. SE         *    14    -19    1.8
 2. NW         *   -12     15    1.8
 3. SW         *   -12    -21    1.8
 4. NE         *    14     17    1.8
 5. ES mdblk *     150    -19    1.8
 6. WN mdblk *    -150     15    1.8
 7. WS mdblk *    -150    -21    1.8
 8. EN mdblk *     150     17    1.8
 9. SE mdblk *      14   -150    1.8
10. NW mdblk *     -12    150    1.8
11. SW mdblk *     -12   -150    1.8
12. NE mdblk *      14    150    1.8
13. ES blk     *   600    -19    1.8
14. WN blk     *  -600     15    1.8
15. WS blk     *  -600    -21    1.8
16. EN blk     *   600     17    1.8
17. SE blk     *    14   -600    1.8
18. NW blk     *   -12    600    1.8
19. SW blk     *   -12   -600    1.8
20. NE blk     *    14    600    1.8
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   3

              JOB: Olinda 2013 NP2
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

               *        * PRED  *                  CONC/LINK
               *  BRG   * CONC  *                    (PPM)
 RECEPTOR      * (DEG)  * (PPM) *   A    B    C    D    E    F    G    H
-------------*-------*-------*----------------------------------------
 1. SE         *  279. *   1.4 *   .0   .0   .0   .0   .0   .0   .8   .0
 2. NW         *   98. *   1.3 *   .0   .0   .0   .0   .0   .0   .0   .1
 3. SW         *   80. *   1.2 *   .0   .0   .0   .0   .1   .0   .0   .6
 4. NE         *  261. *   1.1 *   .0   .0   .0   .0   .0   .0   .2   .0
 5. ES mdblk   *  278. *   1.2 *   .0   .0   .0   .0   .0   .0   .0   .7
 6. WN mdblk   *   99. *   1.4 *   .0   .0   .0   .0   .0   .0   .2   .1
 7. WS mdblk   *   82. *   1.1 *   .0   .0   .0   .0   .0   .0   .6   .0
 8. EN mdblk   *  261. *   1.2 *   .0   .0   .0   .0   .0   .0   .2   .1
 9. SE mdblk   *  348. *    .5 *   .1   .0   .0   .0   .1   .0   .0   .0
10. NW mdblk   *  177. *    .4 *   .0   .0   .0   .0   .0   .0   .0   .0
11. SW mdblk   *   10. *    .6 *   .0   .0   .0   .0   .3   .0   .0   .0
12. NE mdblk   *  184. *    .4 *   .0   .0   .0   .0   .0   .0   .0   .0
13. ES blk     *  278. *   1.2 *   .0   .0   .0   .0   .0   .0   .0   .0
14. WN blk     *   98. *   1.4 *   .0   .0   .0   .0   .0   .0   .0   .0
15. WS blk     *   82. *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
16. EN blk     *  262. *   1.2 *   .0   .0   .0   .0   .0   .0   .0   .0
17. SE blk     *  353. *    .5 *   .0   .0   .0   .0   .0   .0   .0   .0
18. NW blk     *  177. *    .2 *   .0   .0   .0   .0   .0   .0   .0   .0
19. SW blk     *    7. *    .6 *   .0   .0   .0   .0   .0   .0   .0   .0
20. NE blk     *  183. *    .2 *   .0   .0   .0   .0   .0   .0   .0   .0
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   4

            JOB: Olinda 2013 NP2
            RUN: Hour 1             (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

              *                        CONC/LINK
              *                          (PPM)
  RECEPTOR    *   I    J    K    L    M    N    O    P    Q    R    S    T
 ------------*-------------------------------------------------------------
  1. SE       *  .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .2
  2. NW       *  .0   .7   .1   .0   .0   .0   .0   .0   .0   .2   .0   .0
  3. SW       *  .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .2   .0
  4. NE       *  .0   .0   .6   .0   .0   .0   .0   .0   .2   .0   .0   .0
  5. ES mdblk *  .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0
  6. WN mdblk *  .0   .0   .8   .0   .0   .0   .0   .0   .0   .0   .0   .0
  7. WS mdblk *  .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  8. EN mdblk *  .0   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .8   .3   .0
 14. WN blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .3   .0   .0   .9
 15. WS blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .7   .0   .0   .2
 16. EN blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .3   .7   .0
 17. SE blk   *  .0   .0   .0   .0   .2   .0   .0   .2   .0   .0   .0   .0
 18. NW blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk   *  .0   .0   .0   .0   .0   .0   .0   .4   .0   .0   .0   .0
 20. NE blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   1

            JOB: Olinda 2013 NP3
            RUN: Hour 1           (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

       U=    .5 M/S             Z0= 100. CM          ALT=   360. (M)
     BRG= WORST CASE            VD=    .0 CM/S
    CLAS=      7 (G)            VS=    .0 CM/S
    MIXH= 1000. M              AMB=    .0 PPM
   SIGTH=   10. DEGREES       TEMP=   8.3 DEGREE (C)


 II.  LINK VARIABLES

      LINK        *  LINK COORDINATES (M)    *                EF     H      W
   DESCRIPTION    *   X1     Y1    X2     Y2  * TYPE  VPH  (G/MI)  (M)    (M)
-----------------*------------------------*-------------------------------
A. Kraem NBA     *    12   -150    12      0 *  AG    627    2.7     .0   10.0
B. Kraem NBD     *    12      0    12    150 *  AG   1264    2.7     .0   10.0
C. Kraem NBL     *     9   -150     0      0 *  AG    353    2.7     .0   10.0
D. Kraem SBA     *   -12    150   -12      0 *  AG   1960    2.7     .0   10.0
E. Kraem SBD     *   -12      0   -12   -150 *  AG   2065    2.7     .0   10.0
F. Kraem SBL     *    -9    150     0      0 *  AG    330    2.7     .0   10.0
G. Imper EBA     *  -150    -12     0    -12 *  AG   1866    2.7     .0   10.0
H. Imper EBD     *     0    -12   150    -12 *  AG   1809    2.7     .0   10.0
I. Imper EBL     *  -150     -9     0      0 *  AG    290    2.7     .0   10.0
J. Imper WBA     *   150     14     0     14 *  AG   1896    2.7     .0   10.0
K. Imper WBD     *     0     14  -150     14 *  AG   2289    2.7     .0   10.0
L. Imper WBL     *   150      9     0      0 *  AG    105    2.7     .0   10.0
M. Kraem NBAX    *    12   -750    12   -150 *  AG    980    2.7     .0   10.0
N. Kraem NBDX    *    12    150    12    750 *  AG   1264    2.7     .0   10.0
O. Kraem SBAX    *   -12    750   -12    150 *  AG   2290    2.7     .0   10.0
P. Kraem SBDX    *   -12   -150   -12   -750 *  AG   2065    2.7     .0   10.0
Q. Imper EBAX    *  -750    -12  -150    -12 *  AG   2156    2.7     .0   10.0
```

```
R. Imper EBDX   *   150    -12    750    -12 *  AG    1809    2.7      .0  10.0
S. Imper WBAX   *   750     14    150     14 *  AG    2001    2.7      .0  10.0
T. Imper WBDX   *  -150     14   -750     14 *  AG    2289    2.7      .0  10.0




       CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   2

           JOB: Olinda 2013 NP3
           RUN: Hour 1           (WORST CASE ANGLE)
     POLLUTANT: Carbon Monoxide


III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
  RECEPTOR   *    X      Y      Z
-------------*---------------------
 1. SE       *     21    -20    1.8
 2. NW       *    -21     22    1.8
 3. SW       *    -20    -21    1.8
 4. NE       *     20     24    1.8
 5. ES mdblk *    150    -20    1.8
 6. WN mdblk *   -150     22    1.8
 7. WS mdblk *   -150    -21    1.8
 8. EN mdblk *    150     24    1.8
 9. SE mdblk *     21   -150    1.8
10. NW mdblk *    -21    150    1.8
11. SW mdblk *    -20   -150    1.8
12. NE mdblk *     20    150    1.8
13. ES blk   *    600    -20    1.8
14. WN blk   *   -600     22    1.8
15. WS blk   *   -600    -21    1.8
16. EN blk   *    600     24    1.8
17. SE blk   *     21   -600    1.8
18. NW blk   *    -21    600    1.8
19. SW blk   *    -20   -600    1.8
20. NE blk   *     20    600    1.8
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   3

              JOB: Olinda 2013 NP3
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide

   IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

                 *        * PRED  *                 CONC/LINK
                 *  BRG   * CONC  *                   (PPM)
   RECEPTOR      * (DEG)  * (PPM) *   A    B    C    D    E    F    G    H
-------------*-------*-------*-------------------------------------------
  1. SE          *  279.  *   1.2 *  .1   .0   .0   .0   .1   .0   .4   .1
  2. NW          *  171.  *   1.3 *  .0   .0   .0   .1   .4   .0   .1   .0
  3. SW          *    9.  *   1.4 *  .0   .0   .0   .4   .2   .0   .3   .0
  4. NE          *  260.  *   1.2 *  .0   .2   .0   .1   .0   .0   .0   .0
  5. ES mdblk    *  278.  *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .5
  6. WN mdblk    *   99.  *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .1
  7. WS mdblk    *   80.  *   1.0 *  .0   .0   .0   .0   .0   .0   .5   .0
  8. EN mdblk    *  262.  *    .9 *  .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk    *  351.  *    .7 *  .2   .0   .0   .1   .0   .0   .0   .0
 10. NW mdblk    *  171.  *   1.0 *  .0   .0   .0   .5   .0   .0   .0   .0
 11. SW mdblk    *    8.  *   1.1 *  .0   .0   .0   .0   .6   .0   .0   .0
 12. NE mdblk    *  189.  *    .9 *  .0   .4   .0   .0   .1   .0   .0   .0
 13. ES blk      *  278.  *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .0
 14. WN blk      *   98.  *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .0
 15. WS blk      *   82.  *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .0
 16. EN blk      *  262.  *    .8 *  .0   .0   .0   .0   .0   .0   .0   .0
 17. SE blk      *  352.  *    .7 *  .0   .0   .0   .0   .0   .0   .0   .0
 18. NW blk      *  172.  *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk      *    7.  *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .0
 20. NE blk      *  188.  *    .9 *  .0   .0   .0   .0   .0   .0   .0   .0
```

```
         CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                  JUNE 1989 VERSION
                  PAGE   4

              JOB: Olinda 2013 NP3
              RUN: Hour 1              (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

                *                        CONC/LINK
                *                          (PPM)
  RECEPTOR      *   I    J    K    L    M    N    O    P    Q    R    S    T
 ---------------*-------------------------------------------------------------
  1. SE         *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .2
  2. NW         *  .0   .0   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0
  3. SW         *  .0   .0   .2   .0   .0   .1   .0   .0   .0   .0   .0   .0
  4. NE         *  .0   .0   .5   .0   .0   .0   .0   .0   .2   .0   .0   .0
  5. ES mdblk   *  .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0
  6. WN mdblk   *  .0   .0   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0
  7. WS mdblk   *  .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  8. EN mdblk   *  .0   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk     *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .6   .2   .0
 14. WN blk     *  .0   .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .6
 15. WS blk     *  .0   .0   .0   .0   .0   .0   .0   .0   .6   .0   .0   .2
 16. EN blk     *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .2   .5   .0
 17. SE blk     *  .0   .0   .0   .0   .3   .0   .0   .2   .0   .0   .0   .0
 18. NW blk     *  .0   .0   .0   .0   .0   .1   .7   .0   .0   .0   .0   .0
 19. SW blk     *  .0   .0   .0   .0   .1   .0   .0   .7   .0   .0   .0   .0
 20. NE blk     *  .0   .0   .0   .0   .0   .5   .2   .0   .0   .0   .0   .0
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: Olinda 2013 NP4
              RUN: Hour 1            (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=     .5 M/S            Z0= 100. CM           ALT=   360. (M)
      BRG= WORST CASE            VD=    .0 CM/S
     CLAS=      7 (G)            VS=    .0 CM/S
     MIXH= 1000. M              AMB=    .0 PPM
    SIGTH=    10. DEGREES      TEMP=   8.3 DEGREE (C)


 II.  LINK VARIABLES

     LINK       *  LINK COORDINATES (M)    *                 EF      H      W
  DESCRIPTION   *   X1     Y1     X2    Y2  * TYPE  VPH  (G/MI)   (M)    (M)
----------------*--------------------------*-------------------------------
A. Valenc NBA   *     9  -150      9     0 *  AG    247    2.4      .0  10.0
B. Valenc NBD   *     9     0      9   150 *  AG    416    2.4      .0  10.0
C. Valenc NBL   *     5  -150      0     0 *  AG    100    2.4      .0  10.0
D. Valenc SBA   *    -9   150     -9     0 *  AG    488    2.4      .0  10.0
E. Valenc SBD   *    -9     0     -9  -150 *  AG    847    2.4      .0  10.0
F. Valenc SBL   *    -5   150      0     0 *  AG    628    2.4      .0  10.0
G. Imper EBA    *  -150   -14      0   -14 *  AG   1510    2.4      .0  10.0
H. Imper EBD    *     0   -14    150   -14 *  AG   2188    2.4      .0  10.0
I. Imper EBL    *  -150    -9      0     0 *  AG    171    2.4      .0  10.0
J. Imper WBA    *   150     9      0     9 *  AG   2198    2.4      .0  10.0
K. Imper WBD    *     0     9   -150     9 *  AG   2261    2.4      .0  10.0
L. Imper WBL    *   150     5      0     0 *  AG    370    2.4      .0  10.0
M. Valenc NBAX  *     9  -750      9  -150 *  AG    347    2.4      .0  10.0
N. Valenc NBDX  *     9   150      9   750 *  AG    416    2.4      .0  10.0
O. Valenc SBAX  *    -9   750     -9   150 *  AG   1116    2.4      .0  10.0
P. Valenc SBDX  *    -9  -150     -9  -750 *  AG    847    2.4      .0  10.0
Q. Imper EBAX   *  -750   -14   -150   -14 *  AG   1681    2.4      .0  10.0
```

```
R. Imper EBDX    *   150    -14    750    -14 *  AG    2188    2.4         .0  10.0
S. Imper WBAX    *   750      9    150      9 *  AG    2568    2.4         .0  10.0
T. Imper WBDX    *  -150      9   -750      9 *  AG    2261    2.4         .0  10.0
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: Olinda 2013 NP4
              RUN: Hour 1            (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
  RECEPTOR   *    X       Y      Z
-------------*---------------------
 1. SE       *     17     -22    1.8
 2. NW       *    -17      16    1.8
 3. SW       *    -15     -24    1.8
 4. NE       *     15      17    1.8
 5. ES mdblk *    150     -22    1.8
 6. WN mdblk *   -150      16    1.8
 7. WS mdblk *   -150     -24    1.8
 8. EN mdblk *    150      17    1.8
 9. SE mdblk *     17    -150    1.8
10. NW mdblk *    -17     150    1.8
11. SW mdblk *    -15    -150    1.8
12. NE mdblk *     15     150    1.8
13. ES blk   *    600     -22    1.8
14. WN blk   *   -600      16    1.8
15. WS blk   *   -600     -24    1.8
16. EN blk   *    600      17    1.8
17. SE blk   *     17    -600    1.8
18. NW blk   *    -17     600    1.8
19. SW blk   *    -15    -600    1.8
20. NE blk   *     15     600    1.8
```

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       CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   3

           JOB: Olinda 2013 NP4
           RUN: Hour 1            (WORST CASE ANGLE)
    POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

                *        * PRED  *                  CONC/LINK
                *  BRG   * CONC  *                    (PPM)
  RECEPTOR      * (DEG)  * (PPM) *   A    B    C    D    E    F    G    H
 ---------------*--------*-------*----------------------------------------
  1. SE         *  279.  *    .8 *  .0   .0   .0   .0   .0   .0   .3   .0
  2. NW         *   99.  *   1.1 *  .0   .0   .0   .0   .0   .0   .0   .0
  3. SW         *   80.  *    .9 *  .0   .0   .0   .0   .1   .0   .0   .4
  4. NE         *  261.  *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .0
  5. ES mdblk   *  279.  *    .9 *  .0   .0   .0   .0   .0   .0   .0   .5
  6. WN mdblk   *   98.  *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .1
  7. WS mdblk   *   82.  *    .7 *  .0   .0   .0   .0   .0   .0   .3   .0
  8. EN mdblk   *  261.  *    .9 *  .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk   *  353.  *    .4 *  .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk   *  171.  *    .5 *  .0   .0   .0   .1   .0   .1   .0   .0
 11. SW mdblk   *    7.  *    .6 *  .0   .0   .0   .0   .3   .0   .0   .0
 12. NE mdblk   *  188.  *    .5 *  .0   .2   .0   .0   .0   .0   .0   .0
 13. ES blk     *  278.  *    .9 *  .0   .0   .0   .0   .0   .0   .0   .0
 14. WN blk     *   98.  *    .9 *  .0   .0   .0   .0   .0   .0   .0   .0
 15. WS blk     *   82.  *    .7 *  .0   .0   .0   .0   .0   .0   .0   .0
 16. EN blk     *  262.  *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .0
 17. SE blk     *  353.  *    .4 *  .0   .0   .0   .0   .0   .0   .0   .0
 18. NW blk     *  173.  *    .5 *  .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk     *    6.  *    .5 *  .0   .0   .0   .0   .0   .0   .0   .0
 20. NE blk     *  187.  *    .4 *  .0   .0   .0   .0   .0   .0   .0   .0
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   4

             JOB: Olinda 2013 NP4
             RUN: Hour 1           (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

              *                        CONC/LINK
              *                          (PPM)
  RECEPTOR    *   I    J    K    L    M    N    O    P    Q    R    S    T
-------------*-----------------------------------------------------------
 1. SE        *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .2
 2. NW        *  .0   .5   .1   .0   .0   .0   .0   .0   .0   .1   .0   .0
 3. SW        *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .2   .0
 4. NE        *  .0   .0   .5   .0   .0   .0   .0   .0   .1   .0   .0   .0
 5. ES mdblk  *  .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0
 6. WN mdblk  *  .0   .0   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0
 7. WS mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 8. EN mdblk  *  .0   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 9. SE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
10. NW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
11. SW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
12. NE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
13. ES blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .6   .2   .0
14. WN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .7
15. WS blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .4   .0   .0   .2
16. EN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .2   .6   .0
17. SE blk    *  .0   .0   .0   .0   .1   .0   .0   .1   .0   .0   .0   .0
18. NW blk    *  .0   .0   .0   .0   .0   .0   .3   .0   .0   .0   .0   .0
19. SW blk    *  .0   .0   .0   .0   .0   .0   .0   .3   .0   .0   .0   .0
20. NE blk    *  .0   .0   .0   .0   .0   .2   .1   .0   .0   .0   .0   .0
```

```
       CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   1

           JOB: Olinda 2013 NP5
           RUN: Hour 1            (WORST CASE ANGLE)
     POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=    .5 M/S            Z0= 100. CM           ALT=   360. (M)
      BRG= WORST CASE           VD=    .0 CM/S
     CLAS=     7 (G)            VS=    .0 CM/S
     MIXH= 1000. M             AMB=    .0 PPM
    SIGTH=   10. DEGREES      TEMP=   8.3 DEGREE (C)


 II.  LINK VARIABLES

      LINK       *  LINK COORDINATES (M)    *                 EF     H     W
   DESCRIPTION   *   X1     Y1     X2     Y2 * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*--------------------------*------------------------------
 A. Valenc NBA   *      9   -150      9      0 *  AG    106   2.7     .0  10.0
 B. Valenc NBD   *      9      0      9    150 *  AG    304   2.7     .0  10.0
 C. Valenc NBL   *      5   -150      0      0 *  AG     50   2.7     .0  10.0
 D. Valenc SBA   *     -7    150     -7      0 *  AG   1276   2.7     .0  10.0
 E. Valenc SBD   *     -7      0     -7   -150 *  AG   1286   2.7     .0  10.0
 F. Valenc SBL   *     -5    150      0      0 *  AG    498   2.7     .0  10.0
 G. Birch EBA    *   -150     -9      0     -9 *  AG    910   2.7     .0  10.0
 H. Birch EBD    *      0     -9    150     -9 *  AG   1328   2.7     .0  10.0
 I. Birch EBL    *   -150     -5      0      0 *  AG     40   2.7     .0  10.0
 J. Birch WBA    *    150      5      0      5 *  AG    708   2.7     .0  10.0
 K. Birch WBD    *      0      5   -150      5 *  AG    680   2.7     .0  10.0
 L. Birch WBL    *    150      5      0      0 *  AG     10   2.7     .0  10.0
 M. Valenc NBAX  *      9   -750      9   -150 *  AG    156   2.7     .0  10.0
 N. Valenc NBDX  *      9    150      9    750 *  AG    304   2.7     .0  10.0
 O. Valenc SBAX  *     -7    750     -7    150 *  AG   1774   2.7     .0  10.0
 P. Valenc SBDX  *     -7   -150     -7   -750 *  AG   1286   2.7     .0  10.0
 Q. Birch EBAX   *   -750     -9   -150     -9 *  AG    950   2.7     .0  10.0
```

```
R. Birch EBDX    *   150     -9   750      -9 *  AG    1328    2.7       .0  10.0
S. Birch WBAX    *   750      5   150       5 *  AG     718    2.7       .0  10.0
T. Birch WBDX    *  -150      5  -750       5 *  AG     680    2.7       .0  10.0




          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: Olinda 2013 NP5
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
  RECEPTOR   *    X       Y      Z
 ------------*---------------------
 1. SE       *     17     -15    1.8
 2. NW       *    -14      12    1.8
 3. SW       *    -14     -17    1.8
 4. NE       *     15      12    1.8
 5. ES mdblk *    150     -15    1.8
 6. WN mdblk *   -150      12    1.8
 7. WS mdblk *   -150     -17    1.8
 8. EN mdblk *    150      12    1.8
 9. SE mdblk *     17    -150    1.8
10. NW mdblk *    -14     150    1.8
11. SW mdblk *    -14    -150    1.8
12. NE mdblk *     15     150    1.8
13. ES blk   *    600     -15    1.8
14. WN blk   *   -600      12    1.8
15. WS blk   *   -600     -17    1.8
16. EN blk   *    600      12    1.8
17. SE blk   *     17    -600    1.8
18. NW blk   *    -14     600    1.8
19. SW blk   *    -14    -600    1.8
20. NE blk   *     15     600    1.8
```

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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   3

              JOB: Olinda 2013 NP5
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

                 *        * PRED   *                 CONC/LINK
                 *  BRG   * CONC   *                   (PPM)
  RECEPTOR       * (DEG)  * (PPM)  *   A    B    C    D    E    F    G    H
-------------*-------*-------*-------------------------------------
 1. SE           *  351.  *     .7 *  .0   .0   .0   .1   .0   .0   .0   .2
 2. NW           *   98.  *     .9 *  .0   .0   .0   .2   .0   .0   .0   .1
 3. SW           *    7.  *    1.0 *  .0   .0   .0   .4   .1   .1   .1   .0
 4. NE           *  262.  *     .7 *  .0   .0   .0   .1   .0   .0   .0   .0
 5. ES mdblk     *  278.  *     .8 *  .0   .0   .0   .0   .0   .0   .0   .5
 6. WN mdblk     *   97.  *     .6 *  .0   .0   .0   .0   .0   .0   .0   .0
 7. WS mdblk     *   83.  *     .6 *  .0   .0   .0   .0   .0   .0   .3   .0
 8. EN mdblk     *  263.  *     .6 *  .0   .0   .0   .0   .0   .0   .0   .1
 9. SE mdblk     *  353.  *     .4 *  .0   .0   .0   .0   .0   .0   .0   .0
10. NW mdblk     *  172.  *     .8 *  .0   .0   .0   .5   .0   .1   .0   .0
11. SW mdblk     *    6.  *     .7 *  .0   .0   .0   .0   .5   .0   .0   .0
12. NE mdblk     *  189.  *     .5 *  .0   .1   .0   .1   .0   .0   .0   .0
13. ES blk       *  277.  *     .8 *  .0   .0   .0   .0   .0   .0   .0   .0
14. WN blk       *   97.  *     .6 *  .0   .0   .0   .0   .0   .0   .0   .0
15. WS blk       *   83.  *     .6 *  .0   .0   .0   .0   .0   .0   .0   .0
16. EN blk       *  263.  *     .6 *  .0   .0   .0   .0   .0   .0   .0   .0
17. SE blk       *  353.  *     .4 *  .0   .0   .0   .0   .0   .0   .0   .0
18. NW blk       *  173.  *     .9 *  .0   .0   .0   .0   .0   .0   .0   .0
19. SW blk       *    6.  *     .7 *  .0   .0   .0   .0   .0   .0   .0   .0
20. NE blk       *  187.  *     .5 *  .0   .0   .0   .0   .0   .0   .0   .0
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   4

              JOB: Olinda 2013 NP5
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


   IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

                *                       CONC/LINK
                *                         (PPM)
   RECEPTOR     *   I    J    K    L    M    N    O    P    Q    R    S    T
  ------------*----------------------------------------------------------------
   1. SE        *  .0   .0   .0   .0   .0   .0   .1   .0   .0   .0   .0   .0
   2. NW        *  .0   .2   .0   .0   .0   .0   .0   .0   .0   .1   .0   .0
   3. SW        *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
   4. NE        *  .0   .0   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0
   5. ES mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
   6. WN mdblk  *  .0   .0   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0
   7. WS mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
   8. EN mdblk  *  .0   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
   9. SE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  10. NW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  11. SW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  12. NE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  13. ES blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .6   .1   .0
  14. WN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .3
  15. WS blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .3   .0   .0   .1
  16. EN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .2   .3   .0
  17. SE blk    *  .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .0   .0
  18. NW blk    *  .0   .0   .0   .0   .0   .0   .7   .0   .0   .0   .0   .0
  19. SW blk    *  .0   .0   .0   .0   .0   .0   .0   .5   .0   .0   .0   .0
  20. NE blk    *  .0   .0   .0   .0   .0   .2   .2   .0   .0   .0   .0   .0
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: Olinda 2013 NP6
              RUN: Hour 1            (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

        U=    .5 M/S            Z0= 100. CM           ALT=   360. (M)
      BRG= WORST CASE           VD=    .0 CM/S
     CLAS=     7 (G)            VS=    .0 CM/S
     MIXH= 1000. M             AMB=    .0 PPM
    SIGTH=   10. DEGREES      TEMP=   8.3 DEGREE (C)


  II.  LINK VARIABLES

        LINK       *  LINK COORDINATES (M)   *                 EF     H     W
     DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
  -----------------*-------------------------*-------------------------------
  A. Valenc NBA    *     9  -150     9     0 *  AG   110    2.7     .0  10.0
  B. Valenc NBD    *     9     0     9   150 *  AG   121    2.7     .0  10.0
  C. Valenc NBL    *     5  -150     0     0 *  AG    80    2.7     .0  10.0
  D. Valenc SBA    *    -7   150    -7     0 *  AG   185    2.7     .0  10.0
  E. Valenc SBD    *    -7     0    -7  -150 *  AG  1654    2.7     .0  10.0
  F. Valenc SBL    *    -5   150     0     0 *  AG    20    2.7     .0  10.0
  G. Carbon EBA    *  -150    -9     0    -9 *  AG   850    2.7     .0  10.0
  H. Carbon EBD    *     0    -9   150    -9 *  AG   630    2.7     .0  10.0
  I. Carbon EBL    *  -150    -5     0     0 *  AG   111    2.7     .0  10.0
  J. Carbon WBA    *   150    12     0    12 *  AG  2340    2.7     .0  10.0
  K. Carbon WBD    *     0    12  -150    12 *  AG  2521    2.7     .0  10.0
  L. Carbon WBL    *   150     9     0     0 *  AG  1230    2.7     .0  10.0
  M. Valenc NBAX   *     9  -750     9  -150 *  AG   190    2.7     .0  10.0
  N. Valenc NBDX   *     9   150     9   750 *  AG   121    2.7     .0  10.0
  O. Valenc SBAX   *    -7   750    -7   150 *  AG   205    2.7     .0  10.0
  P. Valenc SBDX   *    -7  -150    -7  -750 *  AG  1654    2.7     .0  10.0
  Q. Carbon EBAX   *  -750    -9  -150    -9 *  AG   961    2.7     .0  10.0
```

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 R. Carbon EBDX  *   150     -9    750     -9 *  AG     630    2.7       .0  10.0
 S. Carbon WBAX  *   750     12    150     12 *  AG    3570    2.7       .0  10.0
 T. Carbon WBDX  *  -150     12   -750     12 *  AG    2521    2.7       .0  10.0




            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   2

                JOB: Olinda 2013 NP6
                RUN: Hour 1           (WORST CASE ANGLE)
          POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

                *    COORDINATES (M)
   RECEPTOR     *    X       Y      Z
 ------------*---------------------
  1. SE         *     17     -16    1.8
  2. NW         *    -14      20    1.8
  3. SW         *    -14     -17    1.8
  4. NE         *     15      21    1.8
  5. ES mdblk   *    150     -16    1.8
  6. WN mdblk   *   -150      20    1.8
  7. WS mdblk   *   -150     -17    1.8
  8. EN mdblk   *    150      21    1.8
  9. SE mdblk   *     17    -150    1.8
 10. NW mdblk   *    -14     150    1.8
 11. SW mdblk   *    -14    -150    1.8
 12. NE mdblk   *     15     150    1.8
 13. ES blk     *    600     -16    1.8
 14. WN blk     *   -600      20    1.8
 15. WS blk     *   -600     -17    1.8
 16. EN blk     *    600      21    1.8
 17. SE blk     *     17    -600    1.8
 18. NW blk     *    -14     600    1.8
 19. SW blk     *    -14    -600    1.8
 20. NE blk     *     15     600    1.8
```

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     CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
              JUNE 1989 VERSION
              PAGE   3

         JOB: Olinda 2013 NP6
         RUN: Hour 1            (WORST CASE ANGLE)
   POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

              *       * PRED    *              CONC/LINK
              *  BRG  * CONC    *                (PPM)
 RECEPTOR     * (DEG) * (PPM)   *   A    B    C    D    E    F    G    H
-------------*-------*-------*--------------------------------------------
 1. SE        *  278. *     .8 *   .0   .0   .0   .0   .1   .0   .2   .0
 2. NW        *   98. *    1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 3. SW        *   79. *    1.1 *   .0   .0   .0   .0   .3   .0   .0   .2
 4. NE        *   98. *    1.0 *   .0   .0   .0   .0   .0   .0   .0   .0
 5. ES mdblk  *  279. *     .7 *   .0   .0   .0   .0   .0   .0   .0   .2
 6. WN mdblk  *   98. *    1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 7. WS mdblk  *   82. *     .8 *   .0   .0   .0   .0   .0   .0   .3   .0
 8. EN mdblk  *  260. *    1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 9. SE mdblk  *  341. *     .4 *   .0   .0   .0   .0   .2   .0   .0   .0
10. NW mdblk  *  177. *     .4 *   .0   .0   .0   .0   .0   .0   .0   .0
11. SW mdblk  *   10. *     .8 *   .0   .0   .0   .0   .6   .0   .0   .0
12. NE mdblk  *  186. *     .4 *   .0   .0   .0   .0   .0   .0   .0   .0
13. ES blk    *  278. *     .7 *   .0   .0   .0   .0   .0   .0   .0   .0
14. WN blk    *   98. *    1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
15. WS blk    *   82. *     .7 *   .0   .0   .0   .0   .0   .0   .0   .0
16. EN blk    *  262. *    1.2 *   .0   .0   .0   .0   .0   .0   .0   .0
17. SE blk    *  352. *     .4 *   .0   .0   .0   .0   .0   .0   .0   .0
18. NW blk    *  175. *     .3 *   .0   .0   .0   .0   .0   .0   .0   .0
19. SW blk    *    7. *     .8 *   .0   .0   .0   .0   .0   .0   .0   .0
20. NE blk    *  185. *     .2 *   .0   .0   .0   .0   .0   .0   .0   .0
```

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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   4

              JOB: Olinda 2013 NP6
              RUN: Hour 1          (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

                *                         CONC/LINK
                *                           (PPM)
  RECEPTOR      *   I    J    K    L    M    N    O    P    Q    R    S    T
 ---------------*-------------------------------------------------------------
  1. SE         *  .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .2
  2. NW         *  .0   .6   .0   .2   .0   .0   .0   .0   .0   .0   .1   .0
  3. SW         *  .0   .1   .0   .2   .0   .0   .0   .0   .0   .0   .2   .0
  4. NE         *  .0   .6   .0   .1   .0   .0   .0   .0   .0   .0   .2   .0
  5. ES mdblk   *  .0   .0   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0
  6. WN mdblk   *  .0   .0   .7   .0   .0   .0   .0   .0   .0   .0   .0   .0
  7. WS mdblk   *  .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .1   .0
  8. EN mdblk   *  .0   .6   .0   .2   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk     *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .3   .4   .0
 14. WN blk     *  .0   .0   .0   .0   .0   .0   .0   .0   .1   .0   .0   .8
 15. WS blk     *  .0   .0   .0   .0   .0   .0   .0   .0   .3   .0   .0   .2
 16. EN blk     *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0  1.0   .0
 17. SE blk     *  .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .0   .0
 18. NW blk     *  .0   .0   .0   .0   .0   .0   .1   .0   .0   .0   .0   .0
 19. SW blk     *  .0   .0   .0   .0   .0   .0   .0   .7   .0   .0   .0   .0
 20. NE blk     *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
```

OLINDA ALPHA LANDFILL EXPANSION

AIR QUALITY CO HOT SPOT ANALYSIS

CALINE4 MODEL PRINTOUTS

FUTURE (2013) WITH PROJECT CONDITIONS

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: Olinda 2013 P1
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

       U=    .5 M/S             Z0= 100. CM              ALT=   360. (M)
     BRG= WORST CASE            VD=    .0 CM/S
    CLAS=     7 (G)             VS=    .0 CM/S
    MIXH= 1000. M              AMB=    .0 PPM
   SIGTH=   10. DEGREES       TEMP=   8.3 DEGREE (C)


 II.  LINK VARIABLES

    LINK         *  LINK COORDINATES (M)    *                EF     H     W
 DESCRIPTION     *   X1    Y1    X2    Y2   * TYPE  VPH   (G/MI)  (M)   (M)
-----------------*--------------------------*------------------------------
A. Assoc NBA     *    12  -150    12     0 *  AG    230    2.7     .0  10.0
B. Assoc NBD     *    12     0    12   150 *  AG    410    2.7     .0  10.0
C. Assoc NBL     *     9  -150     0     0 *  AG    280    2.7     .0  10.0
D. Assoc SBA     *   -12   150   -12     0 *  AG    460    2.7     .0  10.0
E. Assoc SBD     *   -12     0   -12  -150 *  AG    540    2.7     .0  10.0
F. Assoc SBL     *    -9   150     0     0 *  AG    190    2.7     .0  10.0
G. Imper EBA     *  -150   -12     0   -12 *  AG   2300    2.7     .0  10.0
H. Imper EBD     *     0   -12   150   -12 *  AG   2390    2.7     .0  10.0
I. Imper EBL     *  -150    -9     0     0 *  AG    150    2.7     .0  10.0
J. Imper WBA     *   150    12     0    12 *  AG   2090    2.7     .0  10.0
K. Imper WBD     *     0    12  -150    12 *  AG   2450    2.7     .0  10.0
L. Imper WBL     *   150     9     0     0 *  AG     90    2.7     .0  10.0
M. Assoc NBAX    *    12  -750    12  -150 *  AG    510    2.7     .0  10.0
N. Assoc NBDX    *    12   150    12   750 *  AG    410    2.7     .0  10.0
O. Assoc SBAX    *   -12   750   -12   150 *  AG    650    2.7     .0  10.0
P. Assoc SBDX    *   -12  -150   -12  -750 *  AG    540    2.7     .0  10.0
Q. Imper EBAX    *  -750   -12  -150   -12 *  AG   2450    2.7     .0  10.0
```

```
R. Imper EBDX   *   150    -12    750    -12 *  AG    2390    2.7       .0  10.0
S. Imper WBAX   *   750     12    150     12 *  AG    2180    2.7       .0  10.0
T. Imper WBDX   *  -150     12   -750     12 *  AG    2450    2.7       .0  10.0
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: Olinda 2013 P1
              RUN: Hour 1                (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

               *    COORDINATES (M)
   RECEPTOR    *    X        Y      Z
 --------------*---------------------
  1. SE        *     21     -20    1.8
  2. NW        *    -21      20    1.8
  3. SW        *    -19     -21    1.8
  4. NE        *     19      21    1.8
  5. ES mdblk  *    150     -20    1.8
  6. WN mdblk  *   -150      20    1.8
  7. WS mdblk  *   -150     -21    1.8
  8. EN mdblk  *    150      21    1.8
  9. SE mdblk  *     21    -150    1.8
 10. NW mdblk  *    -21     150    1.8
 11. SW mdblk  *    -19    -150    1.8
 12. NE mdblk  *     19     150    1.8
 13. ES blk    *    600     -20    1.8
 14. WN blk    *   -600      20    1.8
 15. WS blk    *   -600     -21    1.8
 16. EN blk    *    600      21    1.8
 17. SE blk    *     21    -600    1.8
 18. NW blk    *    -21     600    1.8
 19. SW blk    *    -19    -600    1.8
 20. NE blk    *     19     600    1.8
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   3

            JOB: Olinda 2013 P1
            RUN: Hour 1             (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

                 *        * PRED  *                CONC/LINK
                 *  BRG   * CONC  *                  (PPM)
  RECEPTOR       * (DEG)  * (PPM) *   A    B    C    D    E    F    G    H
 ----------------*--------*-------*---------------------------------------
  1. SE          *  279.  *   1.2 *   .0   .0   .0   .0   .0   .0   .5   .2
  2. NW          *   99.  *   1.2 *   .0   .0   .0   .0   .0   .0   .0   .0
  3. SW          *   81.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .5
  4. NE          *  261.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
  5. ES mdblk    *  279.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .7
  6. WN mdblk    *   99.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .1
  7. WS mdblk    *   81.  *   1.0 *   .0   .0   .0   .0   .0   .0   .6   .0
  8. EN mdblk    *  261.  *   1.0 *   .0   .0   .0   .0   .0   .0   .1   .0
  9. SE mdblk    *  351.  *    .4 *   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk    *  172.  *    .5 *   .0   .0   .0   .1   .0   .0   .0   .0
 11. SW mdblk    *    7.  *    .5 *   .0   .0   .0   .0   .2   .0   .0   .0
 12. NE mdblk    *  188.  *    .5 *   .0   .2   .0   .0   .0   .0   .0   .0
 13. ES blk      *  278.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 14. WN blk      *   98.  *   1.1 *   .0   .0   .0   .0   .0   .0   .0   .0
 15. WS blk      *   82.  *   1.0 *   .0   .0   .0   .0   .0   .0   .0   .0
 16. EN blk      *  262.  *   1.0 *   .0   .0   .0   .0   .0   .0   .0   .0
 17. SE blk      *  353.  *    .4 *   .0   .0   .0   .0   .0   .0   .0   .0
 18. NW blk      *  173.  *    .4 *   .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk      *    7.  *    .5 *   .0   .0   .0   .0   .0   .0   .0   .0
 20. NE blk      *  187.  *    .4 *   .0   .0   .0   .0   .0   .0   .0   .0
```

```
      CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
               JUNE 1989 VERSION
               PAGE   4

          JOB: Olinda 2013 P1
          RUN: Hour 1               (WORST CASE ANGLE)
    POLLUTANT: Carbon Monoxide


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

              *                           CONC/LINK
              *                             (PPM)
 RECEPTOR     *   I    J    K    L    M    N    O    P    Q    R    S    T
-------------*-----------------------------------------------------------
  1. SE       *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .2
  2. NW       *  .0   .5   .2   .0   .0   .0   .0   .0   .0   .2   .0   .0
  3. SW       *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .2   .0
  4. NE       *  .0   .0   .5   .0   .0   .0   .0   .0   .2   .0   .0   .0
  5. ES mdblk *  .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0
  6. WN mdblk *  .0   .0   .7   .0   .0   .0   .0   .0   .0   .0   .0   .0
  7. WS mdblk *  .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  8. EN mdblk *  .0   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .8   .2   .0
 14. WN blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .8
 15. WS blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .7   .0   .0   .2
 16. EN blk   *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .2   .6   .0
 17. SE blk   *  .0   .0   .0   .0   .2   .0   .0   .0   .0   .0   .0   .0
 18. NW blk   *  .0   .0   .0   .0   .0   .0   .2   .0   .0   .0   .0   .0
 19. SW blk   *  .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .0   .0
 20. NE blk   *  .0   .0   .0   .0   .0   .2   .0   .0   .0   .0   .0   .0
```

```
       CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   1

            JOB: Olinda 2013 P2
            RUN: Hour 1             (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide

  I.  SITE VARIABLES

       U=    .5 M/S            Z0= 100. CM            ALT=   360. (M)
     BRG= WORST CASE           VD=   .0 CM/S
    CLAS=      7 (G)           VS=   .0 CM/S
    MIXH= 1000. M             AMB=   .0 PPM
   SIGTH=   10. DEGREES      TEMP=  8.3 DEGREE (C)

 II.  LINK VARIABLES

      LINK       *  LINK COORDINATES (M)    *               EF      H      W
   DESCRIPTION   *   X1    Y1    X2    Y2   * TYPE  VPH  (G/MI)   (M)    (M)
-----------------*--------------------------*------------------------------
A. Place NBA     *     7  -150     7     0 *  AG    290    2.7     .0   10.0
B. Place NBD     *     7     0     7   150 *  AG     80    2.7     .0   10.0
C. Place NBL     *     5  -150     0     0 *  AG    140    2.7     .0   10.0
D. Place SBA     *    -5   150    -5     0 *  AG     60    2.7     .0   10.0
E. Place SBD     *    -5     0    -5  -150 *  AG    790    2.7     .0   10.0
F. Place SBL     *    -5   150     0     0 *  AG     10    2.7     .0   10.0
G. Imper EBA     *  -150   -11     0   -11 *  AG   3300    2.7     .0   10.0
H. Imper EBD     *     0   -11   150   -11 *  AG   2970    2.7     .0   10.0
I. Imper EBL     *  -150    -5     0     0 *  AG     10    2.7     .0   10.0
J. Imper WBA     *   150     9     0     9 *  AG   2450    2.7     .0   10.0
K. Imper WBD     *     0     9  -150     9 *  AG   2590    2.7     .0   10.0
L. Imper WBL     *   150     5     0     0 *  AG    170    2.7     .0   10.0
M. Place NBAX    *     7  -750     7  -150 *  AG    430    2.7     .0   10.0
N. Place NBDX    *     7   150     7   750 *  AG     80    2.7     .0   10.0
O. Place SBAX    *    -5   750    -5   150 *  AG     70    2.7     .0   10.0
P. Place SBDX    *    -5  -150    -5  -750 *  AG    790    2.7     .0   10.0
Q. Imper EBAX    *  -750   -11  -150   -11 *  AG   3310    2.7     .0   10.0
```

```
 R. Imper EBDX   *   150    -11    750    -11 *  AG    2970    2.7       .0  10.0
 S. Imper WBAX   *   750      9    150      9 *  AG    2620    2.7       .0  10.0
 T. Imper WBDX   *  -150      9   -750      9 *  AG    2590    2.7       .0  10.0
```

```
            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   2

                JOB: Olinda 2013 P2
                RUN: Hour 1           (WORST CASE ANGLE)
          POLLUTANT: Carbon Monoxide


  III.  RECEPTOR LOCATIONS

                *    COORDINATES (M)
    RECEPTOR    *    X      Y      Z
  ------------*---------------------
  1. SE         *    14    -19    1.8
  2. NW         *   -12     15    1.8
  3. SW         *   -12    -21    1.8
  4. NE         *    14     17    1.8
  5. ES mdblk *   150    -19    1.8
  6. WN mdblk *  -150     15    1.8
  7. WS mdblk *  -150    -21    1.8
  8. EN mdblk *   150     17    1.8
  9. SE mdblk *    14   -150    1.8
 10. NW mdblk *   -12    150    1.8
 11. SW mdblk *   -12   -150    1.8
 12. NE mdblk *    14    150    1.8
 13. ES blk     *   600    -19    1.8
 14. WN blk     *  -600     15    1.8
 15. WS blk     *  -600    -21    1.8
 16. EN blk     *   600     17    1.8
 17. SE blk     *    14   -600    1.8
 18. NW blk     *   -12    600    1.8
 19. SW blk     *   -12   -600    1.8
 20. NE blk     *    14    600    1.8
```

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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   3

              JOB: Olinda 2013 P2
              RUN: Hour 1             (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

               *        * PRED   *                 CONC/LINK
               *  BRG   * CONC   *                   (PPM)
  RECEPTOR     * (DEG)  * (PPM)  *   A    B    C    D    E    F    G    H
 -------------*--------*--------*---------------------------------------
 1. SE         *  279.  *   1.4  *   .0   .0   .0   .0   .0   .0   .8   .0
 2. NW         *   99.  *   1.3  *   .0   .0   .0   .0   .0   .0   .0   .2
 3. SW         *   80.  *   1.2  *   .0   .0   .0   .0   .1   .0   .0   .6
 4. NE         *  261.  *   1.2  *   .0   .0   .0   .0   .0   .0   .2   .0
 5. ES mdblk   *  278.  *   1.2  *   .0   .0   .0   .0   .0   .0   .0   .7
 6. WN mdblk   *   99.  *   1.4  *   .0   .0   .0   .0   .0   .0   .2   .1
 7. WS mdblk   *   82.  *   1.1  *   .0   .0   .0   .0   .0   .0   .6   .0
 8. EN mdblk   *  261.  *   1.2  *   .0   .0   .0   .0   .0   .0   .2   .1
 9. SE mdblk   *  348.  *    .5  *   .1   .0   .0   .0   .1   .0   .0   .0
10. NW mdblk   *  177.  *    .4  *   .0   .0   .0   .0   .0   .0   .0   .0
11. SW mdblk   *   10.  *    .6  *   .0   .0   .0   .0   .3   .0   .0   .0
12. NE mdblk   *  184.  *    .4  *   .0   .0   .0   .0   .0   .0   .0   .0
13. ES blk     *  278.  *   1.2  *   .0   .0   .0   .0   .0   .0   .0   .0
14. WN blk     *   98.  *   1.4  *   .0   .0   .0   .0   .0   .0   .0   .0
15. WS blk     *   82.  *   1.1  *   .0   .0   .0   .0   .0   .0   .0   .0
16. EN blk     *  262.  *   1.2  *   .0   .0   .0   .0   .0   .0   .0   .0
17. SE blk     *  353.  *    .5  *   .0   .0   .0   .0   .0   .0   .0   .0
18. NW blk     *  177.  *    .2  *   .0   .0   .0   .0   .0   .0   .0   .0
19. SW blk     *    7.  *    .6  *   .0   .0   .0   .0   .0   .0   .0   .0
20. NE blk     *  183.  *    .2  *   .0   .0   .0   .0   .0   .0   .0   .0
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   4

            JOB: Olinda 2013 P2
            RUN: Hour 1              (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

               *                        CONC/LINK
               *                          (PPM)
  RECEPTOR     *   I    J    K    L    M    N    O    P    Q    R    S    T
 ------------*-------------------------------------------------------------
  1. SE        *  .0   .0   .1   .0   .0   .0   .0   .0   .1   .0   .0   .2
  2. NW        *  .0   .7   .2   .0   .0   .0   .0   .0   .0   .2   .0   .0
  3. SW        *  .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .2   .0
  4. NE        *  .0   .0   .6   .0   .0   .0   .0   .0   .2   .0   .0   .0
  5. ES mdblk  *  .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0
  6. WN mdblk  *  .0   .0   .9   .0   .0   .0   .0   .0   .0   .0   .0   .0
  7. WS mdblk  *  .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  8. EN mdblk  *  .0   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .8   .3   .0
 14. WN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .4   .0   .0   .9
 15. WS blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .8   .0   .0   .3
 16. EN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .3   .7   .0
 17. SE blk    *  .0   .0   .0   .0   .2   .0   .0   .2   .0   .0   .0   .0
 18. NW blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk    *  .0   .0   .0   .0   .0   .0   .0   .4   .0   .0   .0   .0
 20. NE blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
```

```
       CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   1

           JOB: Olinda 2013 P3
           RUN: Hour 1            (WORST CASE ANGLE)
     POLLUTANT: Carbon Monoxide

  I.  SITE VARIABLES

       U=    .5 M/S            Z0= 100. CM           ALT=   360. (M)
     BRG= WORST CASE           VD=    .0 CM/S
    CLAS=     7 (G)            VS=    .0 CM/S
    MIXH= 1000. M             AMB=    .0 PPM
   SIGTH=   10. DEGREES      TEMP=   8.3 DEGREE (C)

 II.  LINK VARIABLES

     LINK        *  LINK COORDINATES (M)    *             EF     H     W
  DESCRIPTION    *  X1    Y1    X2     Y2   * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*--------------------------*------------------------------
 A. Kraem NBA    *   12  -150    12      0  *  AG    627   2.7     .0  10.0
 B. Kraem NBD    *   12     0    12    150  *  AG   1264   2.7     .0  10.0
 C. Kraem NBL    *    9  -150     0      0  *  AG    353   2.7     .0  10.0
 D. Kraem SBA    *  -12   150   -12      0  *  AG   1960   2.7     .0  10.0
 E. Kraem SBD    *  -12     0   -12   -150  *  AG   2070   2.7     .0  10.0
 F. Kraem SBL    *   -9   150     0      0  *  AG    330   2.7     .0  10.0
 G. Imper EBA    * -150   -12     0    -12  *  AG   1940   2.7     .0  10.0
 H. Imper EBD    *    0   -12   150    -12  *  AG   1883   2.7     .0  10.0
 I. Imper EBL    * -150    -9     0      0  *  AG    290   2.7     .0  10.0
 J. Imper WBA    *  150    14     0     14  *  AG   1970   2.7     .0  10.0
 K. Imper WBD    *    0    14  -150     14  *  AG   2363   2.7     .0  10.0
 L. Imper WBL    *  150     9     0      0  *  AG    110   2.7     .0  10.0
 M. Kraem NBAX   *   12  -750    12   -150  *  AG    980   2.7     .0  10.0
 N. Kraem NBDX   *   12   150    12    750  *  AG   1264   2.7     .0  10.0
 O. Kraem SBAX   *  -12   750   -12    150  *  AG   2290   2.7     .0  10.0
 P. Kraem SBDX   *  -12  -150   -12   -750  *  AG   2070   2.7     .0  10.0
 Q. Imper EBAX   * -750   -12  -150    -12  *  AG   2230   2.7     .0  10.0
```

```
R. Imper EBDX   *   150    -12    750    -12 *  AG    1883    2.7       .0  10.0
S. Imper WBAX   *   750     14    150     14 *  AG    2080    2.7       .0  10.0
T. Imper WBDX   *  -150     14   -750     14 *  AG    2363    2.7       .0  10.0




               CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                        JUNE 1989 VERSION
                        PAGE   2

                   JOB: Olinda 2013 P3
                   RUN: Hour 1            (WORST CASE ANGLE)
             POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

                *    COORDINATES (M)
   RECEPTOR     *    X      Y      Z
 ------------*---------------------
 1. SE          *     21    -20    1.8
 2. NW          *    -21     22    1.8
 3. SW          *    -20    -21    1.8
 4. NE          *     20     24    1.8
 5. ES mdblk    *    150    -20    1.8
 6. WN mdblk    *   -150     22    1.8
 7. WS mdblk    *   -150    -21    1.8
 8. EN mdblk    *    150     24    1.8
 9. SE mdblk    *     21   -150    1.8
10. NW mdblk    *    -21    150    1.8
11. SW mdblk    *    -20   -150    1.8
12. NE mdblk    *     20    150    1.8
13. ES blk      *    600    -20    1.8
14. WN blk      *   -600     22    1.8
15. WS blk      *   -600    -21    1.8
16. EN blk      *    600     24    1.8
17. SE blk      *     21   -600    1.8
18. NW blk      *    -21    600    1.8
19. SW blk      *    -20   -600    1.8
20. NE blk      *     20    600    1.8
```

```
       CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   3

           JOB: Olinda 2013 P3
           RUN: Hour 1            (WORST CASE ANGLE)
    POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

                *         * PRED   *                  CONC/LINK
                *   BRG   * CONC   *                    (PPM)
  RECEPTOR      * (DEG)   * (PPM)  *   A     B     C     D     E     F     G     H
 -------------*---------*--------*-----------------------------------------------
  1. SE         *  279.  *    1.3  *   .1    .0    .0    .0    .1    .0    .4    .2
  2. NW         *  171.  *    1.3  *   .0    .0    .0    .1    .4    .0    .1    .0
  3. SW         *    9.  *    1.4  *   .0    .0    .0    .4    .2    .0    .3    .0
  4. NE         *  260.  *    1.2  *   .0    .2    .0    .1    .0    .0    .0    .0
  5. ES mdblk   *  278.  *    1.1  *   .0    .0    .0    .0    .0    .0    .0    .6
  6. WN mdblk   *   99.  *    1.1  *   .0    .0    .0    .0    .0    .0    .0    .1
  7. WS mdblk   *   80.  *    1.0  *   .0    .0    .0    .0    .0    .0    .5    .0
  8. EN mdblk   *  262.  *     .9  *   .0    .0    .0    .0    .0    .0    .0    .0
  9. SE mdblk   *  351.  *     .8  *   .2    .0    .0    .1    .0    .0    .0    .0
 10. NW mdblk   *  171.  *    1.0  *   .0    .0    .0    .5    .0    .0    .0    .0
 11. SW mdblk   *    8.  *    1.1  *   .0    .0    .0    .0    .6    .0    .0    .0
 12. NE mdblk   *  189.  *     .9  *   .0    .4    .0    .0    .1    .0    .0    .0
 13. ES blk     *  278.  *    1.0  *   .0    .0    .0    .0    .0    .0    .0    .0
 14. WN blk     *   98.  *    1.0  *   .0    .0    .0    .0    .0    .0    .0    .0
 15. WS blk     *   82.  *    1.0  *   .0    .0    .0    .0    .0    .0    .0    .0
 16. EN blk     *  262.  *     .9  *   .0    .0    .0    .0    .0    .0    .0    .0
 17. SE blk     *  352.  *     .7  *   .0    .0    .0    .0    .0    .0    .0    .0
 18. NW blk     *  172.  *    1.0  *   .0    .0    .0    .0    .0    .0    .0    .0
 19. SW blk     *    7.  *    1.0  *   .0    .0    .0    .0    .0    .0    .0    .0
 20. NE blk     *  188.  *     .9  *   .0    .0    .0    .0    .0    .0    .0    .0
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   4

              JOB: Olinda 2013 P3
              RUN: Hour 1               (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide

 IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

              *                          CONC/LINK
              *                            (PPM)
 RECEPTOR     *   I    J    K    L    M    N    O    P    Q    R    S    T
------------*------------------------------------------------------------
  1. SE       *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .2
  2. NW       *   .0   .0   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0
  3. SW       *   .0   .0   .2   .0   .0   .1   .0   .0   .0   .0   .0   .0
  4. NE       *   .0   .0   .5   .0   .0   .0   .0   .0   .2   .0   .0   .0
  5. ES mdblk *   .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0
  6. WN mdblk *   .0   .0   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0
  7. WS mdblk *   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  8. EN mdblk *   .0   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .6   .2   .0
 14. WN blk   *   .0   .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .7
 15. WS blk   *   .0   .0   .0   .0   .0   .0   .0   .0   .6   .0   .0   .2
 16. EN blk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .2   .5   .0
 17. SE blk   *   .0   .0   .0   .0   .3   .0   .0   .2   .0   .0   .0   .0
 18. NW blk   *   .0   .0   .0   .0   .0   .1   .7   .0   .0   .0   .0   .0
 19. SW blk   *   .0   .0   .0   .0   .1   .0   .0   .7   .0   .0   .0   .0
 20. NE blk   *   .0   .0   .0   .0   .0   .5   .2   .0   .0   .0   .0   .0
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: Olinda 2013 P4
              RUN: Hour 1            (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=    .5 M/S             Z0= 100. CM           ALT=   360. (M)
      BRG= WORST CASE            VD=   .0 CM/S
     CLAS=      7 (G)            VS=   .0 CM/S
     MIXH= 1000. M              AMB=   .0 PPM
    SIGTH=   10. DEGREES       TEMP=  8.3 DEGREE (C)


 II.  LINK VARIABLES

     LINK       *  LINK COORDINATES (M)   *                  EF     H     W
  DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. Valenc NBA   *     9  -150     9     0 *  AG    250   2.4     .0  10.0
B. Valenc NBD   *     9     0     9   150 *  AG    510   2.4     .0  10.0
C. Valenc NBL   *     5  -150     0     0 *  AG    100   2.4     .0  10.0
D. Valenc SBA   *    -9   150    -9     0 *  AG    570   2.4     .0  10.0
E. Valenc SBD   *    -9     0    -9  -150 *  AG    850   2.4     .0  10.0
F. Valenc SBL   *    -5   150     0     0 *  AG    640   2.4     .0  10.0
G. Imper EBA    *  -150   -14     0   -14 *  AG   1510   2.4     .0  10.0
H. Imper EBD    *     0   -14   150   -14 *  AG   2200   2.4     .0  10.0
I. Imper EBL    *  -150    -9     0     0 *  AG    250   2.4     .0  10.0
J. Imper WBA    *   150     9     0     9 *  AG   2210   2.4     .0  10.0
K. Imper WBD    *     0     9  -150     9 *  AG   2340   2.4     .0  10.0
L. Imper WBL    *   150     5     0     0 *  AG    370   2.4     .0  10.0
M. Valenc NBAX  *     9  -750     9  -150 *  AG    350   2.4     .0  10.0
N. Valenc NBDX  *     9   150     9   750 *  AG    510   2.4     .0  10.0
O. Valenc SBAX  *    -9   750    -9   150 *  AG   1210   2.4     .0  10.0
P. Valenc SBDX  *    -9  -150    -9  -750 *  AG    850   2.4     .0  10.0
Q. Imper EBAX   *  -750   -14  -150   -14 *  AG   1760   2.4     .0  10.0
```

```
 R. Imper EBDX   *   150   -14    750    -14 *  AG   2200   2.4      .0  10.0
 S. Imper WBAX   *   750     9    150      9 *  AG   2580   2.4      .0  10.0
 T. Imper WBDX   *  -150     9   -750      9 *  AG   2340   2.4      .0  10.0
```

```
              CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                       JUNE 1989 VERSION
                       PAGE   2

                  JOB: Olinda 2013 P4
                  RUN: Hour 1            (WORST CASE ANGLE)
            POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

               *    COORDINATES (M)
   RECEPTOR    *    X      Y      Z
 ------------*---------------------
  1. SE        *     17    -22    1.8
  2. NW        *    -17     16    1.8
  3. SW        *    -15    -24    1.8
  4. NE        *     15     17    1.8
  5. ES mdblk  *    150    -22    1.8
  6. WN mdblk  *   -150     16    1.8
  7. WS mdblk  *   -150    -24    1.8
  8. EN mdblk  *    150     17    1.8
  9. SE mdblk  *     17   -150    1.8
 10. NW mdblk  *    -17    150    1.8
 11. SW mdblk  *    -15   -150    1.8
 12. NE mdblk  *     15    150    1.8
 13. ES blk    *    600    -22    1.8
 14. WN blk    *   -600     16    1.8
 15. WS blk    *   -600    -24    1.8
 16. EN blk    *    600     17    1.8
 17. SE blk    *     17   -600    1.8
 18. NW blk    *    -17    600    1.8
 19. SW blk    *    -15   -600    1.8
 20. NE blk    *     15    600    1.8
```

```
        CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                 JUNE 1989 VERSION
                 PAGE   3

            JOB: Olinda 2013 P4
            RUN: Hour 1            (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide

  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

                *       * PRED   *                 CONC/LINK
                *  BRG  * CONC   *                   (PPM)
  RECEPTOR      * (DEG) * (PPM)  *   A    B    C    D    E    F    G    H
 -------------*-------*-------*----------------------------------------
  1. SE         *  279. *    .8  *   .0   .0   .0   .0   .0   .0   .3   .0
  2. NW         *   99. *   1.2  *   .0   .0   .0   .0   .0   .0   .0   .0
  3. SW         *   80. *    .9  *   .0   .0   .0   .0   .1   .0   .0   .4
  4. NE         *  261. *   1.0  *   .0   .0   .0   .0   .0   .0   .0   .0
  5. ES mdblk   *  279. *    .9  *   .0   .0   .0   .0   .0   .0   .0   .5
  6. WN mdblk   *   98. *   1.0  *   .0   .0   .0   .0   .0   .0   .0   .1
  7. WS mdblk   *   81. *    .7  *   .0   .0   .0   .0   .0   .0   .3   .0
  8. EN mdblk   *  261. *    .9  *   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk   *  354. *    .4  *   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk   *  171. *    .5  *   .0   .0   .0   .2   .0   .1   .0   .0
 11. SW mdblk   *    6. *    .6  *   .0   .0   .0   .0   .3   .0   .0   .0
 12. NE mdblk   *  188. *    .5  *   .0   .2   .0   .0   .0   .0   .0   .0
 13. ES blk     *  278. *    .9  *   .0   .0   .0   .0   .0   .0   .0   .0
 14. WN blk     *   98. *   1.0  *   .0   .0   .0   .0   .0   .0   .0   .0
 15. WS blk     *   82. *    .7  *   .0   .0   .0   .0   .0   .0   .0   .0
 16. EN blk     *  262. *   1.0  *   .0   .0   .0   .0   .0   .0   .0   .0
 17. SE blk     *  353. *    .4  *   .0   .0   .0   .0   .0   .0   .0   .0
 18. NW blk     *  173. *    .6  *   .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk     *    6. *    .5  *   .0   .0   .0   .0   .0   .0   .0   .0
 20. NE blk     *  187. *    .5  *   .0   .0   .0   .0   .0   .0   .0   .0
```

```
         CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                  JUNE 1989 VERSION
                  PAGE   4

             JOB: Olinda 2013 P4
             RUN: Hour 1            (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

                *                        CONC/LINK
                *                          (PPM)
  RECEPTOR      *    I    J    K    L    M    N    O    P    Q    R    S    T
 ---------------*------------------------------------------------------------
  1. SE         *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .2
  2. NW         *   .0   .5   .1   .0   .0   .0   .0   .0   .0   .1   .0   .0
  3. SW         *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .2   .0
  4. NE         *   .0   .0   .5   .0   .0   .0   .0   .0   .1   .0   .0   .0
  5. ES mdblk   *   .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0
  6. WN mdblk   *   .0   .0   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0
  7. WS mdblk   *   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  8. EN mdblk   *   .0   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk   *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk     *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .6   .2   .0
 14. WN blk     *   .0   .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .7
 15. WS blk     *   .0   .0   .0   .0   .0   .0   .0   .0   .4   .0   .0   .2
 16. EN blk     *   .0   .0   .0   .0   .0   .0   .0   .0   .0   .2   .6   .0
 17. SE blk     *   .0   .0   .0   .0   .1   .0   .0   .1   .0   .0   .0   .0
 18. NW blk     *   .0   .0   .0   .0   .0   .0   .4   .0   .0   .0   .0   .0
 19. SW blk     *   .0   .0   .0   .0   .0   .0   .0   .3   .0   .0   .0   .0
 20. NE blk     *   .0   .0   .0   .0   .0   .2   .2   .0   .0   .0   .0   .0
```

```
         CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                  JUNE 1989 VERSION
                  PAGE   1

              JOB: Olinda 2013 P5
              RUN: Hour 1             (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=    .5 M/S             Z0= 100. CM             ALT=   360. (M)
      BRG= WORST CASE            VD=    .0 CM/S
     CLAS=     7 (G)             VS=    .0 CM/S
     MIXH= 1000. M              AMB=    .0 PPM
    SIGTH=   10. DEGREES       TEMP=   8.3 DEGREE (C)


 II.  LINK VARIABLES

      LINK        *  LINK COORDINATES (M)   *                 EF      H      W
   DESCRIPTION    *   X1     Y1    X2    Y2 * TYPE  VPH   (G/MI)   (M)    (M)
 -----------------*-------------------------*------------------------------
 A. Valenc NBA    *     9  -150     9     0 *  AG    200    2.7      .0   10.0
 B. Valenc NBD    *     9     0     9   150 *  AG    400    2.7      .0   10.0
 C. Valenc NBL    *     5  -150     0     0 *  AG     50    2.7      .0   10.0
 D. Valenc SBA    *    -7   150    -7     0 *  AG   1370    2.7      .0   10.0
 E. Valenc SBD    *    -7     0    -7  -150 *  AG   1380    2.7      .0   10.0
 F. Valenc SBL    *    -5   150     0     0 *  AG    500    2.7      .0   10.0
 G. Birch EBA     *  -150    -9     0    -9 *  AG    910    2.7      .0   10.0
 H. Birch EBD     *     0    -9   150    -9 *  AG   1330    2.7      .0   10.0
 I. Birch EBL     *  -150    -5     0     0 *  AG     40    2.7      .0   10.0
 J. Birch WBA     *   150     5     0     5 *  AG    710    2.7      .0   10.0
 K. Birch WBD     *     0     5  -150     5 *  AG    680    2.7      .0   10.0
 L. Birch WBL     *   150     5     0     0 *  AG     10    2.7      .0   10.0
 M. Valenc NBAX   *     9  -750     9  -150 *  AG    250    2.7      .0   10.0
 N. Valenc NBDX   *     9   150     9   750 *  AG    400    2.7      .0   10.0
 O. Valenc SBAX   *    -7   750    -7   150 *  AG   1870    2.7      .0   10.0
 P. Valenc SBDX   *    -7  -150    -7  -750 *  AG   1380    2.7      .0   10.0
 Q. Birch EBAX    *  -750    -9  -150    -9 *  AG    950    2.7      .0   10.0
```

```
 R. Birch EBDX   *   150     -9   750      -9 *  AG   1330   2.7       .0  10.0
 S. Birch WBAX   *   750      5   150       5 *  AG    720   2.7       .0  10.0
 T. Birch WBDX   *  -150      5  -750       5 *  AG    680   2.7       .0  10.0
```

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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: Olinda 2013 P5
              RUN: Hour 1            (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


 III.  RECEPTOR LOCATIONS

                *    COORDINATES (M)
   RECEPTOR     *    X        Y      Z
 ------------*---------------------
  1. SE         *     17     -15    1.8
  2. NW         *    -14      12    1.8
  3. SW         *    -14     -17    1.8
  4. NE         *     15      12    1.8
  5. ES mdblk *    150     -15    1.8
  6. WN mdblk *   -150      12    1.8
  7. WS mdblk *   -150     -17    1.8
  8. EN mdblk *    150      12    1.8
  9. SE mdblk *     17    -150    1.8
 10. NW mdblk *    -14     150    1.8
 11. SW mdblk *    -14    -150    1.8
 12. NE mdblk *     15     150    1.8
 13. ES blk     *    600     -15    1.8
 14. WN blk     *   -600      12    1.8
 15. WS blk     *   -600     -17    1.8
 16. EN blk     *    600      12    1.8
 17. SE blk     *     17    -600    1.8
 18. NW blk     *    -14     600    1.8
 19. SW blk     *    -14    -600    1.8
 20. NE blk     *     15     600    1.8
```

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   3

              JOB: Olinda 2013 P5
              RUN: Hour 1              (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

                *        * PRED  *                 CONC/LINK
                *  BRG   * CONC  *                   (PPM)
  RECEPTOR      * (DEG)  * (PPM) *   A    B    C    D    E    F    G    H
 -------------*-------*-------*--------------------------------------------
  1. SE         *  351. *    .8 *   .0   .1   .0   .1   .0   .0   .0   .2
  2. NW         *   98. *    .9 *   .0   .0   .0   .2   .0   .0   .0   .1
  3. SW         *    7. *   1.0 *   .0   .0   .0   .4   .1   .1   .1   .0
  4. NE         *  262. *    .8 *   .0   .0   .0   .1   .0   .0   .0   .0
  5. ES mdblk   *  278. *    .8 *   .0   .0   .0   .0   .0   .0   .0   .5
  6. WN mdblk   *   97. *    .6 *   .0   .0   .0   .0   .0   .0   .0   .0
  7. WS mdblk   *   83. *    .6 *   .0   .0   .0   .0   .0   .0   .3   .0
  8. EN mdblk   *  263. *    .6 *   .0   .0   .0   .0   .0   .0   .0   .1
  9. SE mdblk   *  353. *    .5 *   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk   *  172. *    .9 *   .0   .0   .0   .5   .0   .1   .0   .0
 11. SW mdblk   *    6. *    .8 *   .0   .0   .0   .0   .5   .0   .0   .0
 12. NE mdblk   *  189. *    .6 *   .0   .2   .0   .1   .0   .0   .0   .0
 13. ES blk     *  277. *    .8 *   .0   .0   .0   .0   .0   .0   .0   .0
 14. WN blk     *   97. *    .6 *   .0   .0   .0   .0   .0   .0   .0   .0
 15. WS blk     *   83. *    .6 *   .0   .0   .0   .0   .0   .0   .0   .0
 16. EN blk     *  263. *    .6 *   .0   .0   .0   .0   .0   .0   .0   .0
 17. SE blk     *  353. *    .4 *   .0   .0   .0   .0   .0   .0   .0   .0
 18. NW blk     *  173. *    .9 *   .0   .0   .0   .0   .0   .0   .0   .0
 19. SW blk     *    6. *    .7 *   .0   .0   .0   .0   .0   .0   .0   .0
 20. NE blk     *  187. *    .6 *   .0   .0   .0   .0   .0   .0   .0   .0
```

```
         CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                  JUNE 1989 VERSION
                  PAGE   4

             JOB: Olinda 2013 P5
             RUN: Hour 1           (WORST CASE ANGLE)
       POLLUTANT: Carbon Monoxide


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

               *                        CONC/LINK
               *                          (PPM)
  RECEPTOR     *   I    J    K    L    M    N    O    P    Q    R    S    T
 -------------*------------------------------------------------------------
  1. SE        *  .0   .0   .0   .0   .0   .0   .1   .0   .0   .0   .0   .0
  2. NW        *  .0   .2   .0   .0   .0   .0   .0   .0   .0   .1   .0   .0
  3. SW        *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  4. NE        *  .0   .0   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0
  5. ES mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  6. WN mdblk  *  .0   .0   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0
  7. WS mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  8. EN mdblk  *  .0   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .6   .1   .0
 14. WN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .2   .0   .0   .3
 15. WS blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .3   .0   .0   .1
 16. EN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .2   .3   .0
 17. SE blk    *  .0   .0   .0   .0   .1   .0   .0   .2   .0   .0   .0   .0
 18. NW blk    *  .0   .0   .0   .0   .0   .0   .7   .0   .0   .0   .0   .0
 19. SW blk    *  .0   .0   .0   .0   .0   .0   .0   .6   .0   .0   .0   .0
 20. NE blk    *  .0   .0   .0   .0   .0   .2   .2   .0   .0   .0   .0   .0
```

```
       CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   1

           JOB: Olinda 2013 P6
           RUN: Hour 1              (WORST CASE ANGLE)
     POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

       U=    .5 M/S            Z0= 100. CM           ALT=   360. (M)
     BRG= WORST CASE           VD=    .0 CM/S
    CLAS=     7 (G)            VS=    .0 CM/S
    MIXH= 1000. M             AMB=    .0 PPM
   SIGTH=   10. DEGREES      TEMP=   8.3 DEGREE (C)


 II.  LINK VARIABLES

     LINK       *  LINK COORDINATES (M)    *                EF     H      W
  DESCRIPTION   *   X1     Y1     X2     Y2 * TYPE  VPH  (G/MI)  (M)    (M)
----------------*--------------------------*--------------------------------
A. Valenc NBA   *     9   -150      9      0 *  AG    170    2.7     .0   10.0
B. Valenc NBD   *     9      0      9    150 *  AG    190    2.7     .0   10.0
C. Valenc NBL   *     5   -150      0      0 *  AG     80    2.7     .0   10.0
D. Valenc SBA   *    -7    150     -7      0 *  AG    290    2.7     .0   10.0
E. Valenc SBD   *    -7      0     -7   -150 *  AG   1750    2.7     .0   10.0
F. Valenc SBL   *    -5    150      0      0 *  AG     20    2.7     .0   10.0
G. Carbon EBA   *  -150     -9      0     -9 *  AG    850    2.7     .0   10.0
H. Carbon EBD   *     0     -9    150     -9 *  AG    630    2.7     .0   10.0
I. Carbon EBL   *  -150     -5      0      0 *  AG    120    2.7     .0   10.0
J. Carbon WBA   *   150     12      0     12 *  AG   2340    2.7     .0   10.0
K. Carbon WBD   *     0     12   -150     12 *  AG   2530    2.7     .0   10.0
L. Carbon WBL   *   150      9      0      0 *  AG   1230    2.7     .0   10.0
M. Valenc NBAX  *     9   -750      9   -150 *  AG    250    2.7     .0   10.0
N. Valenc NBDX  *     9    150      9    750 *  AG    190    2.7     .0   10.0
O. Valenc SBAX  *    -7    750     -7    150 *  AG    310    2.7     .0   10.0
P. Valenc SBDX  *    -7   -150     -7   -750 *  AG   1750    2.7     .0   10.0
Q. Carbon EBAX  *  -750     -9   -150     -9 *  AG    970    2.7     .0   10.0
```

```
R. Carbon EBDX  *   150    -9   750    -9 *  AG    630   2.7     .0  10.0
S. Carbon WBAX  *   750    12   150    12 *  AG   3570   2.7     .0  10.0
T. Carbon WBDX  *  -150    12  -750    12 *  AG   2530   2.7     .0  10.0





          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: Olinda 2013 P6
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
  RECEPTOR  *     X      Y      Z
------------*---------------------
 1. SE      *     17    -16   1.8
 2. NW      *    -14     20   1.8
 3. SW      *    -14    -17   1.8
 4. NE      *     15     21   1.8
 5. ES mdblk *   150    -16   1.8
 6. WN mdblk *  -150     20   1.8
 7. WS mdblk *  -150    -17   1.8
 8. EN mdblk *   150     21   1.8
 9. SE mdblk *    17   -150   1.8
10. NW mdblk *   -14    150   1.8
11. SW mdblk *   -14   -150   1.8
12. NE mdblk *    15    150   1.8
13. ES blk  *    600    -16   1.8
14. WN blk  *   -600     20   1.8
15. WS blk  *   -600    -17   1.8
16. EN blk  *    600     21   1.8
17. SE blk  *     17   -600   1.8
18. NW blk  *    -14    600   1.8
19. SW blk  *    -14   -600   1.8
20. NE blk  *     15    600   1.8
```

```
            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   3

                JOB: Olinda 2013 P6
                RUN: Hour 1          (WORST CASE ANGLE)
          POLLUTANT: Carbon Monoxide

 IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

              *       * PRED  *                CONC/LINK
              *  BRG  * CONC  *                  (PPM)
 RECEPTOR     * (DEG) * (PPM) *   A    B    C    D    E    F    G    H
-------------*-------*-------*--------------------------------------
 1. SE        *  278. *    .8 *  .0   .0   .0   .0   .1   .0   .2   .0
 2. NW        *   98. *   1.2 *  .0   .0   .0   .0   .0   .0   .0   .0
 3. SW        *   79. *   1.1 *  .0   .0   .0   .0   .3   .0   .0   .2
 4. NE        *   98. *   1.0 *  .0   .0   .0   .0   .0   .0   .0   .0
 5. ES mdblk  *  279. *    .7 *  .0   .0   .0   .0   .0   .0   .0   .2
 6. WN mdblk  *   98. *   1.1 *  .0   .0   .0   .0   .0   .0   .0   .0
 7. WS mdblk  *   82. *    .8 *  .0   .0   .0   .0   .0   .0   .3   .0
 8. EN mdblk  *  260. *   1.1 *  .0   .0   .0   .0   .0   .0   .0   .0
 9. SE mdblk  *  346. *    .4 *  .0   .0   .0   .0   .2   .0   .0   .0
10. NW mdblk  *  177. *    .5 *  .0   .0   .0   .1   .0   .0   .0   .0
11. SW mdblk  *    9. *    .9 *  .0   .0   .0   .0   .6   .0   .0   .0
12. NE mdblk  *  186. *    .5 *  .0   .0   .0   .0   .0   .0   .0   .0
13. ES blk    *  278. *    .7 *  .0   .0   .0   .0   .0   .0   .0   .0
14. WN blk    *   98. *   1.1 *  .0   .0   .0   .0   .0   .0   .0   .0
15. WS blk    *   82. *    .7 *  .0   .0   .0   .0   .0   .0   .0   .0
16. EN blk    *  262. *   1.2 *  .0   .0   .0   .0   .0   .0   .0   .0
17. SE blk    *  352. *    .4 *  .0   .0   .0   .0   .0   .0   .0   .0
18. NW blk    *  174. *    .3 *  .0   .0   .0   .0   .0   .0   .0   .0
19. SW blk    *    7. *    .9 *  .0   .0   .0   .0   .0   .0   .0   .0
20. NE blk    *  186. *    .3 *  .0   .0   .0   .0   .0   .0   .0   .0
```

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       CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                JUNE 1989 VERSION
                PAGE   4

            JOB: Olinda 2013 P6
            RUN: Hour 1             (WORST CASE ANGLE)
      POLLUTANT: Carbon Monoxide

  IV.  MODEL RESULTS (WORST CASE WIND ANGLE)     (CONT.)

               *                           CONC/LINK
               *                             (PPM)
  RECEPTOR     *   I    J    K    L    M    N    O    P    Q    R    S    T
 ------------*-------------------------------------------------------------
  1. SE        *  .0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .2
  2. NW        *  .0   .6   .0   .2   .0   .0   .0   .0   .0   .0   .1   .0
  3. SW        *  .0   .1   .0   .2   .0   .0   .0   .0   .0   .0   .2   .0
  4. NE        *  .0   .6   .0   .1   .0   .0   .0   .0   .0   .0   .2   .0
  5. ES mdblk  *  .0   .0   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0
  6. WN mdblk  *  .0   .0   .7   .0   .0   .0   .0   .0   .0   .0   .0   .0
  7. WS mdblk  *  .0   .1   .0   .0   .0   .0   .0   .0   .0   .0   .1   .0
  8. EN mdblk  *  .0   .6   .0   .2   .0   .0   .0   .0   .0   .0   .0   .0
  9. SE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 10. NW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 11. SW mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 12. NE mdblk  *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0
 13. ES blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .3   .4   .0
 14. WN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .1   .0   .0   .8
 15. WS blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .3   .0   .0   .2
 16. EN blk    *  .0   .0   .0   .0   .0   .0   .0   .0   .0   .0  1.0   .0
 17. SE blk    *  .0   .0   .0   .0   .1   .0   .0   .2   .0   .0   .0   .0
 18. NW blk    *  .0   .0   .0   .0   .0   .0   .2   .0   .0   .0   .0   .0
 19. SW blk    *  .0   .0   .0   .0   .0   .0   .0   .7   .0   .0   .0   .0
 20. NE blk    *  .0   .0   .0   .0   .0   .1   .0   .0   .0   .0   .0   .0
```

APPENDIX B

LANDFILL EMISSIONS SPREADSHEET

OLINDA ALPHA LANDFILL EXPANSION

AIR QUALITY REGIONAL EMISSIONS

LANDFILL OPERATIONS EMISSIONS

ONSITE CRITERIA POLLUTANT EMISSIONS
OLINDA ALPHA LANDFILL

SOURCE	Daily Usage For Equipment	Load Factor (%)	Annual Usage For Equipment (1A)	Number Of Units (1B)	Onsite Round-Trip Distance Traveled By Equipment (1C)		NOx			ROC			PM$_{10}$			SOx			CO		
							Emission Factor	Emissions		Emission Factor	Emissions		Emission Factor	Emissions		Emission Factor	Emissions		Emission Factor	Emissions	
					(mi/day)	(mi/yr)		(lbs/day)	(tons/yr)		(lbs/day)	(tons/yr)		(lbs/day)	(tons/yr)		(lbs/day)	(tons/yr)		(lbs/day)	(tons/yr)
Off-road Equipment (diesel)				--																	
Motorgrader	8 hours/day	57.5%	2,456 hours/year	1	--	--	0.713 lb/hr	5.7	0.88	0.039 lb/hr	0.3	0.05	0.061 lb/hr	0.5	0.07	0.086 lb/hr	0.7	0.11	0.151 lb/hr	1.2	0.19
Loader	8 hours/day	41.0%	2,456 hours/year	1	--	--	0.83 lb/hr	6.6	1.02	0.095 lb/hr	0.8	0.12	0.059 lb/hr	0.5	0.07	0.076 lb/hr	0.6	0.09	0.201 lb/hr	1.6	0.25
Compactor	10 hours/day	46.5%	3,070 hours/year	2	--	--	1.7 lb/hr	34.0	5.2	0.15 lb/hr	3.0	0.46	0.14 lb/hr	2.8	0.43	0.143 lb/hr	2.9	0.44	0.675 lb/hr	13.5	2.07
Scrapers	8 hours/day	66.0%	2,456 hours/year	2	--	--	3.84 lb/hr	61.4	9	0.27 lb/hr	4.3	0.7	0.41 lb/hr	6.6	1.0	0.46 lb/hr	7.4	1.13	1.25 lb/hr	20.0	3
Water Trucks	8 hours/day		2,456 hours/year	2	--	--	512.4 g/hr	18.1	2.77	36.60 g/hr	1.3	0.20	73.2 g/hr	2.6	0.40	249 g/hr	8.8	1.35	183.0 g/hr	6.5	0.99
Dozer	10 hours/day	59.0%	3,070 hours/year	5	--	--	1.26 lb/hr	63.0	10	0.12 lb/hr	6.0	0.9	0.112 lb/hr	5.6	0.9	0.14 lb/hr	7.0	1.07	0.35 lb/hr	17.5	2.7
Backhoe	8 hours/day	46.5%	2,456 hours/year	1	--	--	1.7 lb/hr	13.6	2.1	0.15 lb/hr	1.2	0.18	0.14 lb/hr	1.1	0.17	0.143 lb/hr	1.1	0.18	0.675 lb/hr	5.4	0.83
Stationary Sources **LANDFILL GAS:**																					
LFG generated			MMscf/day	22.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LFG fugitive (Escape percent =)	30%		MMscf/day	6.8	--	--	--	--	--	82 lb/MMscf LFG	562	103	--	--	--	--	--	--	--	--	--

DRAFT

Olinda Alpha Landfill Expantion

Operation Emissions

Emission Rates (EMFAC2002) (g/mile)

	ROG	CO	NOx	SOx	PM10
Other Deliveries	0.162	4.154	1.31	0.007	0.036
Waste Trucks	0.54	5.778	11.511	0.129	0.242
Worker Comutes	0.134	4.127	0.593	0.003	0.03

Vehicle Miles Traveled Per Day

Other Deliveries	3456
Waste Trucks	20338
Worker Comutes	3050

Emissions (pounds per day)

	ROG	CO	NOx	SOx	PM10
Other Deliveries	1.23	31.65	9.98	0.05	0.27
Waste Trucks	24.21	259.07	516.12	5.78	10.85
Worker Comutes	0.90	27.75	3.99	0.02	0.20

Olinda Alpha Landfill Expantion

Peak Day Construction Emissions

Emission Rates (EMFAC2002) (g/mile)

	ROG	CO	NOx	SOx	PM10
Haul Trucks	2.036	20.917	15.809	0.132	0.593
Delivery Trucks	0.54	5.778	11.511	0.129	0.242
Worker Comutes	0.134	4.127	0.593	0.003	0.03

Vehicle Miles Traveled Per Day

Haul Trucks	200
Delivery Trucks	250
Worker Comutes	700

Emissions (pounds per day)

	ROG	CO	NOx	SOx	PM10
Haul Trucks	0.90	9.22	6.97	0.06	0.26
Delivery Trucks	0.30	3.18	6.34	0.07	0.13
Worker Comutes	0.21	6.37	0.92	0.00	0.05

TABLE __
INHALATION SCREENING HEALTH RISK
OLINDA ALPHA LANDFILL
EMISSIONS FROM FLARE AND DIESEL EQUIPMENT

	M.W.	Concentration in Flare Exhaust (PPB)	Emission Rate (lb/hr)	Inhalation Unit Risk (ug/m3)-1	Inh. Cancer Potency Factor (mg/kg-d)-1	Annual Concentration (ug/m3)			Inhalation Carcinogenic Health Risk (# in a million)		
						500ft	1000ft	1500ft	500ft	1000ft	1500ft
Benzene	78.12	2600	3.86E-01	2.90E-05	1.00E-01	1.72E-06	3.86E-06	4.22E-06	6.47E-05	1.45E-04	1.59E-04
Dichlorobenzenes	147	169	4.72E-02	1.10E-05	4.00E-02	2.10E-07	4.72E-07	5.16E-07	3.17E-06	7.11E-06	7.78E-06
1,1 Dicholoroethane	99	800	1.51E-01	1.60E-06	5.70E-03	6.70E-07	1.50E-06	1.65E-06	1.44E-06	3.23E-06	3.54E-06
Trichloroethene	131	1200	2.99E-01	2.00E-06	7.00E-03	1.33E-06	2.99E-06	3.27E-06	3.51E-06	7.88E-06	8.62E-06
Vinyl Chloride	62.5	430	5.11E-02	7.80E-05	2.70E-01	2.27E-07	5.10E-07	5.59E-07	2.31E-05	5.19E-05	5.68E-05
Diesel Vehicle Exhaust Particulate			3.3	3.00E-04	1.1	0.01	0.00	0.00	0.96	0.46	0.12
									0.96	0.46	0.12

DBR	393	Daily breathing rate	(L/kg-day)
A	1	Inhalation absorption factor	
EF	350	Exposure frequency	(days/yr)
ED	70	Exposure duration	(years)
AT	25,550	Avg. time period of exposure	(days) (70 years = 25,550 days)

Olinda Alpha Landfill - Valencia Ave
Screening Health Risk

	Unmitigated						Mitigation: Whole-house particulate filtration (efficiency)	Mitigated		
	PM_{10} Annual Arithmetic Average Concentration (ug/m^3)		Inhalation Cancer Risk		Chronic HI			PM_{10} Annual Arithmetic Average Concentration (ug/m^3)	Inhalation Cancer Risk	Chronic HI
	Outdoor	Indoor	Outdoor [1]	In/Outdoor [2]	Outdoor	In/Out door		In/Outdoor	In/Outdoor	In/Out door
California ambient diesel particulate [3]	0		0 in a million		0.00		N/A	N/A	N/A	N/A
California indoor diesel particulate [3]		0		0 in a million		0.00	N/A	N/A	N/A	N/A
House 1 (12m from road)	0.05	0.05	2 in a million	2 in a million	0.01	0.01	90%	0.005	1 in a million	0.01
House 2 (14m from road)	0.08	0.08	2 in a million	2 in a million	0.02	0.02	90%	0.008	1 in a million	0.01
House 3 (20m from road)	0.04	0.04	1 in a million	1 in a million	0.01	0.01	90%	0.004	1 in a million	0.00
House 4 (29m from road)	0.05	0.05	2 in a million	2 in a million	0.01	0.01	90%	0.005	1 in a million	0.01
House 5 (31m from road)	0.04	0.04	1 in a million	1 in a million	0.01	0.01	90%	0.004	1 in a million	0.01
House 6 (37m from road)	0.04	0.04	1 in a million	1 in a million	0.01	0.01	90%	0.004	1 in a million	0.01

DBR	393	Daily breathing rate	(L/kg-day)
A	1	Inhalation absorption factor	
EF	350	Exposure frequency	(days/yr)
ED	5	Exposure duration	(years)
AT	25,550	Avg. time period of exposure	(days) (70 years = 25,550 days)
For diesel PM_{10}	1.1	Inhalation Cancer Potency factor	(mg/kg-d)$^{-1}$
For diesel PM_{10}	5.0	Chronic Inhalation REL	(ug/m^3)

AADT	
1,788	HDT
247	MDT
3,305	Auto

Inhalation cancer risk = ((Cair * DBR * A * EF * ED * 1x10^{-6}) / AT) * Inhalation Cancer Potency factor

Notes:

1) Outdoor represents an exposure of 24 hours per day outdoors for 70 years
2) Indoors represents an exposure of 10 hours per day indoors, 14 hours per day outdoors, for 70 years
3) Data published in Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, California Environmental Protection Agency, June, 1998

Olinda Alpha Landfill - Valencia Ave
Screening Health Risk

	Unmitigated						Mitigation: Whole-house particulate filtration	Mitigated		
	PM_{10} Annual Arithmetic Average Concentration (ug/m^3)		Inhalation Cancer Risk		Chronic HI			PM_{10} Annual Arithmetic Average Concentration (ug/m^3)	Inhalation Cancer Risk	Chronic HI
	Outdoor	Indoor	Outdoor [1]	In/Outdoor [2]	Outdoor	In/Out door	(efficiency)	In/Outdoor	In/Outdoor	In/Out door
California ambient diesel particulate [3]	0		0 in a million		0.00		N/A	N/A	N/A	N/A
California indoor diesel particulate [3]		0		0 in a million		0.00	N/A	N/A	N/A	N/A
House 1 (12m from road)	0.05	0.05	2 in a million	2 in a million	0.01	0.01	90%	0.005	1 in a million	0.01
House 2 (14m from road)	0.08	0.08	2 in a million	2 in a million	0.02	0.02	90%	0.008	1 in a million	0.01
House 3 (20m from road)	0.04	0.04	1 in a million	1 in a million	0.01	0.01	90%	0.004	1 in a million	0.00
House 4 (29m from road)	0.05	0.05	2 in a million	2 in a million	0.01	0.01	90%	0.005	1 in a million	0.01
House 5 (31m from road)	0.04	0.04	1 in a million	1 in a million	0.01	0.01	90%	0.004	1 in a million	0.01
House 6 (37m from road)	0.04	0.04	1 in a million	1 in a million	0.01	0.01	90%	0.004	1 in a million	0.01

DBR	393	Daily breathing rate	(L/kg-day)
A	1	Inhalation absorption factor	
EF	350	Exposure frequency	(days/yr)
ED	5	Exposure duration	(years)
AT	25,550	Avg. time period of exposure	(days) (70 years = 25,550 days)
For diesel PM_{10}	1.1	Inhalation Cancer Potency factor	(mg/kg-d)$^{-1}$
For diesel PM_{10}	5.0	Chronic Inhalation REL	(ug/m^3)

AADT	
1,796	HDT
272	MDT
3,272	Auto

Inhalation cancer risk = ((Cair * DBR * A * EF * ED * 1x10^{-6}) / AT) * Inhalation Cancer Potency factor

Notes:
1) Outdoor represents an exposure of 24 hours per day outdoors for 70 years
2) Indoors represents an exposure of 10 hours per day indoors, 14 hours per day outdoors, for 70 years
3) Data published in Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, California Environmental Protection Agency, June, 1998

APPENDIX C

TECHNICAL MEMORANDUM

BAS

BRYAN A. STIRRAT & ASSOCIATES
CIVIL AND ENVIRONMENTAL ENGINEERS

MEMORANDUM

TO: Tin Cheung, P&D Consultants
Jerry Flores, P&D Consultants

JN: 9927/6.2

FROM: cma for Bryan A. Stirrat, BAS

DATE: May 12, 2004

RE: Backup Calculations for Gas Generation Projections
Olinda Alpha Landfill Expansion

The following describes an analysis performed by BAS of landfill gas production rates which are projected to be generated at the Olinda Alpha Landfill if waste disposal ceases in 2013 or continues until 2021.

1) The County is currently collecting a total of 11.0 mmscf/day (7,638 SCFM) average of landfill gas at approximately 50% methane.

   Source: OCIWMD as tabulated by Waste Energy Technology [Attachment 1] for Olinda Flares [Q-F1 and Q-F2] and the Brea Plant [Inlet Q].

2) BAS has generated a series of gas production curves (see Attachment 2) for the in-place (data provided by IWMD) and projected waste disposal at the Olinda Alpha Landfill through year 2013, and another series of gas production curves for the in-place and projected waste disposal through year 2021. This family of curves is based on varying assumptions of moisture content and biodegradability of the waste. It should be noted that the curves represent projected methane production not projected landfill gas to be recovered. In order to determine the amount of landfill gas to be recovered, a curve is selected that most represents the in-place waste at the site and each point on the curve (represented by a year) is multiplied by an estimated recovery efficiency (assumed to be 70% for this analysis – an industry standard). That number is then divided by the estimated percentage methane content of the gas to be recovered (50% methane content was assumed for this analysis based on recent tests run on the gas at the site) and the end result would be SCFM (standard cubic feet per minute) of landfill gas.

3) Rather than pick a curve at random, BAS has elected to use the recent test data from the site for year 2004 and use that data to determine which curve most represents actual recovery from the site. In order to determine landfill gas generation using the curves (Attachment 2), the gas recovered in year 2004 was converted to methane generated.

If the site currently collects 7,638 SCFM of landfill gas at 50% methane and at a recovery efficiency of 70%, you would multiply 7,638 * (0 .50) =3,819 and then divide that number by 0.70. The result is the methane generation rate for year 2004. In this case, that is 3,819/0.70 = 5,455 SCFM methane.

4) Using the BAS generated gas curves and looking at year 2004, the 5,455 SCFM methane is intersected between Curve No. 3 and Curve No. 4 from the bottom (see Point A on the attached curves). Following the same slope from Point A as the other curves, the year 2013 is intersected at approximately 7,700 SCFM methane (see Point B on the attached curves). Both Points A & B will be the same for both sets of curves through year 2013. Drawing a line between points A & B will represent the projected methane gas production rates which should be generated at the landfill between years 2004 and 2013 (based on actual methane generated in 2004). In order to determine if there will be any impacts from gas emissions at the site if the landfill life is extended until year 2021, an estimate must be made of the difference in gas production between the curve represented by waste disposal through year 2013 and the curve represented by waste disposal through year 2021. Using similar slopes as those of the 3rd and 4th curve from the bottom, a curve can be drawn from Point B to where the year 2021 is intersected on the year 2013 curve and where the year 2021 is intersected on the year 2021 disposal curve (see Attachment 2). The year 2021 is intersected at 7,700 SCFM methane on the year 2013 curve and at 8,800 SCFM methane on the year 2021 disposal curve. These points are referred to as Point C on both the 2013 and 2021 disposal curves (see Attachment 2). Following the similar slopes as the 3rd and 4th curves from the bottom, the peak of the year 2013 disposal curve and year 2021 disposal curve is shown as Point D in Attachment 2. For the year 2013 disposal curve, Point D is 8,000 SCFM methane and for the year 2021 curve is 9,000 SCFM methane.

5) A comparison of the results for landfill gas projections based on the above analysis is presented in Table 5.6-___ (for inclusion in Section 5.6 of the Olinda Alpha Landfill Expansion EIR). An assumption of 70% recovery efficiency and 50% methane content of gas was used to convert the methane levels on the attached curves to total gas generation. The increase in gas generation due to an additional eight years of landfill operation (from 2013 to 2021) is 12.5%. This increase would not result in the need for additional flare(s) as shown on Table 5.6-___.

BAS:jd

Enclosures

C: Christine Arbogast, BAS

TABLE 5.6-__

OLINDA ALPHA LANDFILL
PROJECTED LANDFILL GAS PRODUCTION WITH AND WITHOUT EXPANSION

TABLE 5.6- ___

Projected Year of Landfill Closure	Estimates of Landfill Gas Production at Closure (SCFM of LFG)	Peak Landfill Gas Flow Rate (SCFM of LFG) and Date Peak Occurs	Number of Flares Required at Closure	Number of Flares Required at Peak Landfill Gas Flow Rate
2013[1]	10,780	11,200 (2017)	2.57	2.67
2021[2]	12,320	12,600 (2023)	2.93	3.0

[1] Permitted Closure Date
[2] Expansion Closure Date
[3] Based on flare capacity of 4,200 SCFM/flare (Source: IWMD).
SCFM = standard cubic feet per minute.
LFG = landfill gas.

C:\Documents and Settings\jdavis\Local Settings\Temporary Internet Files\OLK72\Table 5.6.doc 5/10/2004

ATTACHMENT 1

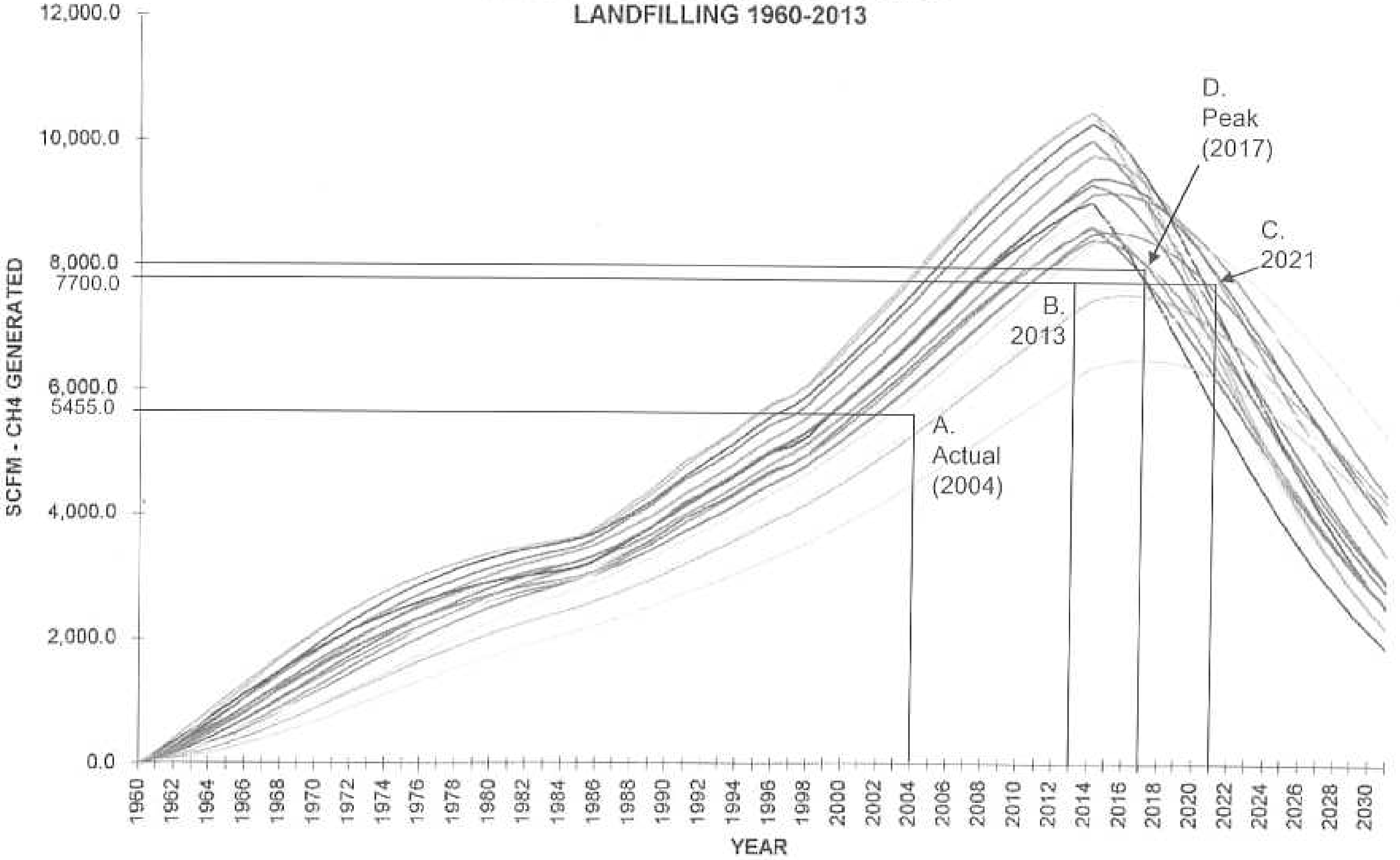
WASTE ENERGY TECHNOLOGY, LLC - GR LOG WORKSHEET

SITE: OLINDA

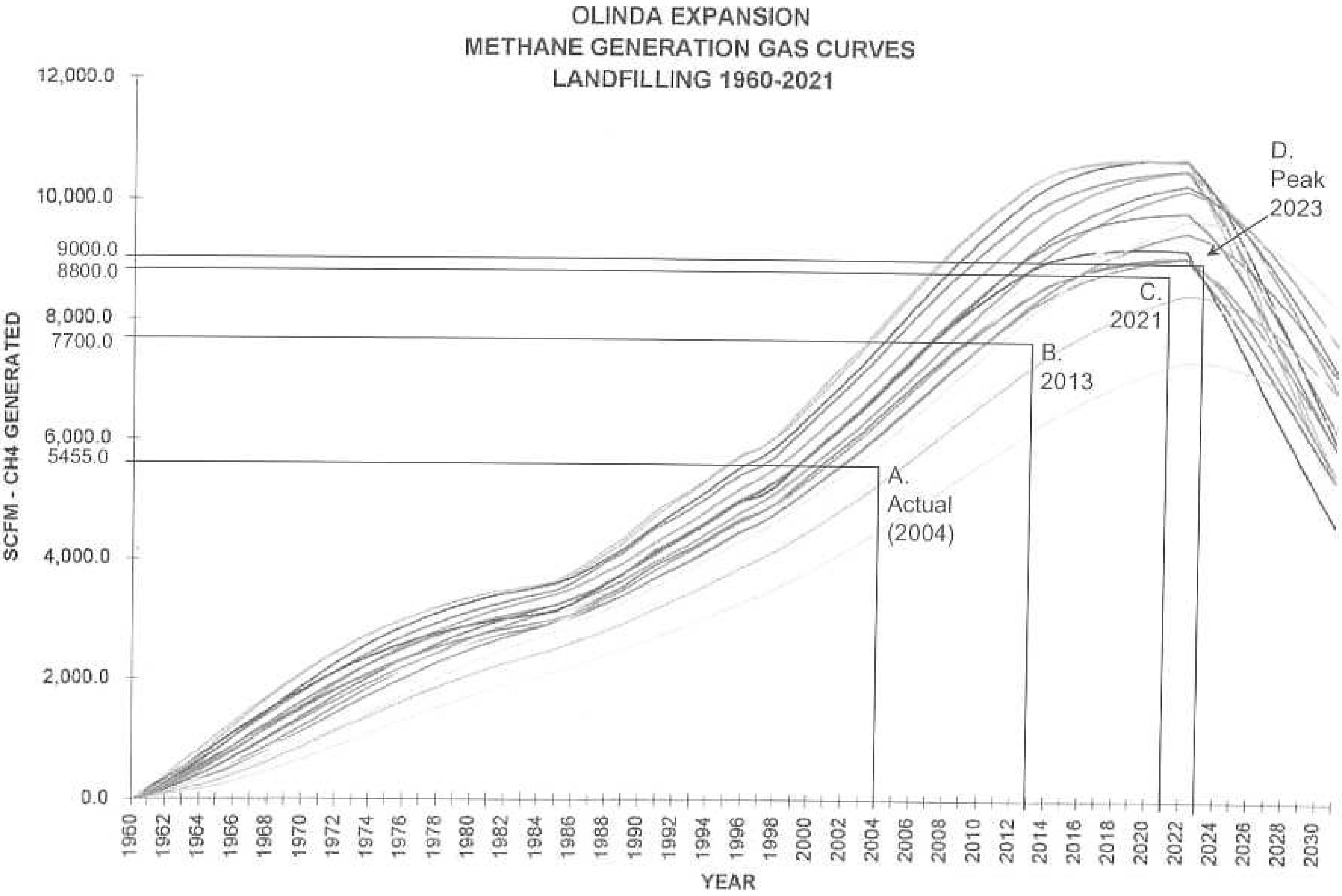
DATE (MMDDYY)	TIME	AMB. TEMP. (°F)	LFG PARAMETERS - FLARE(S)				BREA PLANT				COMMENTS	DATA BY:
			INVAC ("WC)	Q-F1 (SCFD)	Q-F2 (SCFD)	% CH4	INVAC ("WC)	INLET Q (SCFD)	DISCH. Q (SCFD)	% CH4		
03/26/04	8:10	66	-60	4.23	3.97	47.52	-61	2.78	0.00	52.28	Some flare gas to Plant	TD
03/29/04	6:30	78	-60	4.15	4.25	48.39	-58	2.79	0.09	52.34	Some flare gas to Plant	AP
03/30/04	6:30	60	-60	4.18	4.10	48.20	-58	2.82	0.10	52.54	Some flare gas to Plant	AP
03/31/04	8:00	54	-60	4.14	4.22	48.60	-48	2.90	0.16	52.78	Brea header dewateredSome Flare gas to Plant	
04/01/04	7:00	55	-60	4.16	4.24	48.55	-55	2.85	0.13	52.54	Some flare gas to Plant	AP
04/02/04	6:45	50	-60	4.15	4.03	48.72	-54	2.78	0.09	52.88	Some flare gas to Plant	AP
04/05/04	7:25	52	-60	4.15	3.93	48.02	-58	2.74	0.00	52.18	Some flare gas to Plant	AP
04/06/04	13:26	53	-60	4.11	4.14	48.32	-63	2.75	0.03	52.12	Some flare gas to Plant	TD
04/07/04	7:00	50	-60	4.17	4.08	47.80	-59	2.83	0.08	52.36	Some flare gas to Plant	AP
04/08/04	7:00	52	-60	4.12	4.06	48.38	-60	2.83	0.08	52.40	Some flare gas to Plant	AP
04/09/04	7:00	54	-60	4.07	3.96	47.49	-60	2.80	0.06	52.31	Some flare gas to Plant	AP
04/12/04	6:30	52	-60	4.08	4.02	47.97	-63	2.85	0.07	51.97	Some flare gas to Plant	AP
04/13/04	7:00	50	-60	4.06	4.00	49.02	-46	2.80	0.05	52.19	Brea header dewateredSome Flare gas to Plant	
04/14/04	6:45	50	-60	4.06	4.00	48.86	-57	2.86	0.10	52.70	Some flare gas to Plant	AP
04/15/04	6:30	50	-60	4.15	4.12	49.24	-61	2.79	0.00	52.65	Some flare gas to Plant	AP
04/16/04	7:20	50	-60	4.14	4.15	48.53	-61	2.85	0.09	52.63	Some flare gas to Plant	AP
04/19/04	6:25	50	-60	4.50	3.73	48.49	-58	2.80	0.00	52.59	Some flare gas to Plant	AP
04/20/04	7:00	50	-60	4.50	4.02	48.58	-35	1.90	0.14	53.21	Outage 2004	NP
04/21/04	6:36	50	-60	4.46	4.15	48.84	-34	1.83	0.06	53.88	Outage 2004	AP
04/23/04	8:00	72	-60	3.97	5.06	48.68	-61	2.76	0.18	54.94	Outage 2004	AP

ATTACHMENT 2

OLINDA NO EXPANSION
METHANE GENERATION GAS CURVES
LANDFILLING 1960-2013



L:COIWMD\9927\EIR\METHANE CURVE1



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APPENDIX H
NOISE IMPACT ANALYSIS

NOISE IMPACT ANALYSIS

REGIONAL LANDFILL OPTIONS FOR ORANGE COUNTY (RELOOC)
OLINDA ALPHA LANDFILL EXPANSION

Submitted to:

County of Orange Integrated Waste Management Department

Prepared by:

LSA Associates, Inc.
20 Executive Park, Suite 200
Irvine, California 92614-4731
(949) 553-0666

LSA Project No. PND830A

May 18, 2004

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OLINDA ALPHA LANDFILL EXPANSION PLAN

INTRODUCTION

This noise impact analysis has been prepared to evaluate the potential noise impacts and mitigation measures associated with The Olinda Alpha Landfill expansion project in an unincorporated Orange County area north of the City of Brea, California. This report is intended to satisfy the County's requirement for a project-specific noise impact analysis in support of the proposed project and associated environmental documents, and identifies necessary mitigation measures for incorporation as part of the project design.

Project Location

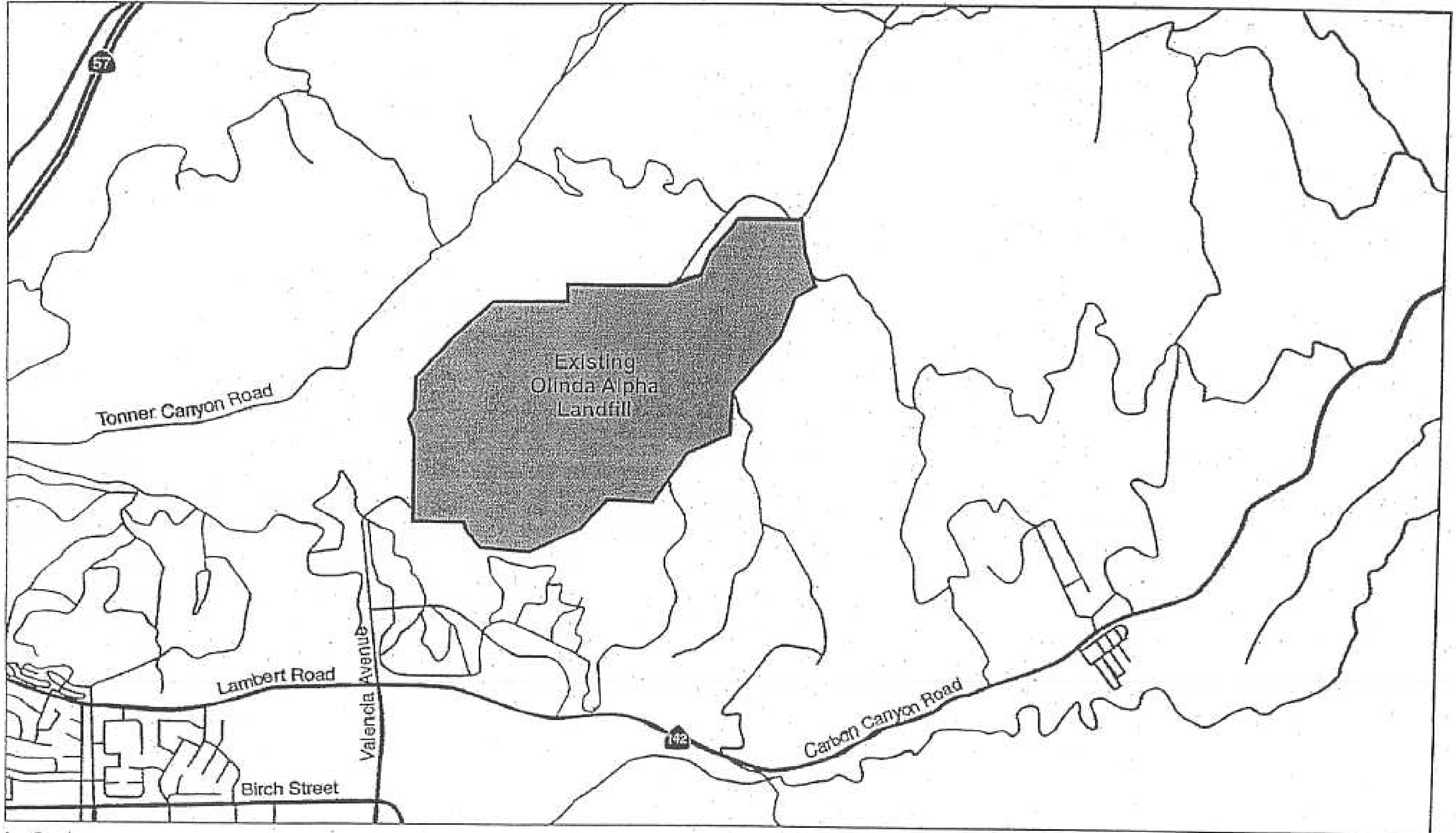
The Olinda Alpha Landfill is located at 1942 N. Valencia Avenue in unincorporated Orange County, immediately north of the City of Brea. Figure 1 shows the location of the Olinda Alpha Landfill.

Project Description

The proposed project includes both a vertical and horizontal expansion of Olinda Alpha Landfill disposal prism. No change in the landfill property boundary is proposed.

Proposed Modifications. The proposed project includes both a vertical and horizontal expansion of Olinda Alpha Landfill disposal prism. No change in the landfill property boundary is proposed. As proposed, the height of Olinda Alpha Landfill would be increased from its current permitted level of 1,300 feet above mean sea level (amsl) to 1,415 feet amsl or a net vertical increase of 115 feet. The horizontal expansion would include landform modifications to the northeast part of the landfill site. This modification would expand the existing refuse footprint approximately 33 acres within the existing property boundary of the Olinda Alpha Landfill. Parts of the horizontal expansion would occur only in areas that have already been disturbed by landfill operations. Figure 2 shows the current permitted vertical and horizontal limits of Olinda Alpha Landfill. Figure 3 depicts the proposed limits of the vertical and horizontal expansions at the landfill under the proposed project.

The expanded landfill would ultimately accommodate disposal of an additional 14.2 million tons (MT) of municipal solid waste (MSW, as of 2003) and would extend the life of the landfill from its permitted closure date of 2013 to approximately 2021, based on current population projections, daily tonnage, compaction densities, and existing disposal technologies. The proposed project would not result in any increase to either the Maximum Daily Permitted Tonnage or the annual average daily tonnage limits for the landfill.



LSA

FIGURE 1

Relooc Strategic Plan

Location Map

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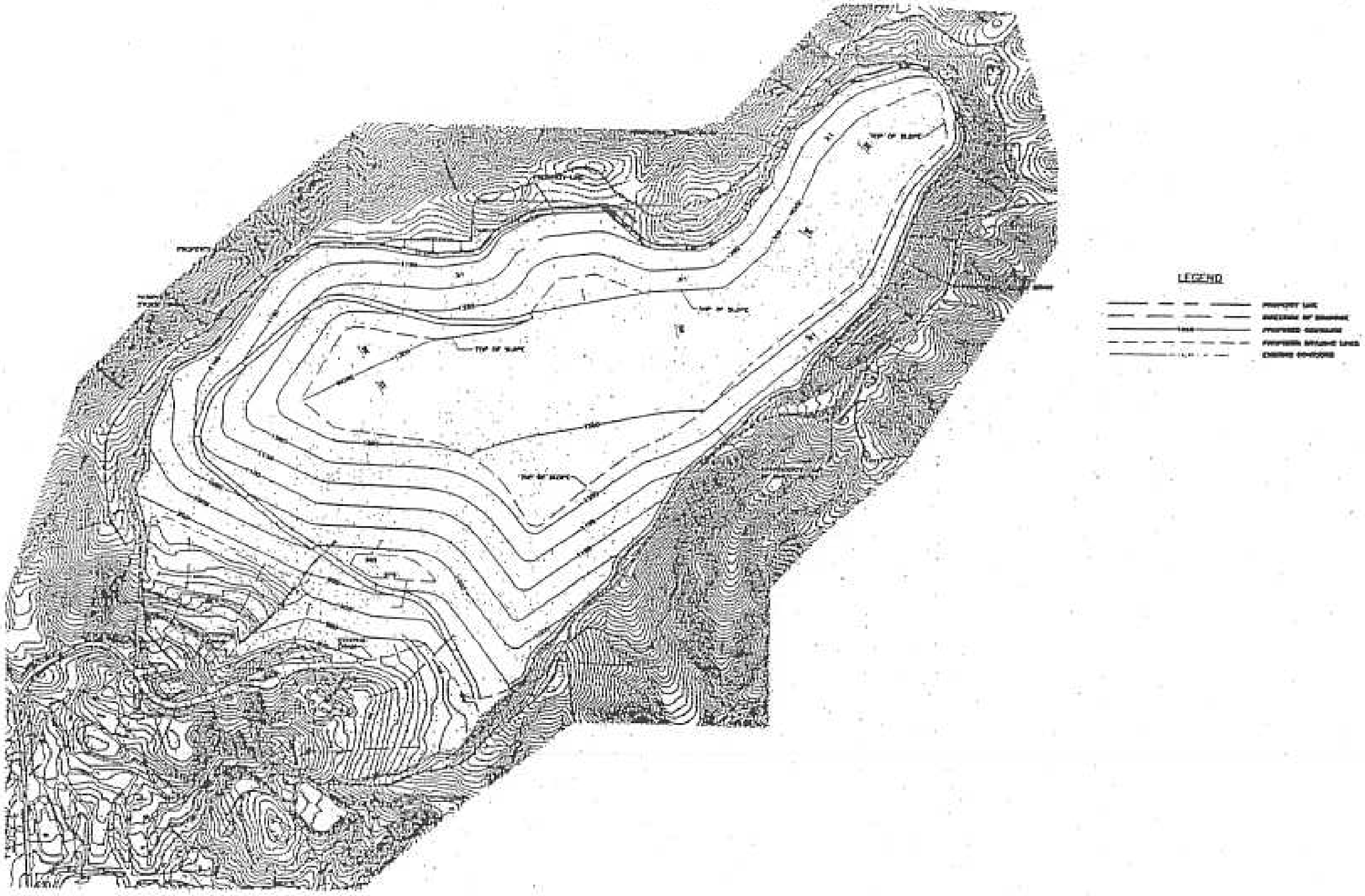

LSA

FIGURE 2

N

0 600 1200
FEET

SOURCE: Bryan A. Stirrat & Associates

Relooc Strategic Plan

Current Permitted Limits

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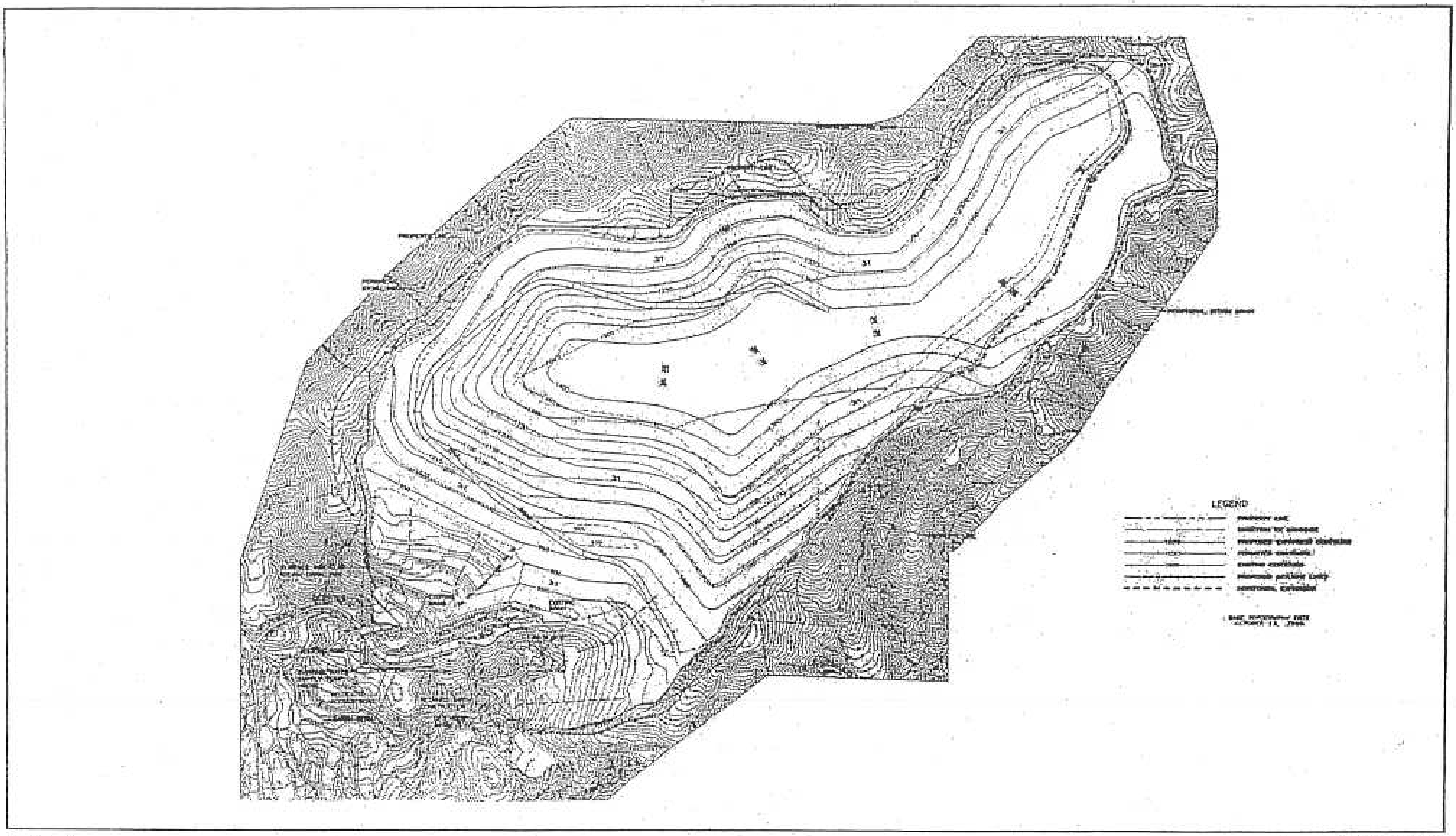

LSA

FIGURE 3

SOURCE: Bryan A. Stirrat & Associates

Relooc Strategic Plan

Proposed Expansion Plan Map

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Phasing. The expansion of the Olinda Alpha Landfill would be implemented in phases and would not disturb all parts of the landfill site at once.

On-site soil to be utilized for daily cover, road construction, and other related uses is available at the Olinda Alpha Landfill through 2015. The site currently accepts dirt and continues to stockpile it on-site for future cover use. When on-site soil for cover is depleted at the Olinda Alpha Landfill, soil will need to be imported to the site. Truck traffic associated with soil import is anticipated to be less than or equal to import refuse truck traffic, which will cease in 2015. Fill and cover techniques at the landfill would be similar to the methods currently employed. Waste would be deposited, compacted, and covered daily using appropriate landfilling methods.

Waste Composition. The waste composition at the Olinda Alpha Landfill under the proposed project would not differ from that currently received at this landfill. Non-hazardous MSW would comprise the waste stream, and existing screening safety mechanisms would continue to be employed to ensure that hazardous materials are not accepted. Access to Olinda Alpha Landfill would remain unchanged, with access provided via Valencia Avenue. The total number of trips per day to the landfill for MSW disposal would not increase under the proposed project because the permitted daily tonnage accepted at Olinda Alpha Landfill would not increase compared to existing conditions. The additional traffic associated with soil import for cover use at Olinda Alpha Landfill by the year 2015 would be offset by the cessation of refuse importation.

Other Project Features. The project may require that additional buildings and structures be constructed at the Olinda Alpha Landfill and may include additional gas control facilities. However, the number of employees at the landfill will not change with implementation of the proposed project. Employees would continue to perform landfill operations, including administration, landfill cover operations, and other landfill-related operations. The number and types of equipment utilized at the Olinda Alpha Landfill, and the operating schedule, would remain unchanged after implementation of the proposed project.

Surface water drainage systems, landfill gas collection and control systems, and leachate collection and recovery systems will be expanded, as necessary, to accommodate expansion of the Olinda Alpha Landfill.

Alternative 1: No Project (No Action) Alternative

The No Project Alternative would include no action by the County of Orange. Under this Alternative, neither the vertical nor horizontal expansion at the Olinda Alpha Landfill would occur. The landfill would continue to operate at its existing permitted capacity with no increase in long term physical capacity or daily tonnage received. As such, under this Alternative, the Olinda Alpha Landfill would continue to receive up to an annual average of 7,000 TPD of MSW under an MOU between the City of Brea and IWMD and would operate until its permitted closure date of 2013. Under this Alternative, importation of waste into the Orange County disposal system will end in 2013 when landfilling at the Olinda Alpha Landfill terminates. Upon its closure, approximately 1,000 TPD of MSW, which is in excess of what could be accommodated at the Frank R. Bowerman (FRB) and Prima Deshecha Landfills, would have to be accommodated at landfills outside of Orange County.

The projected excess TPD of MSW to be exported out of County is based on population projections for the system demand by 2021 (the horizon year for this EIR).

Out-of-County landfills would have to be permitted to accept the excess tonnage from Orange County and may include El Sobrante Landfill in Riverside County, the Mid-Valley Landfill in San Bernardino County and/or a rail haul facility.

Alternative 2: Two-Landfill System in 2013 (Prima Deschecha Daily Tonnage Increase)

Assumptions

- Increase permitted TPD at Prima Deshecha Landfill from 4,000 TPD to 5,000 TPD when Olinda Alpha Landfill closes in 2013.
- Permitted TPD at FRB Landfill will remain at 8,500 TPD when Olinda Alpha Landfill closes in 2013.
- Olinda Alpha Landfill continues to accept an annual average of 7,000 TPD until its closure date in 2013.
- No expansion at Olinda Alpha Landfill, present capacity unchanged through remaining life.
- County importation at all three Orange County landfills ceases in 2013, with a net reduction of approximately 2,075 TPD imported to Olinda Alpha Landfill; approximately 830 TPD imported into FRB Landfill and approximately 920 TPD imported into Prima Deshecha Landfill (projected amount for 2013 according to County of Orange - RELOOC Demand Model Runs R1-R5).

Alternative 2 proposes increasing the current permitted TPD at Prima Deshecha Landfill from 4,000 to 5,000 TPD when Olinda Alpha Landfill closes at its permitted closure date of 2013. This increase would accommodate projections for the system demand in 2021 based on forecasted population growth and factors in the lower total tonnage with importation ceasing in 2013. At FRB Landfill, the permitted TPD received would remain unchanged at 8,500 TPD. Based on the RELOOC Demand model approximately 4,900 TPD of Olinda Alpha Landfill MSW would be diverted to the FRB and Prima Deshecha landfills under Alternative 2.

Under Alternative 2, no expansion or extension of the Olinda Alpha Landfill closure date would occur. All importation of out-of-County MSW would cease in 2013 when there is no longer capacity in the system to accommodate imported waste. The Prima Deshecha Landfill 2001 General Development Plan (GDP) remaining refuse capacity would remain unchanged at 77.6 million tons (MT) as of 2001 GDP. However, the incremental increase of the Prima Deshecha Landfill in-flow waste stream from 4,000 TPD to a permitted limit of 5,000 TPD would accelerate its anticipated closure date from 2067 to approximately 2056 based on current population projections and existing disposal technologies. The accelerated closure date to 2056 results in a net reduction of 11 years in the life of Prima Deshecha Landfill under Alternative 2.

Under Alternative 2, the number of truck trips to Prima Deshecha Landfill would increase although the period over which those would occur would be reduced by 11 years because the life of the landfill would be shortened under this Alternative.

Under Alternative 2, the existing County MOU with the City of San Juan Capistrano would need to be amended prior to 2013 to provide for the increase in permitted daily tonnage. Similarly, permits currently in-place with the California Integrated Waste Management Board (CIWMB) and other regulatory agencies with jurisdictional oversight for Prima Deshecha Landfill would need to be amended.

Alternative 3: Two-Landfill System In 2013 (FRB Daily Tonnage Increase)

Assumptions

- Increase permitted TPD at FRB Landfill from 8,500 TPD to 9,500 TPD when Olinda Alpha Landfill closes in 2013.
- Permitted TPD at Prima Deshecha Landfill remains at 4,000 TPD when Olinda Alpha Landfill closes in 2013.
- Olinda Alpha Landfill continues to accept up to 7,000 TPD until its closure date in 2013.
- No expansion at Olinda Alpha Landfill, present capacity unchanged through remaining life.
- County importation at all three Orange County landfills ceases in 2013, with a net reduction of approximately 2,075 TPD imported to Olinda Alpha Landfill; approximately 830 TPD imported into FRB Landfill and approximately 920 TPD imported into Prima Deshecha Landfill (projected amount for 2013 according to County of Orange - RELOOC Demand Model Runs R1-R5).

Alternative 3 proposes increasing the current permitted TPD at FRB Landfill from 8,500 TPD to 9,500 TPD when Olinda Alpha Landfill closes on its permitted closure date in 2013. This increase would accommodate projections for the system demand in 2021 based on forecasted population growth and factors in the lower total tonnage with importation ceasing in 2013. The permitted TPD at Prima Deshecha Landfill would remain unchanged at 4,000 TPD. Based on the RELOOC Demand model, approximately 4,900 TPD of Olinda Alpha Landfill MSW would be diverted to the FRB and Prima Deshecha landfills under Alternative 3.

Under Alternative 3, no expansion or extension of Olinda Alpha Landfill's closure date would occur. All out-of-County importation of MSW would cease in 2013 when there no longer is capacity in the system to accommodate imported waste.

At present, the permitted closure date of FRB Landfill is 2022. Alternative 3 would accelerate the closure date to 2021 based on current population projections and existing disposal technologies. This accelerated closure date for the FRB Landfill results in a net reduction of one year of life at this landfill which just meets the horizon year goal of 2021 for this EIR. After 2021, the County would have one remaining landfill in their system. Under Alternative 3, the number of truck trips to the FRB Landfill would increase although the duration of the trips would be reduced because the life of the landfill would be shortened by one year.

Under Alternative 3, the County's existing Settlement Agreement with the City of Irvine would need to be amended prior to 2013 to provide for the increased permitted daily tonnage. Similarly, existing permits with the CIWMB and other regulatory agencies with jurisdictional oversight for these landfills would need to be amended.

Methodology Related to Noise and Vibration Impact Assessment

Evaluation of noise impacts associated with a proposed commercial project typically includes the following:

- Determine the short-term construction noise and vibration impacts on off-site noise-sensitive uses. This was based on published noise emission data of construction equipment and use of calculations to account for distance attenuation between the source of the noise and the receiver. Vibration impacts were assessed based on methodologies developed by the Federal Transit Administration.
- Determine the long-term noise and vibration impacts, including refuse truck traffic and on-site operational noise impacts, on off-site uses. The FHWA highway traffic noise prediction model (FHWA RD-77-108) was used to evaluate highway traffic-related noise conditions in proximity to the project site. Vibration impacts were assessed based on methodologies developed by the Federal Transit Administration.
- Determine the required mitigation measures to reduce long-term noise and vibration impacts from all sources if necessary.

Characteristics of Sound

Sound is increasing to such disagreeable levels in the environment that it can threaten quality of life. Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect the ability to hear. Pitch is the number of complete vibrations, or cycles per second, of a wave resulting in the tone's range from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment and is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. This characteristic of sound can be precisely measured with instruments. The analysis of a project defines the noise environment of the project area in terms of sound intensity and its effect on adjacent sensitive land uses.

Measurement of Sound

Sound intensity is measured through the A-weighted scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies. Unlike linear units, such as inches or pounds, decibels are measured on a logarithmic scale representing points on a sharply rising curve.

For example, 10 decibels (dB) are 10 times more intense than 1 dB, 20 dB are 100 times more intense, and 30 dB are 1,000 times more intense. Thirty dB represent 1,000 times as much acoustic energy as one decibel. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the loudness of the sound. Ambient sounds generally range from 30 dB (very quiet) to 100 dB (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. For a single-point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source, such as highway traffic or railroad operations, the sound decreases 3 dB for each doubling of distance in a hard site environment. Line source, noise in a relatively flat environment with absorptive vegetation, decreases 4.5 dB for each doubling of distance.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and community noise equivalent level (CNEL) or the day-night average level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the evening hours. CNEL and L_{dn} are within 1 dBA of each other and are normally exchangeable.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max}. L_{max} reflects peak operating conditions and addresses the annoying aspects of intermittent noise. It is often used together with another noise scale, or noise standards in terms of percentile noise levels, in noise ordinances for enforcement purposes. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half the time the noise level exceeds this level, and half the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first is audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 dB or greater because this level has been found to be barely perceptible in exterior environments.

The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise levels of less than 1.0 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 190 dBA will rupture the eardrum and permanently damage the inner ear. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying less developed areas.

Table A lists Definitions of Acoustical Terms. Table B shows Common Sound Levels and Their Sources. Table C shows Land Use Compatibility for Exterior Community Noise recommended by the California Department of Health, Office of Noise Control.

Groundborne Vibration

Vibration refers to groundborne noise and perceptible motion. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernable, but without the effects associated with the shaking of a building there is less adverse reaction. Vibration energy propagates from a source through intervening soil and rock layers to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by the occupants as motion of building surfaces, rattling of items on shelves or hanging on walls, or as a low-frequency rumbling noise. The rumbling noise is caused by the vibrating walls, floors, and ceilings radiating sound waves. Vibration-induced structural damage is not a factor for normal transportation projects, including highways, but may be an issue if blasting and pile driving occur during construction. The proposed project would not involve the need for blasting or pile driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by 10 decibels or less. This is an order of magnitude below the damage threshold for normal buildings.

Typical sources of groundborne vibration are construction activities (e.g., blasting, pile driving, and operating heavy duty earth-moving equipment), steel-wheeled trains, and occasional traffic on rough roads. When roadways are smooth, vibration from traffic, even heavy trucks, is rarely perceptible. It is assumed for most projects that the roadway surface will be smooth enough that groundborne vibration from street traffic will not exceed the impact criteria; however, heavy truck traffic associated with the project could result in ground-borne vibration that could be perceptible and annoying. Groundborne noise is not likely to be a problem because noise arriving via the normal airborne path usually will be greater than groundborne noise.

Groundborne vibration has the potential to disturb people as well as to damage buildings. Although it is very rare for train or roadway traffic-induced groundborne vibration to cause even cosmetic building damage, it is not uncommon for construction processes such as blasting and pile driving to cause vibration of sufficient amplitudes to damage nearby buildings (FTA, 1995). Groundborne vibration is usually measured in terms of vibration velocity, either the root-mean-square (rms) velocity or peak particle velocity (PPV). Rms is best for characterizing human response to building vibration, and PPV is used to characterize potential for damage. Decibel notation acts to compress the range of numbers required to describe vibration. Vibration velocity level in decibels is defined as:

$L_V = 20 \log_{10} [V/V_{ref}]$

where L_V is the velocity in decibels (VdB), "V" is the rms velocity amplitude, and "V_{ref}" is the reference velocity amplitude, or $1x10^{-6}$ inches/second used in the USA. Table D illustrates human response to various vibration levels as described in the Federal Transit Administration Transit Noise and Vibration Impact Assessment (FTA, April 1995).

Table A: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit of level that denotes the ratio between two quantities that are proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. 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. All sound levels in this report are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels that are equaled or exceeded by a fluctuating sound level 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dBA to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources at many directions, near and far; no particular sound is dominant.
Intrusive	The noise that 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.

Source: Handbook of Acoustical Measurements and Noise Control 1991.

Table B: Common Sound Levels and Their Noise Sources

Noise Source	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Evaluations
Near Jet Engine	140	Deafening	128 times as loud
Civil Defense Siren	130	Threshold of Pain	64 times as loud
Hard Rock Band	120	Threshold of Feeling	32 times as loud
Accelerating Motorcycle at a Few Feet Away	110	Very Loud	16 times as loud
Pile Driver; Noisy Urban Street/Heavy City Traffic	100	Very Loud	8 times as loud
Ambulance Siren; Food Blender	95	Very Loud	
Garbage Disposal	90	Very Loud	4 times as loud
Freight Cars; Living Room Music	85	Loud	
Pneumatic Drill; Vacuum Cleaner	80	Loud	2 times as loud
Busy Restaurant	75	Moderately Loud	
Near Freeway Auto Traffic	70	Moderately Loud	
Average Office	60	Quiet	One-half as loud
Suburban Street	55	Quiet	
Light Traffic; Soft Radio Music in Apartment	50	Quiet	One-quarter as loud
Large Transformer	45	Quiet	
Average Residence without Stereo Playing	40	Faint	One-eighth as loud
Soft Whisper	30	Faint	
Rustling Leaves	20	Very Faint	
Human Breathing	10	Very Faint	Threshold of Hearing
	0	Very Faint	

Source: Compiled by LSA Associates, Inc. 2002.

Table C: Land Use Compatibility for Exterior Community Noise

Land Use Category	Noise Range (L_{dn} or CNEL), dB			
	I	II	III	IV
Passively used open spaces	50	50-55	55-70	70+
Auditoriums, concert halls, amphitheaters	45-50	50-65	65-70	70+
Residential: low-density single-family, duplex, mobile homes	50-55	55-70	70-75	75+
Residential: multifamily	50-60	60-70	70-75	75+
Transient lodging: motels, hotels	50-60	60-70	70-80	80+
Schools, libraries, churches, hospitals, nursing homes	50-60	60-70	70-80	80+
Actively used open spaces: playgrounds, neighborhood parks	50-67	C	67-73	73+
Golf courses, riding stables, water recreation, cemeteries	50-70	C	70-80	80+
Office buildings, business commercial and professional	50-67	67-75	75+	C
Industrial, manufacturing, utilities, agriculture	50-70	70-75	75+	C

Noise Range I—Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Noise Range II—Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Noise Range III—Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Noise Range IV—Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: Office of Noise Control, California Department of Health 1976.

Table D: Human Response to Different Levels of Groundborne Noise and Vibration

Vibration Velocity Level	Noise Level		Human Response
	Low Freq[1]	Mid Freq[2]	
65 VdB	25 dBA	40 dBA	Approximate threshold of perception for many humans. Low-frequency sound usually inaudible, mid-frequency sound excessive for quiet sleeping areas.
75 VdB	35 dBA	50 dBA	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level unacceptable. Low-frequency noise acceptable for sleeping areas, mid-frequency noise annoying in most quiet occupied areas.
85 VdB	45 dBA	60 dBA	Vibration acceptable only if there is an infrequent number of events per day. Low-frequency noise unacceptable for sleeping areas, mid-frequency noise unacceptable even for infrequent events with institutional land uses such as schools and churches.

Source: Federal Transit Administration, 1995, and Federal Railroad Administration, 1998.

Factors that influence groundborne vibration and noise include the following:

- Vibration Source: Vehicle suspension, wheel types and condition, track/roadway surface, track support system, speed, transit structure, and depth of vibration source
- Vibration Path: soil type, rock layers, soil layering, depth to water table, and frost depth
- Vibration Receiver: foundation type, building construction, and acoustical absorption

Among the factors listed above, there are significant differences in the vibration characteristics when the source is underground compared to when it is at ground surface. In addition, soil conditions are known to have a strong influence on the levels of groundborne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock. Experience with groundborne vibration is that vibration propagation is more efficient in stiff clay soils than in loose sandy soils, and shallow rock seems to concentrate the vibration energy close to the surface and can result in groundborne vibration problems at far distances from the track. Factors such as layering of the soil and depth to water table can have significant effects on the propagation of groundborne vibration. Soft, loose, sandy soils tend to attenuate more vibration energy than hard, rocky materials. Vibration propagation through groundwater is more efficient than through sandy soils.

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[1] Approximate noise level when vibration spectrum peak is near 30 Hz.

[2] Approximate noise level when vibration spectrum peak is near 60 Hz.

EXISTING CONDITIONS

Sensitive Land Uses in the Project Vicinity

The access roads leading to the Olinda Alpha landfill site include Imperial Highway and Valencia Avenue. The closest noise-sensitive uses, such as residential homes, are located more than 1,590 feet from all areas with noise-producing activities on the project site.

Overview of the Existing Noise Environment

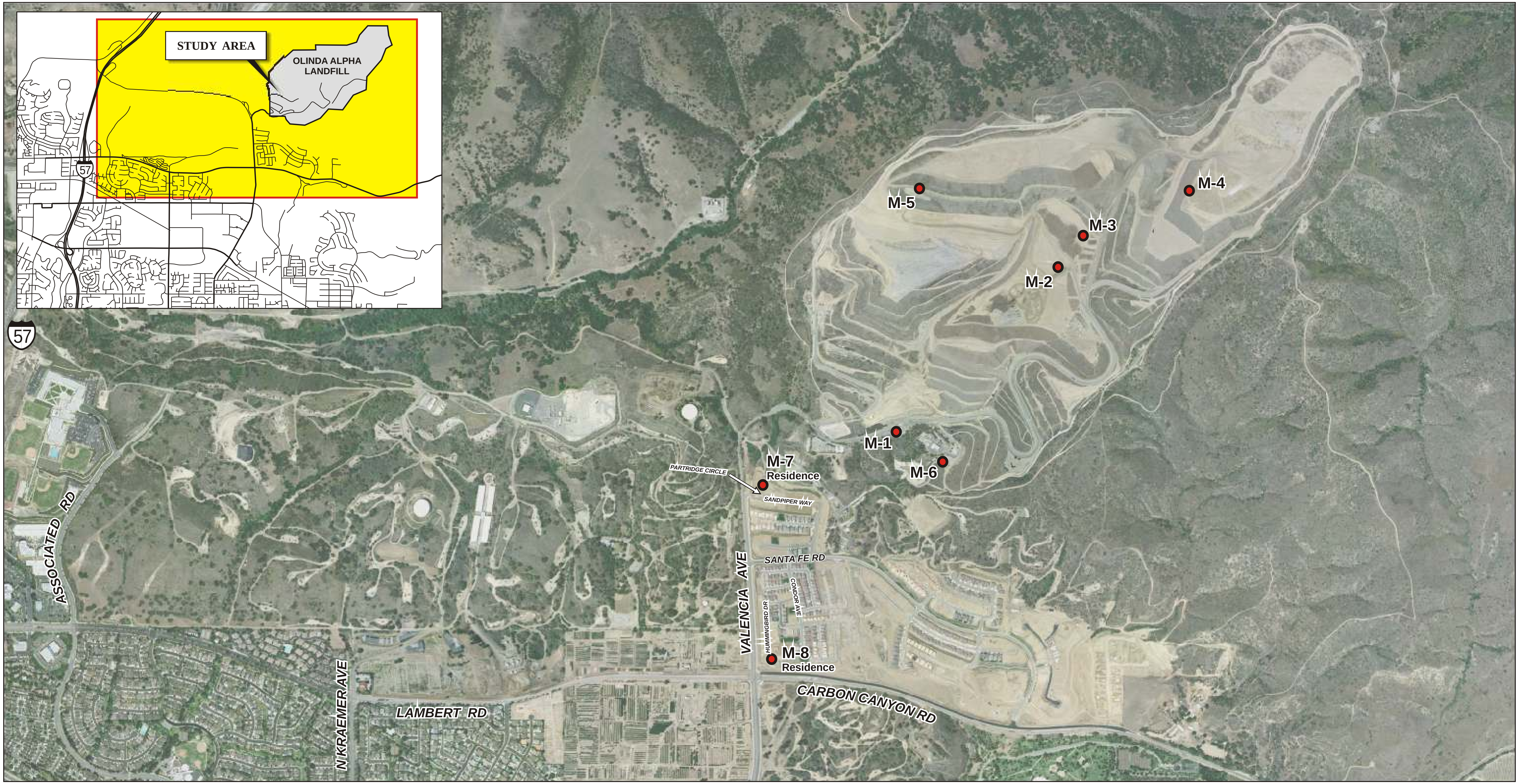
Ambient Noise Survey. An ambient noise survey at 11 locations on and adjacent to the project site was conducted on February 5, 10, and 27, 2004, by an LSA staff member. The survey included noise measurements at the project site and adjacent to nearby existing and planned future noise-sensitive receptors. On-site noise measurements (M-1 through M-6) were conducted to quantify noise levels from existing landfill operations, while the off-site measurements (M-7 through M-10) focused upon ambient noise conditions at nearby existing and planned residential areas. Table E lists the measured ambient noise levels on the project site that were dominated by the landfill-related operations, and off-site areas that were dominated by vehicular traffic. Light aircraft noise was found to be an occasional contributor to the noise environment, both on-site and off-site. Noise from on-site landfill activities was not audible at nearby existing and planned future residences during the noise survey. Figure 4 depicts these noise-monitoring locations.

Noise monitoring was performed using a Larson-Davis Model 820 Type 1 Sound Level Meter. The L_{eq}, L_{min}, and L_{max} values were recorded. The L_{eq} value is representative of the equivalent noise level or logarithmic average noise level obtained over the measurement period. The L_{min} and L_{max} represent the minimum and maximum root-mean-square noise levels obtained over a period of one second. The readings were all taken approximately 5 feet above ground and no closer than 20 feet to any reflective surfaces (e.g., walls). The readings are included in Table E and summarized below.

Table E: Ambient Noise Levels On and Adjacent to Olinda Alpha Landfill, dBA

Receptor/Date	L_{eq}	L_{max}	L_2	L_8	L_{25}	L_{50}
M-1/2-5-04	69.8	87.3	77.3	73.5	70.2	66.0
M-2/2-5-04	71.9	84.0	78.4	76.5	72.5	69.6
M-3/2-5-04	76.6	88.6	82.6	79.6	76.9	75.3
M-4/2-5-04	59.8	71.4	65.8	64.0	61.8	57.1
M-5/2-5-04	52.3	66.2	61.0	57.8	50.6	47.3
M-6/2-5-04	67.8	69.7	69.1	68.7	68.2	67.7
M-7/2-10-04	50.6	62.2	58.9	54.5	50.5	47.0
M-8/2-10-04	55.0	68.2	59.8	57.5	55.5	53.7
M-9/2-10-04	59.1	69.0	64.8	62.8	59.8	57.5
M-10/2-10-04	58.4	71.0	63.8	62.2	59.9	55.9
M-11/2-27-04	65.0	76.3	72.4	69.9	64.9	62.3

Source: LSA Associates, Inc., February 5, 10, and 27, 2004.



LSA

● NOISE MONITORING STATION

N

NO SCALE

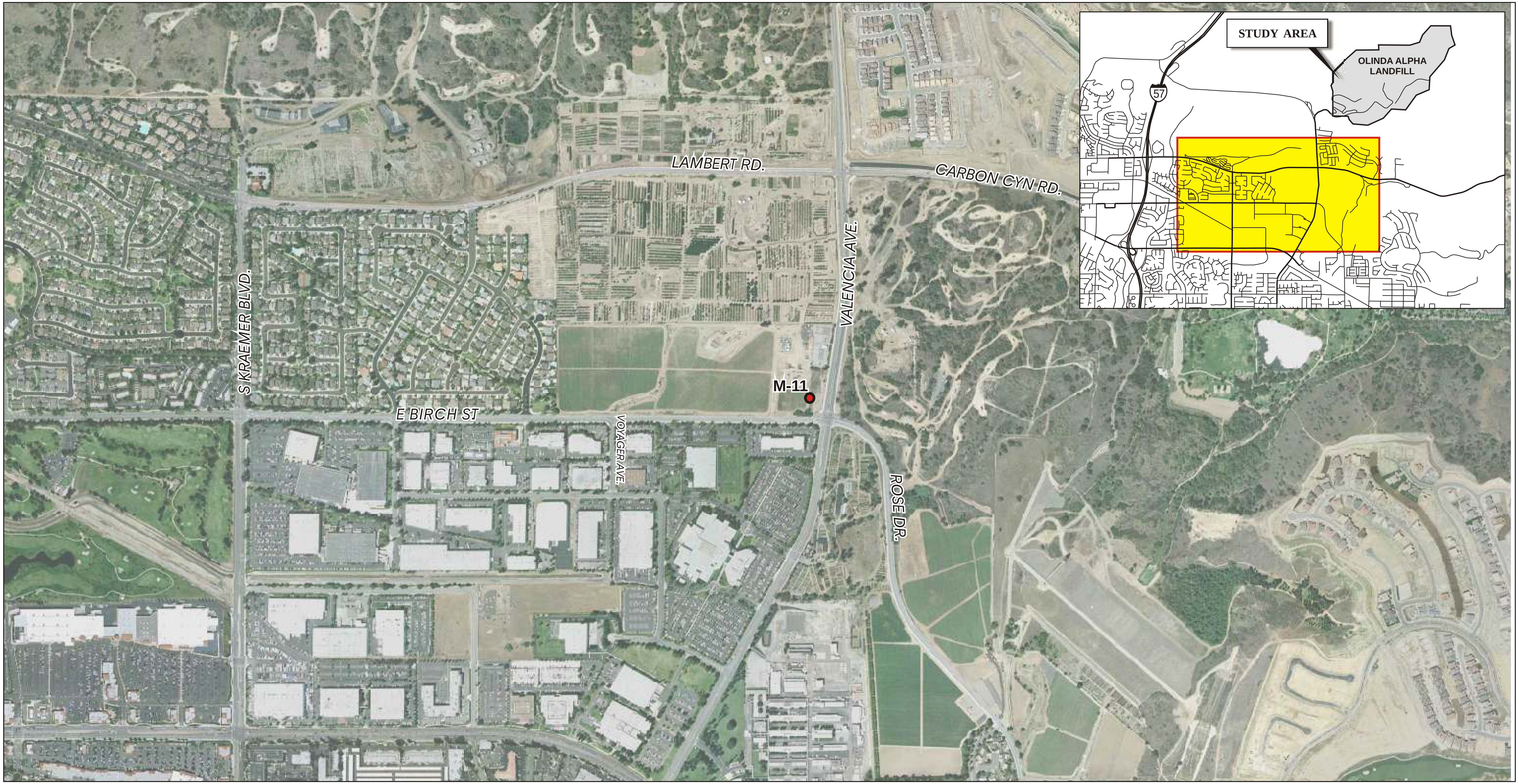
SOURCE: EAGLE AERIAL

I:\PND830\G\Monitoring_N.cdr (2/19/04)

FIGURE 4A

Relooc Strategic Plan

Noise Monitoring Locations



LSA

● NOISE MONITORING STATION

FIGURE 4B

N

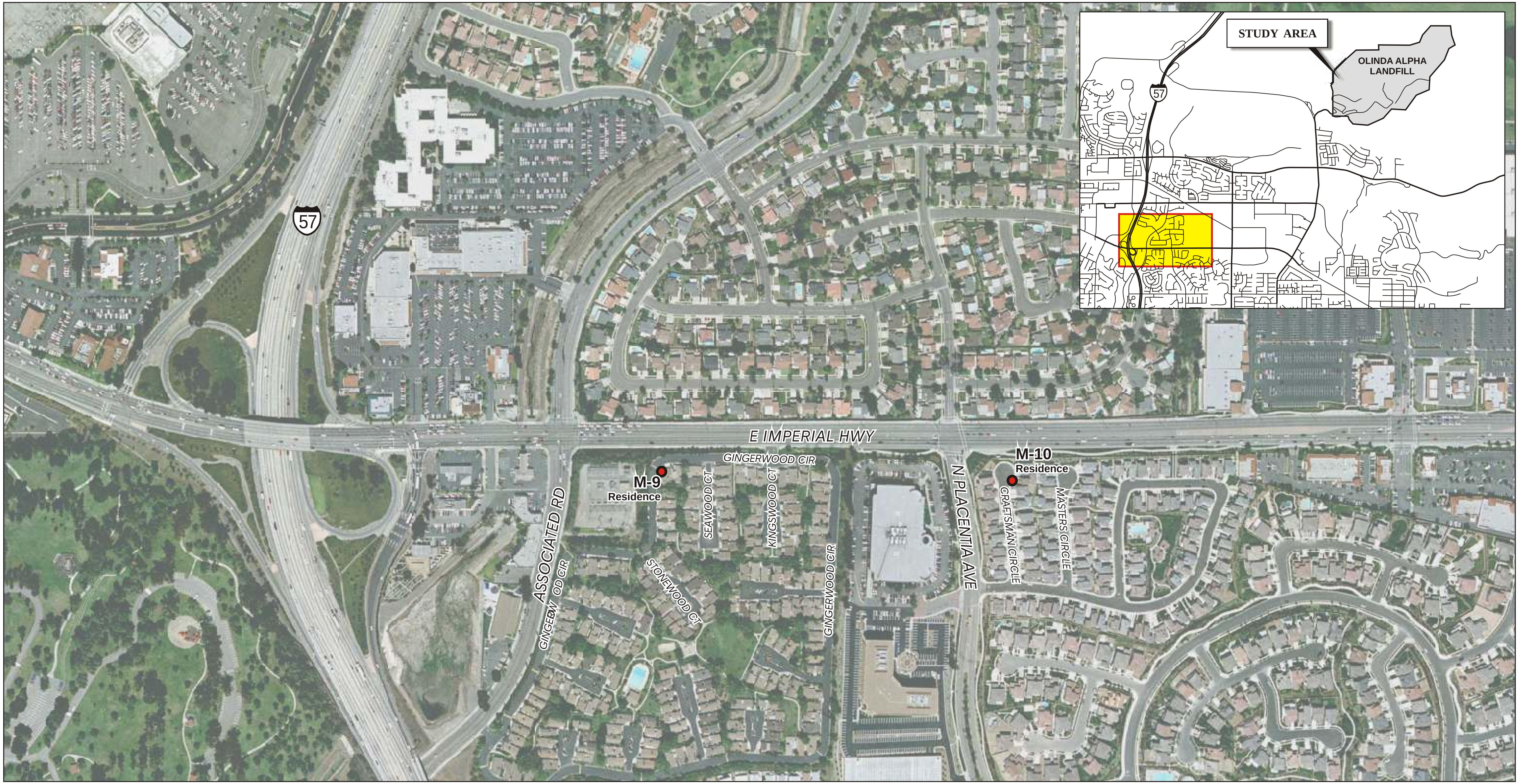
NO SCALE

SOURCE: EAGLE AERIAL

Relooc Strategic Plan

Noise Monitoring Locations

I:\PND830\G\Monitoring_Centrl.cdr (3/5/04)



LSA

● NOISE MONITORING STATION

FIGURE 4C

N

NO SCALE

SOURCE: EAGLE AERIAL

Relooc Strategic Plan

Noise Monitoring Locations

I:\PND830\G\Monitoring_S.cdr (2/19/04)

M-1: Noise measurements at Site M-1 were conducted approximately 30 feet from the nearest traveling lane at the weigh station at the landfill entrance. The weigh station has four roadway lanes, two for entering trucks and two for exiting trucks. Noise sources included heavy trucks idling, brakes squeaking and releasing compressed air, people talking approximately 20 feet from the sound level meter, and light autos starting their engines. Noise levels from the weigh station ranged from 60 to 72.6 dBA.

M-2: Noise measurements at Site M-2 were conducted approximately 100 feet from scraping and bulldozing activity and approximately 350 feet from the main tipping/filling area. Noise sources in this area included scraping and bulldozing activity from two scrapers and one dozer; tipping/filling area operations from three dozers, two compactors, and one loader; two scrapers driving by approximately 50 feet from the sound level meter; three heavy trucks traveling near the main tipping/filling area; truck reverse signals from the scraping/bulldozing area and the tipping/filling area; and “cracker shell” (i.e., gun shot) noise (used by the landfill operators as a bird deterrent) in the tipping/filling area. Noise levels from the scraping activity ranged from 73.4 to 80 dBA. Noise levels from scrapers driving by approximately 50 feet from the sound level meter ranged from 62.6 to 77.3 dBA. Noise levels from scrapers gathering dirt approximately 100 feet away ranged from 66.3 to 73.7 dBA. Scraping activity was the dominant noise source at this measurement location. Noise associated with tipping/filling operations was barely noticeable (faint background noise).

M-3: Noise measurements at Site M-3 were conducted approximately 50 feet from the tipping/filling area. Noise sources included three dozers, two compactors, eight to ten refuse trucks, truck reverse signal, and “cracker shell” noise. Noise levels from the tipping/filling activity ranged from 71.2 to 80 dBA at this location. Tipping/filling activity was the dominant noise source. Cracker shell noise was used to scare seagulls away from the trash ready to be covered.

M-4: Noise measurements at Site M-4 were conducted near the southern end of the landfill approximately 270 feet from bulldozing activity and 1,440 feet from the tipping/filling area. Noise sources included bulldozing activity by one dozer and one truck; tipping/filling activity by two dozers and two compactors; idling from two scrapers approximately 200 feet away; and aircraft overflight noise. Noise levels from the bulldozing activity ranged from 57.6 to 65.7 dBA. Noise levels from the tipping/filling activity ranged from 49.6 to 52.9 dBA at this location. Bulldozing activity was the dominant noise source, but it stopped approximately 11 minutes into the noise measurement period.

M-5: Noise measurements at Site M-5 were conducted near the western end of the landfill approximately 800 feet from the scraping activity and 1,580 feet from the tipping/filling area. Noise sources included scraping, tipping/filling, truck reverse signal, aircraft overflight, and crows flying nearby. Noise levels from the scraping activity ranged from 50.1 to 56.7 dBA at this location. Noise levels from the tipping/filling activity ranged from 45.3 to 51.2 dBA.

M-6: Noise measurements at Site M-6 were conducted approximately 50 feet from the GSF Gas to Electric Power Plant. The only noise source was the power plant operations. Noise levels from the power plant operations ranged from 67.0 to 68.0 dBA.

M-7: Noise measurements at Site M-7 were conducted at the center of the cul-de-sac of Partridge Drive near Sandpiper Way. Noise sources included traffic on Valencia Avenue, aircraft overflight, and cars passing by on Partridge Drive. The centerline of Valencia Avenue was approximately 270 feet away from the sound level meter. Homes along Valencia Avenue in this neighborhood have an existing six-foot sound wall along Valencia Avenue.

M-8: Noise measurements at Site M-8 were conducted at 401 Hummingbird Drive, behind an existing six-foot sound wall at the residence and near a playground area. Noise sources included vehicular traffic on Valencia Avenue and Carbon Canyon Road and lawn mower noise in the neighborhood. The centerline of Valencia Avenue was approximately 186 feet away from the sound level meter. The centerline of Carbon Canyon Road was approximately 210 feet away from the sound level meter.

M-9: Noise measurements at Site M-9 were conducted behind an existing eight-foot sound wall in front of a residence. Noise sources included traffic on Imperial Highway and some traffic on Gingerwood Circle. The centerline of Imperial Highway was approximately 105 feet away from the sound level meter.

M-10: Noise measurements at Site M-10 were conducted at the cul-de-sac of Craftsman Circle near 523 Gingerwood Circle. Noise sources included traffic on Imperial Highway and some traffic on Gingerwood Circle. There is an existing 12-foot sound wall (6 feet of plexi-glass on top of 6 feet of concrete block wall) along Imperial Highway. The centerline of Imperial Highway was approximately 130 feet away from the sound level meter.

M-11: The proposed Birch Intermediate School is located directly adjacent to Birch Street but is approximately 1,645 feet from the edge of Valencia Avenue, separated by a sports park. The proposed intermediate school will have classroom buildings and an outdoor sports activity area adjacent to Birch Street. Ambient noise monitoring was conducted by LSA staff on February 27, 2004. The noise monitoring was conducted from 8:26 a.m. to 8:41 a.m. at a location on the northwest corner of the intersection of Birch Street and Valencia Avenue, approximately 45 feet from the centerline of both streets. The monitored results are as follows: 65 dBA L_{eq}, 76.3 dBA L_{max}, 49.3 dBA L_{min}, 72.4 dBA L_2, 69.9 dBA L_8, 64.9 dBA L_{25}, and 62.3 dBA L_{50}. Vehicular traffic on Valencia Avenue, including heavy trucks, contributed to most of the ambient noise, with a minor contribution from traffic on Birch Street.

It is found that on-site noise levels are relatively high in areas close to where active landfill activities occur (M-1, M-2, M-3, and M-6) and moderate in areas at a distance to these activities (M-4 and M-5). Off-site noise levels are low in areas away from major arterials (R-7) and moderate in areas adjacent to major roads (M-8, M-9 and M-10). It should be noted that the homes are shielded acoustically from the landfill by several local ridgelines. Noise that may be discernible from the landfill by residents may include distant “cracker shell” noise, as well as noise from flares and the gas-to-energy plant.

The County IWMD commissioned a noise impact study for the Olinda Alpha Landfill in 2000 (URS Greiner Woodward-Clyde, May 2000), in which six short-term and two long-term noise measurements were conducted. The short-term noise monitoring results were consistent with LSA’s findings for both on-site and off-site noise measurements. The long-term noise data from the May 2000 noise study showed that ambient noise levels at the nearest residential area are not correlated with landfill hours of operation. Ambient noise appeared to result from local activity only.

Modeled Existing Vehicular Traffic Noise. Table F lists the calculated traffic noise levels along roadway segments in the project vicinity. The FHWA highway traffic noise prediction model (FHWA RD-77-108) was used to evaluate highway traffic related noise conditions along Valencia Avenue, Carbon Canyon Road, Imperial Highway, Lambert Road, Birch Street, Rose Drive, and State Route 57 (SR-57). Table F shows that noise levels along most roadway segments in the project vicinity are high. The noise contour for the specified CNEL is expressed as distance from the centerline in each direction of the road segment.

Thresholds of Significance

A project will normally have a significant effect on the environment related to noise if it will substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of the community in which it is located. The applicable noise standards governing the project site are the criteria in the County's General Plan Noise Element and its Noise Ordinance. Because the project site is adjacent to residences in the City of Brea, the City's noise standards are also discussed in this analysis.

County of Orange

General Plan Noise Element. The Noise Element of the County of Orange (County) General Plan has developed noise standards for mobile noise sources. These standards address the impacts of noise from adjacent roadways and airports, including John Wayne Airport (JWA). The County specifies outdoor and indoor noise limits for residential uses, places of worship, educational facilities, hospitals, hotels/motels, and commercial and other land uses. The noise standard for exterior living areas is 65 dBA CNEL. The County prohibits new residential land uses within the 65 dBA CNEL contour from any airport or air station. Non-residential noise-sensitive land uses, such as hospitals, rest homes, convalescent hospitals, places of worship, and schools will not be permitted within the 65 dBA CNEL area from any source unless appropriate mitigation measures are included such that the standards contained in the Noise Element and in appropriate State and federal codes are met. The indoor noise standard is 45 dBA CNEL, which is consistent with the standard in the California Noise Insulation Standard. The County also enforces building sound transmission and indoor air ventilation requirements specified in Chapter 35 of the Uniform Building Code. However, for commercial uses the County only specifies interior noise standards in terms of the hourly L_{eq}. The noise level for the interior spaces of retail stores and restaurants shall not exceed 55 dBA L_{eq}.

Table F: Existing Traffic Noise Levels

Roadway Segment	ADT	Center-line to 70 CNEL (Feet)	Center-line to 65 CNEL (Feet)	Center-line to 60 CNEL (Feet)	CNEL (dBA) 50 Feet from Outermost Lane
Valencia Avenue					
North of Santa Fe Avenue	3,940	51	110	236	69.4
Carbon Canyon Road to Santa Fe Avenue	5,340	53	113	244	69.6
Between Birch Street and Carbon Canyon Road	18,370	75	158	338	70.7
Between Imperial Highway and Birch Street	11,800	57	118	252	68.8
Imperial Highway					
Between SR-57 and Associated Road	58,800	186	397	854	75.9
Between Associated Road and Kraemer Boulevard	45,030	157	333	715	74.8
Between Kraemer Boulevard and Valencia Avenue	44,550	154	330	710	75.5
East of Valencia Avenue	38,580	140	300	645	74.9
Carbon Canyon Road					
East of Valencia Avenue	18,180	54	112	239	68.4
Lambert Road					
West of Valencia Avenue	17,900	54	111	236	68.3
Between SR-57 and Associated Road	45,100	96	203	437	72.4
Birch Street					
West of Valencia Avenue	12,450	< 50[1]	88	186	66.8
Between SR-57 and Associated Road	21,060	59	123	263	69.0
Rose Drive					
East of Valencia Avenue	17,010	50	107	229	68.1
SR-57					
North of Lambert Road	214,000	793	1,707	3,675	84.8
Imperial Highway to Lambert Road	222,000	808	1,738	3,743	84.9
South of Imperial Highway	246,000	870	1,873	4,033	85.4

Source: LSA Associates, Inc., February 2004.

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[1] Traffic noise within 50 feet of roadway centerline requires site-specific analysis.

“Outdoor living area” is a term used by the County to define spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio, barbecue, and jacuzzi areas, etc., associated with residential uses; outdoor patient recovery or resting areas, etc., associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship that have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes that may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas; driveways; greenbelts; maintenance areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas). The County does not specify outdoor noise standards for non-outdoor living areas.

The standard County Conditions of Approval require that all residential and non-residential noise-sensitive structures be sound-attenuated against the combined impact of all present and projected noise from exterior noise sources (including aircraft and highway noise) to meet the interior noise criteria as specified in the Noise Element and Land Use/Noise Compatibility Manual (which is 45 dBA CNEL interior).

Noise Control Ordinance. The County’s Conditions of Approval require that all construction vehicles or equipment, fixed or mobile, operated within 1,000' of a dwelling unit shall be equipped with properly operating and maintained mufflers. All operations shall comply with Orange County Codified Ordinance Division 6 (Noise Control). Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings. As specified in the Orange County Codified Ordinance Division 6 (Noise Control), construction activities are generally restricted to between 7:00 a.m. and 8:00 p.m. from Monday through Saturday. No construction activity is permitted on Sundays and federal holidays. Construction noise during the allowed construction time periods are exempted from the noise level provisions in the noise control ordinance.

It is stated in the County’s Noise Control Ordinance that exterior noise levels for residential properties shall not exceed the basic noise standard of 55 dBA between the hours of 7:00 a.m. and 10:00 p.m. and shall not exceed 50 dBA between the hours of 10:00 p.m. and 7:00 a.m., plus the following limits:

- Basic noise level for a cumulative period of not more than 30 minutes in any 1 hour; or
- Basic noise level plus 5 dBA for a cumulative period of not more than 15 minutes in any 1 hour; or
- Basic noise level plus 10 dBA for a cumulative period of not more than 5 minutes in any 1 hour; or
- Basic noise level plus 15 dBA for a cumulative period of not more than 1 minutes in any 1 hour; or
- Basic noise level plus 20 dBA for any period of time.

The basic interior noise standard for residential uses are set as 45 dBA between 10:00 p.m. and 7:00 a.m., and 55 dBA between 7:00 a.m. and 10:00 p.m., plus the following limits:

- Basic noise level for a cumulative period of not more than five minutes in any one hour; or
- Basic noise level plus five dBA for a cumulative period of not more than one minute in any one hour; or
- Basic noise level plus 10 dBA for any period of time.

In the event that ambient noise levels exceed any of the above noise limits, the cumulative period applicable to said category shall be increased to reflect said ambient noise level.

It shall be unlawful for any person at any location within the unincorporated area of the County to create any noise, or to allow the creation of any noise, that causes the noise level to exceed the residential noise standards stated above. Each of the noise limits above shall be reduced by 5 dBA for noise consisting of impact noise, simple tone noise, speech, music, or any combination thereof.

City of Brea

Noise Element of the General Plan. The City's General Plan Noise Element states that "The City will use land use compatibility standards when planning and making development decisions in order to ensure that noise producers do not adversely affect sensitive receptors." The Noise Element also indicates that "Contours of 60 dBA (CNEL) or greater define noise impact areas." Based on the Noise/Land Use Compatibility chart included in the Noise Element, residential uses are normally acceptable in areas up to 60 dBA CNEL, conditionally acceptable in areas between 60 and 65 dBA CNEL, normally unacceptable in areas from 65 to 75 dBA CNEL, and clearly unacceptable in areas above 75 dBA CNEL.

Noise Control Ordinance. The City's Municipal Code, Chapter 8.20, Noise Control, adopted exterior and interior noise standards similar to those adopted by the County of Orange. Noise sources associated with construction, repair, remodeling, or grading of any real property are exempt from the provisions of the City's Noise Control Ordinance if the activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

Vibration Impact Criteria

The criteria for environmental impact from ground-borne vibration and noise are based on the maximum levels for a single event. Because there are no adopted vibration thresholds for areas adjacent to highways, vibration criteria recommended for areas adjacent to railroad tracks by the Federal Transit Administration (FTA) and Federal Railroad Administration (FRA) are listed below as guidelines.

Federal Transit Administration and Federal Railroad Administration. Both the FTA in its *Transit Noise and Vibration Impact Assessment* (FTA, April, 1995) and the FRA in its *High-Speed Ground Transportation Noise and Vibration Impact Assessment* (FRA, December, 1998) included ground-borne vibration and noise impact criteria guidance, as shown in Table G. The criteria presented in Table G account for variation in project types as well as the frequency of events, which differ widely among projects. This is accounted for in the criteria by distinguishing between projects with frequent and infrequent events, where the term "frequent events" is defined as more than 70 events per day.

There are some buildings, such as concert halls, TV and recording studios, and theaters, that can be very sensitive to vibration and noise but do not fit into any of the three categories described in Table G. Because of the sensitivity of these buildings, they usually warrant special attention during the environmental assessment of a transit project. Table H gives criteria for acceptable levels of ground-borne vibrations and noise for various types of special buildings. The criteria in Table H are related to ground-borne vibration causing human annoyance or interfering with use of vibration-sensitive equipment. It is extremely rare for vibration from train operations or highway traffic to cause any sort of building damage, even minor cosmetic damage. However, there is sometimes concern about damage to fragile historic buildings located near railroad track rights-of-way. Even in these cases, damage is unlikely except when the tracks will be very close to the structure.

Table G: Ground-Borne Vibration and Noise Impact Criteria

	Ground-Borne Vibration Impact Levels (VdB re 1 micro inch/sec)		**Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)**	
Land Use Category	**Frequent[1] Events**	**Infrequent[2] Events**	**Frequent[1] Events**	**Infrequent[2] Events**
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 VdB[3]	65 VdB[3]	B[4]	B[4]
Category 2: Residences and buildings where people normally sleep.	72 VdB	80 VdB	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use.	75 VdB	83 VdB	40 dBA	48 dBA

Source: Federal Transit Administration 1995.

[1] "Frequent Events" is defined as more than 70 events per day.

[2] "Infrequent Events" is defined as fewer than 70 events per day.

[3] This criterion limit is based on levels that are acceptable for most moderately-sensitive equipment, such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

[4] Vibration-sensitive equipment is not sensitive to ground-borne noise.

IMPACTS AND MITIGATION MEASURES

Short-Term Construction-Related Impacts

The project may require that additional buildings and structures be constructed at the Olinda Alpha Landfill and may include additional gas control facilities. Surface water drainage systems, landfill gas collection and control systems, and leachate collection and recovery systems will be expanded, as necessary, and a liner system for the lateral expansion will accommodate expansion of the landfill operations. Because the proposed horizontal expansion area is located in the northeast portion of the project site, it is farther away from the existing and planned off-site residences in the project vicinity than the existing landfilling area. Any construction activity required for the proposed project would be conducted away from these residences. Noise levels from construction activities on the project site would be below 50 dBA L_{max} at the nearest off-site residences for very limited times. Construction-related noise impacts from the proposed project would comply with the County's Noise Control Ordinance and would be less than significant.

Short-term noise impacts would be associated with excavation, grading, and backfilling to construct the liner system, surface water drainage systems, landfill gas collection and control systems, and leachate collection and recovery systems during construction of the proposed project. Construction-related short-term noise levels would be higher than existing ambient noise levels in the project area but would no longer occur once construction was completed.

Because the proposed project is not proposing an increase in daily tonnage rates, the equipment used for daily landfill operations will also be used during the expansion operation. Therefore, there is no need to transport additional construction equipment to the project site for daily operations. Landfill operations occur in discrete areas that move from day to day, and consequently, create their own noise characteristics. These various sequential phases would change the character of the noise generated on site and therefore the noise levels surrounding the site as operations progress. Despite the changing location of landfill equipment, similarities in the dominant noise sources and patterns of operation allow operations-related noise ranges to be categorized by work phase. Table I lists typical construction equipment noise levels recommended for noise impact assessments based on a distance of 50 feet between the equipment and a noise receptor. Typical noise levels range up to 91 dBA L_{max} at 50 feet during the noisiest construction phases. The site preparation phase, which includes excavation and grading of the site, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery such as backhoes, bulldozers, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve one or two minutes of full-power operation followed by three or four minutes at lower power settings.

Construction of the proposed project improvements is expected to require the use of earthmovers, bulldozers, and water and pickup trucks. This equipment would be used on the project site. Based on the information in Table I, the maximum noise level generated by each earthmover on the proposed project site is assumed to be 88 dBA L_{max} at 50 feet from the earthmover. Each bulldozer would also generate 88 dBA L_{max} at 50 feet. The maximum noise level generated by water and pickup trucks is approximately 86 dBA L_{max} at 50 feet from these vehicles. Each doubling of the sound source with

Table H: Ground-Borne Vibration and Noise Impact Criteria for Special Buildings

	Ground-Borne Vibration Impact Levels (VdB re 1 micro inch/sec)		Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)	
Type of Building or Room	**Frequent[1] Events**	**Infrequent[2] Events**	**Frequent[1] Events**	**Infrequent[2] Events**
Concert Halls	65 VdB	65 VdB	25 dBA	25 dBA
TV Studios	65 VdB	65 VdB	25 dBA	25 dBA
Recording Studios	65 VdB	65 VdB	25 dBA	25 dBA
Auditoriums	72 VdB	80 VdB	30 dBA	38 dBA
Theaters	72 VdB	80 VdB	35 dBA	43 dBA

Source: Federal Transit Administration 1995.

[1] "Frequent Events" is defined as more than 70 events per day.
[2] "Infrequent Events" is defined as fewer than 70 events per day.

Table I: Typical Construction Equipment Noise Levels

Type of Equipment	Range of Maximum Sound Levels Measured (dBA at 50 feet)	Suggested Maximum Sound Levels for Analysis (dBA at 50 feet)
Pile Drivers, 12,000 to 18,000 ft-lb/blow	81 to 96	93
Rock Drills	83 to 99	96
Jack hammers	75 to 85	82
Pneumatic Tools	78 to 88	85
Pumps	74 to 84	80
Dozers	77 to 90	85
Scrapers	83 to 91	87
Haul Trucks	83 to 94	88
Cranes	79 to 86	82
Portable Generators	71 to 87	80
Rollers	75 to 82	80
Tractors	77 to 82	80
Front-End Loaders	77 to 90	86
Hydraulic Backhoe	81 to 90	86
Hydraulic Excavators	81 to 90	86
Graders	79 to 89	86
Air Compressors	76 to 89	86
Trucks	81 to 87	86

Source: Noise Control for Buildings and Manufacturing Plants, Bolt, Beranek & Newman 1987.

equal strength increases the noise level by 3 dBA. Assuming that each piece of construction equipment operates at some distance from the other equipment, the worst-case combined noise level during this phase of construction would be 91 dBA L_{max} at a distance of 50 feet from the active construction area.

The nearest noise-sensitive uses are those to the southwest of the project site approximately 4,500 feet from the proposed expansion area, which would provide a 39 dBA noise reduction by distance divergence alone. In addition, the intervening ridgeline between the expansion area and the off-site residences acts as a barrier and provides a minimum 5 dBA reduction. Therefore, these nearest off-site residences may be subject to short-term intermittent maximum noise reaching 47 dBA L_{max}, generated by construction activities on the project site. This range of construction noise levels would be below the County's 75 dBA L_{max} for daytime hours and 70 dBA L_{max} for nighttime hours. They would also be lower than the 55 dBA L_{50} for daytime hours and 50 dBA L_{50} for nighttime hours in the nearest residential areas. In addition, on-site construction activity would comply with the County's Noise Control Ordinance requirements. Therefore, project-related construction noise impacts would be less than significant.

Long-Term On-Site Stationary Noise Impacts

The proposed project expansion area is located in the northeast portion of the landfill site. Tipping/filling activities generate approximately 88.6 dBA L_{max} at a distance of 50 feet. Scraping and bulldozing activities generate approximately 84 dBA L_{max} at a distance of 100 feet (or approximately 90 dBA L_{max} at a distance of 50 feet). Power plant-related operations generate approximately 69.7 dBA L_{max} at a distance of 50 feet. The nearest off-site residences are more than 1,590 feet from the power plant and 4,500 feet from the tipping/filling area (in the expansion area). Distance divergence alone would provide the off-site residences a minimum of 30 and 39 dBA, respectively, in noise attenuation. The intervening terrain (i.e., the local ridgelines) would provide an additional noise reduction of 5 dBA or more. Therefore, noise associated with power plant operations on the project site would be reduced to 35 dBA L_{max} or lower. Noise associated with landfill activities (including the "cracker shell" noise) in the expansion area of the project site would be reduced to 46 dBA L_{max} or lower. This range of noise levels would be lower than the County's (and the City of Brea's) noise ordinance maximum noise levels for daytime and nighttime periods. This range of noise levels is also lower than the County's (and the City of Brea's) noise ordinance medium (L_{50}) noise levels for daytime and nighttime periods. In addition, in the neighborhood of these off-site residences this range of noise would be below the traffic noise and other community noises combined. No significant stationary noise impact from the proposed project would occur. No mitigation measures would be required.

Long-Term Traffic Noise Impacts

The proposed project would result in the continuation of landfill-related vehicular trips to and from the Olinda Alpha Landfill. Along roadway segments with existing and/or projected heavy volumes of traffic, project-related traffic would not contribute significant changes to the traffic noise. Along roadway segments with relatively low traffic volumes, there would be a higher percentage of traffic from project-related vehicle trips. Although traffic noise along these less traveled roadway segments would be much lower than those heavily traveled, project-related traffic noise impacts would be potentially significant due to the high percentage of truck traffic.

Based on the traffic study prepared for this project, the proposed project would generate 2,168 daily vehicle trips. These daily traffic trips would be distributed through Valencia Avenue, Imperial Highway, Lambert Road, and SR-57.

The FHWA highway traffic noise prediction model (FHWA RD-77-108) was used to evaluate highway traffic-related noise conditions along Valencia Avenue, Imperial Highway, Lambert Road, Birch Street, Rose Drive, and Carbon Canyon Road in the project vicinity. Standard vehicle mix for Orange County roadways was used for traffic on Carbon Canyon Road, Birch Street, and Rose Drive. Traffic mix along Imperial Highway (SR-90) in the project area included in Caltrans Annual Average Daily Truck Traffic on the California State Highway System was used for Imperial Highway and Lambert Road in the project area. Truck percentages on Valencia Avenue were increased based on the daily vehicular trips related to landfill operations. The modeled 24-hour CNEL levels are shown in Tables J and K. These noise levels represent the worst-case scenario, which assumes no shielding is provided between the traffic and the location where the noise contours are drawn. The specific assumptions used in developing these noise levels and model printouts are provided in Appendix A.

Table J shows that traffic noise along roadway segments in the project vicinity under the future no project scenario would continue to be relatively high, except along Valencia Avenue and Birch Street. Table K shows that project-related traffic noise level increases would be small (3 dBA or less) and would not be perceptible to the human ear along most of the roadway segments in the project vicinity, except along Valencia Avenue north of Carbon Canyon Road leading to the landfill. Along this segment of Valencia Avenue, landfill-related traffic accounts for approximately half of the daily traffic volume. Without the truck-dominated landfill traffic, noise along this segment of Valencia Avenue would be approximately 11 to 12 dBA lower compared to the levels with landfill traffic included. Although homes are protected by a six-foot sound wall and therefore not be exposed to outdoor noise levels exceeding the 65 dBA CNEL standard, the 12 dBA increase in traffic noise between the with project and no project scenarios is considered substantial. In an outdoor environment a noise increase of 3 dBA or more can be discerned by the human ear. Without the landfill traffic, homes along Valencia Avenue north of Carbon Canyon Road would be exposed to noise levels lower than the 53 dBA CNEL. With the landfill traffic, these frontline homes would be exposed to traffic noise lower than 65 dBA CNEL (with a 6-foot sound wall). Though the project will not increase noise above existing conditions because it would not change the volume of traffic as it is occurring in 2004, the continuation of landfill activities due to the project at 2013 would result in a 12 dBA increase above the no project scenario. As such, the 12 dBA increase in noise is considered substantial and is a potentially significant impact for long-term transportation-related noise.

The project will not increase the rate of daily traffic and thus will not increase noise levels on the roads leading to the project site beyond those currently experienced. The nearest existing and planned residential development is located adjacent to Valencia Avenue and Carbon Canyon Road. Valencia Avenue serves as the access road to and from the Olinda Alpha Landfill. The City of Brea, as the Lead Agency of this nearest residential development project, has placed noise standards upon the developer of the residential project as a condition of approval. Noise abatement measures such as landscaped berms or sound walls has been or will be constructed as necessary to ensure that noise

Table J: Future Baseline (No Project) Traffic Noise Levels

Roadway Segment	ADT	Center-line to 70 CNEL (Feet)	Center-line to 65 CNEL (Feet)	Center-line to 60 CNEL (Feet)	CNEL (dBA) 50 Feet from Outermost Lane
Valencia Avenue					
North of Santa Fe Avenue	2,675	< 50[1]	< 50	< 50	58.5
Carbon Canyon Road to Santa Fe Avenue	2,675	< 50	< 50	< 50	58.5
Between Birch Street and Carbon Canyon Road	20,026	58	119	255	68.8
Between Imperial Highway and Birch Street	10,078	< 50	77	162	65.8
Imperial Highway					
Between SR-57 and Associated Road	59,496	188	400	861	76.0
Between Associated Road and Kraemer Boulevard	48,496	165	350	751	75.1
Between Kraemer Boulevard and Valencia Avenue	48,389	163	349	751	75.9
East of Valencia Avenue	44,764	155	331	713	75.5
Carbon Canyon Road					
East of Valencia Avenue	38,965	87	185	396	71.7
Lambert Road					
West of Valencia Avenue	35,684	82	174	374	71.3
Between SR-57 and Associated Road	47,684	99	211	453	72.6
Birch Street					
West of Valencia Avenue	17,000	< 50	107	229	68.1
Between SR-57 and Associated Road	28,000	71	149	318	70.3
Rose Drive					
East of Valencia Avenue	21,949	61	127	271	69.2
SR-57					
North of Lambert Road	330,557	1,059	2,280	4,911	86.7
Imperial Highway to Lambert Road	317,473	1,031	2,220	4,780	86.5
South of Imperial Highway	316,827	1,030	2,217	4,774	86.5

Source: LSA Associates, Inc., February 2004.

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[1] Traffic noise within 50 feet of roadway centerline requires site-specific analysis.

Table K: Future with Project Traffic Noise Levels

Roadway Segment	ADT	Center-line to 70 CNEL (Feet)	Center-line to 65 CNEL (Feet)	Center-line to 60 CNEL (Feet)	CNEL (dBA) 50 Feet from Outermost Lane	Increase from Baseline Level, dBA
Valencia Avenue						
North of Santa Fe Avenue	5,000	60	129	277	70.5	12.0
Carbon Canyon Road to Santa Fe Avenue	5,000	51	108	233	69.3	10.8
Between Birch Street and Carbon Canyon Road	22,000	84	177	381	71.5	2.7
Between Imperial Highway and Birch Street	12,000	58	119	254	68.8	3.0
Imperial Highway						
Between SR-57 and Associated Road	61,000	191	407	875	76.1	0.1
Between Associated Road and Kraemer Boulevard	50,000	168	357	767	75.2	0.1
Between Kraemer Boulevard and Valencia Avenue	50,000	166	357	767	76.0	0.1
East of Valencia Avenue	45,000	155	332	715	75.6	0.1
Carbon Canyon Road						
East of Valencia Avenue	39,000	87	185	397	71.7	0.0
Lambert Road						
West of Valencia Avenue	36,000	83	175	376	71.4	0.1
Between SR-57 and Associated Road	48,000	100	212	455	72.6	0.0
Birch Street						
West of Valencia Avenue	17,000	< 50	107	229	68.1	0.0
Between SR-57 and Associated Road	28,000	71	149	318	70.3	0.0
Rose Drive						
East of Valencia Avenue	22,000	61	127	271	69.2	0.0
SR-57						
North of Lambert Road	331,000	1,060	2,282	4,915	86.7	0.0
Imperial Highway to Lambert Road	318,000	1,032	2,222	4,786	86.5	0.0
South of Imperial Highway	318,000	1,032	2,222	4,786	86.5	0.0

Source: LSA Associates, Inc., February 2004.

levels for all low- and medium-density residential property will not exceed 65 dBA CNEL. There is an existing six-foot tall sound wall along Valencia Avenue for existing homes in this area. In addition, future residential development that will be built before year 2013 near the project site will be mitigated for noise from traffic along the local roads. For future homes along Valencia Avenue that will be built between 2013 and 2021 and have outdoor active use areas within the 65 dBA CNEL impact area (see Table K), a six-foot sound wall is required along the property line. The County of Orange IWMD should contribute to a roadway noise reduction program if the City of Brea has instituted a program for traffic noise reduction along Valencia Avenue north of Carbon Canyon Road.

However, trucks passing by would result in relatively high single event noise exposure levels at residences along the access roads leading to the project site, including Imperial Highway, Lambert Road, and Valencia Avenue. Although the single event noise exposures would cause annoyance to residences along these access roads, the noise impacts would not be considered significant based on the County's (and City of Brea's) long-term noise standards from transportation related noise.

Potential Noise Impacts from Vehicular Traffic on the Proposed Birch Street Intermediate School . Based on Table K, Future with Project Traffic Noise Levels, the 70, 65, and 60 dBA CNEL noise contours would extend to 84, 177, and 381 feet, respectively, from the centerline of Valencia Avenue. Taking into account the greater distance of the school location, the proposed school site would be exposed to traffic noise up to 50 dBA CNEL from Valencia Avenue, when no man-made or natural intervening barrier exists. This range of traffic noise levels is much lower than the 65 dBA CNEL normally acceptable exterior noise standard for school uses. Standard building attenuation in Southern California would reduce the exterior noise by 12 dBA with windows open and by 24 dBA with windows closed. Therefore, with windows closed, traffic noise on Valencia Avenue would be reduced to 26 dBA CNEL. With windows open, this noise is reduced to 38 dBA CNEL. This range of noise levels is lower than the 24-hour averaged daily 45 dBA CNEL noise level normally acceptable inside classrooms.

Heavy-duty refuse/waste trucks would result in approximately 89 dBA L_{max} when passing by at 50 feet. At 1,645 feet, this maximum noise level associated with refuse/waste trucks would be reduced to 59 dBA Lmax from distance attenuation alone. (Point sources receive 6 dBA noise reduction per doubling of the distance from the source.) This maximum noise level is lower than traffic noise on Birch Street and would be further reduced inside the classrooms or other noise-sensitive buildings on the school site. Therefore, with windows closed, refuse/waste truck noise on Valencia Avenue would be reduced to 35 dBA L_{max}. With windows open, this noise is reduced to 47 dBA L_{max}. This range of maximum noise levels is lower than the 70 dBA L_{max} maximum noise level or the Caltrans 52 dBA L_{eq} noise level normally acceptable inside classrooms.

Based on Table K, Future with Project Traffic Noise Levels, the 65 and 60 dBA CNEL noise contours would extend to 107 and 229 feet, respectively, from the centerline of Birch Street. Therefore, the proposed school site would be exposed to traffic noise up to 65 dBA CNEL from Birch Street when no man-made or natural intervening barrier exists. The proposed intermediate school would place staff and visitor parking along the southern perimeter of the site along Birch Street. This layout would minimize traffic noise impacts from Birch Street on classrooms. Noise impacts from Birch Street traffic would need to be evaluated for the proposed intermediate school outdoor activity areas when the school site plan is available. However, because no landfill-related truck traffic is permitted to use Birch Street, no landfill-related off-site noise impacts would occur on the proposed intermediate school site.

Potential Noise Impacts from On-Site Landfill Operations on the Proposed Birch Street Intermediate School. The proposed intermediate school is approximately 4,300 feet from the residences near Sandpiper Way, the residences nearest the landfill site. These residences are more than 4,250 feet from the landfill expansion area in the northeastern portion of the landfill. Therefore, noise associated with daily landfill operations would be attenuated by more than 40 dBA at these residences. The Birch Intermediate School is located much farther away than these residences. Intervening terrain (local ridgelines) and man-made structures between the school site and the landfill expansion area would provide additional noise attenuation. Due to the large distance between the proposed school and landfill activities in the expansion area, no landfill noise would be perceived at the school site. No significant noise impacts would occur due to the landfill expansion project.

Vibration Impacts

On-Site Construction and Landfill Related Activities. The proposed project would result in the continued landfill operations in the expansion area in the northeast portion of the project site. Groundborne vibration from on-site construction and landfill related activities would be mostly low to moderate, and would not be perceptible at any off-site sensitive receptor locations.

Bulldozers and other heavy-tracked construction/landfill equipment generate approximately 92 VdB of groundborne vibration when measured at 50 feet, based on the Transit Noise and Vibration Impact Assessment (FTA, April 1995). This level of groundborne vibration exceeds the threshold of human perception, which is around 65 VdB. Based on the California Department of Transportation's *Transportation Related Earthborne Vibration, Technical Advisory* (Rudy Hendricks, July 24, 1992), vibration level at 100 feet is approximately 6 VdB lower than the vibration level at 50 feet. Vibration at 200 feet from the source is more than 6 VdB lower than the vibration level at 100 feet, or more than 12 VdB lower than the vibration level at 50 feet. Therefore, at the nearest residences to the landfill located 1,590 feet from the construction activity may be exposed to groundborne vibration up to 62 VdB. This level of vibration is lower than the human perception threshold of 65 VdB for buildings where low ambient vibration is essential for interior operations (Category 1 in Table G). No annoyance at the nearest off-site residences or any damage to the buildings would occur from on-site construction and landfill-related activities.

On-Road Truck Vibration. The proposed project would result in the continuation of truck traffic to and from the Olinda Alpha Landfill on access roads leading to the landfill from 2013 to 2021. Because the rubber tires and suspension systems of refuse trucks and other on-road vehicles provide vibration isolation, it is unusual for on-road vehicles to cause groundborne noise or vibration problems. When on-road vehicles cause effects such as rattling of windows, the source is almost always airborne noise. Most problems with on-road vehicle-related vibration can be directly related to a pothole, bump, expansion joint, or other discontinuity in the road surface. Smoothing the bump or filling the pothole will usually solve the problem. Based on Caltrans Technical Advisory (Rudy Hendriks, July 24, 1992), maximum highway truck traffic vibration levels would be approximately

0.06 inches per second at 25 feet, or 60 VdB. This is lower than the 65 VdB threshold of human perception (see Table D) and would not have any impact on the buildings. Within the project area there are no homes within 25 feet of a roadway centerline along the travel routes for trucks to the project site. Therefore, levels of vibration are below the threshold of human perception and no vibration impacts would occur.

Mitigation Measures

Construction Impacts. Construction of the proposed project in later phases would potentially result in relatively high noise levels. However, due to the distance to the nearest residence, no construction noise impacts are anticipated. No mitigation is required.

Traffic Noise Impacts. For residential units on Valencia Avenue north of Carbon Canyon Road which are approved prior to any approval of an expansion at Olinda Alpha Landfill, which are constructed and occupied before 2013 and which would be impacted by 65 dBA CNEL or higher traffic noise, the County of Orange IWMD will contribute a fair share to a road noise reduction program for these residences, if such a program is implemented by the City of Brea. This program could potentially implement a variety of road noise reduction measures which may include reduction in road speeds on the segment of Valencia Avenue north of Carbon Canyon Road, construction of sound walls adjacent to the affected residences and/or installation of rubberized asphalt concrete on Valencia Avenue north of Carbon Canyon Road.

Vibration Impacts. No mitigation measures would be required for the proposed project.

Level of Significance after Mitigation

With implementation of the identified mitigation measures, potential long-term noise impacts would be reduced to below the level of significance.

ALTERNATIVES

Alternative 1: No Project Alternative (No Action)

Since neither the vertical nor horizontal expansion at the Olinda Alpha Landfill would occur under this project alternative, approximately 1,000 tons per day (TPD) of MSW, which is in excess of what could be accommodated at the FRB and Prima Deschecha Landfills, would have to be accommodated at landfills outside of Orange County, since no increases in daily tonnage at FRB or Prima Deschecha landfills are assumed. Out-of-County landfills would have to be permitted to accept the excess tonnage from Orange County and may include El Sobrante Landfill in Riverside County and/or the Mid-Valley Landfill in San Bernardino County.

Because no expansion would occur at Olinda Alpha Landfill after 2013, no additional construction and landfill activities would occur. The landfill activities would be winding down for closure of the landfill. Noise associated with on-site construction and landfill operations would cease to occur.

Under this project alternative, no refuse or waste trucks would come to the Olinda Alpha Landfill after year 2013. Therefore, landfill-related traffic would be reduced to only those employees to process and maintain the landfill closure. Traffic noise along access roads would be reduced to those similar to levels shown in Table J for the future no project scenarios. In addition, although no significant impacts have been identified, traffic-related vibration would also be reduced due to lower traffic volumes without the proposed project.

Regionally, noise and vibration associated with vehicles carrying municipal solid waste would be relocated along routes to other landfills accepting municipal solid waste that was previously destined for Olinda Alpha Landfill.

Alternative 2: Two Landfill System in 2013 (Prima Deschecha Daily Tonnage Increase)

Under this project alternative, neither the vertical nor horizontal expansion at the Olinda Alpha Landfill would occur. Under this project alternative, the number of truck trips to Prima Deschecha Landfill would increase, although the duration of the trips would be reduced since the life of the landfill would be shortened.

Since no expansion would occur at Olinda Alpha Landfill after 2013, no additional construction and landfill activities would occur. The landfill activities would be winding down for closure of the landfill. Noise associated with on-site construction and landfill operations would cease to occur.

Under this project alternative, no refuse or waste trucks would come to the Olinda Alpha Landfill after year 2013. Therefore, landfill-related traffic would be reduced to only those employees to process and maintain the landfill closure. Traffic noise along access roads would be reduced to those similar to levels shown in Table J for the future no project scenario. In addition, although no significant impacts have been identified, traffic-related vibration would also be reduced due to lower traffic volumes without the proposed project.

Because truck trips to Prima Deschecha Landfill would increase as a result of this project alternative, traffic noise and vibration along access roads leading to Prima Deschecha Landfill would increase.

Regionally, noise and vibration associated with vehicles carrying municipal solid waste would be relocated along routes to other landfills accepting municipal solid waste that was previously destined for Olinda Alpha Landfill.

Alternative 3: Two Landfill System in 2013 (FRB Daily Tonnage Increase)

Under this project alternative, neither the vertical nor horizontal expansion at the Olinda Alpha Landfill would occur. Under this project alternative, the number of truck trips to FRB Landfill would increase, although the duration of the trips would be reduced since the life of the landfill would be shortened.

Because no expansion would occur at Olinda Alpha Landfill after 2013, no additional construction and landfill activities would occur. The landfill activities would be winding down for closure of the landfill. Noise associated with on-site construction and landfill operations would cease to occur.

Under this project alternative, no refuse or waste trucks would come to the Olinda Alpha Landfill after year 2013. Therefore, landfill-related traffic would be reduced to only those employees to process and maintain the landfill closure. Traffic noise along access roads would be reduced. In addition, traffic-related vibration would also be reduced.

Because truck trips to FRB Landfill would increase as a result of this project alternative, traffic noise and vibration along access roads leading to FRB Landfill would increase.

Regionally, noise and vibration associated with vehicles carrying municipal solid waste would be relocated along routes to other landfills accepting municipal solid waste that was previously destined for Olinda Alpha Landfill.

CUMULATIVE IMPACTS

Because the project expansion area is at least 4,250 feet from the nearest off-site sensitive uses, noise associated with construction and daily operations on the project site would have little or no cumulative noise impacts on off-site uses.

Off-site landfill-related traffic, including heavy-duty waste/refuse trucks, would contribute to potentially significant noise impacts due to the 10 to 12 dBA difference with project traffic over the no project scenario. However, existing and proposed homes along the access roads, including Valencia Avenue north of Carbon Canyon Road, have or would be required (by the City of Brea) to have a six-foot sound wall along their property line for their outdoor living area so that the 65 dBA CNEL standard is not exceeded. In addition, traffic noise at homes or other sensitive uses along Imperial Highway leading to the project site are or will have been mitigated through sound wall implementation associated with the Imperial Highway Smart Street project. Therefore, no significant cumulative noise impacts are anticipated from the proposed project.

In addition, because no significant vibration impacts were identified for both on-site operations and off-site truck traffic, no significant cumulative vibration impacts would occur.

REFERENCES

Bolt, Beranek, & Newman, 1987, Noise Control for Buildings and Manufacturing Plants.

California Department of Transportation, July 24, 1992. Transportation Related Earthborne Vibration, Technical Advisory (Rudy Hendricks).

County of Orange, Noise Element and Noise Ordinances.

Federal Highway Administration, 1977, Highway Traffic Noise Prediction Model, FHWA RD-77-108.

Federal Transit Administration, April 1995. Transit Noise and Vibration Impact Assessment.

APPENDIX A

FHWA TRAFFIC NOISE MODEL PRINTOUTS

OLINDA ALPHA LANDFILL EXPANSION

FHWA TRAFFIC NOISE MODEL PRINTOUTS

EXISTING (YEAR 2004) CONDITIONS

```
                        TABLE PND830AVA4
               FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/17/04
ROADWAY SEGMENT: VALENCIA AVE NORTH OF SANTA FE AVE
NOTES: EXISTING TRAFFIC
______________________________________________________________________

                         * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3940    SPEED (MPH): 35     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       37.51         6.37        4.47
M-TRUCKS
        5.79         0.41        0.08
H-TRUCKS
       43.41         1.93        0.03

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                    * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  69.42

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
    51.2         109.8        236.2        508.6

______________________________________________________________________
```

```
                        TABLE PND830AVA3
                FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/17/04
ROADWAY SEGMENT: VALENCIA AVE BTWN LAMBERT RD AND SANTA FE AVE
NOTES: EXISTING TRAFFIC
----------------------------------------------------------------------

                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 5340    SPEED (MPH): 35     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       47.47        8.00        5.73
M-TRUCKS
        4.66        0.32        0.11
H-TRUCKS
       32.21        1.44        0.06

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT
----------------------------------------------------------------------

                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  69.62

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
    52.8         113.2        243.5        524.5
----------------------------------------------------------------------
```

```
                              TABLE PND830AVA2
                   FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/17/04
ROADWAY SEGMENT: VALENCIA AVE BIRCH ST TO LAMBERT RD
NOTES: EXISTING TRAFFIC
______________________________________________________________________

                         * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 18370    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
        71.93        11.97        8.90
M-TRUCKS
         3.83         0.22        0.47
H-TRUCKS
         2.32         0.07        0.29

ACTIVE HALF-WIDTH (FT): 18       SITE CHARACTERISTICS: SOFT
______________________________________________________________________

                    * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  70.67

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
     74.8        157.5        337.5        726.2
______________________________________________________________________
```

```
                         TABLE PND830AVA1
                FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/17/04
ROADWAY SEGMENT: VALENCIA AVE NORTH OF IMPERIAL HWY
NOTES: EXISTING TRAFFIC
-----------------------------------------------------------------------

                    * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 11800    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93       11.97        8.90
M-TRUCKS
        3.83        0.22        0.47
H-TRUCKS
        2.32        0.07        0.29

ACTIVE HALF-WIDTH (FT): 18       SITE CHARACTERISTICS: SOFT
-----------------------------------------------------------------------

               * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  68.75

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     57.0        117.9       251.6        540.8
-----------------------------------------------------------------------
```

TABLE PND830AIH4
FHWA ROADWAY NOISE LEVEL ANALYSIS

```
RUN DATE: 2/17/04
ROADWAY SEGMENT: IMPERIAL HWY BTWN SR-57 AND ASSOCIATED ROAD
NOTES: EXISTING TRAFFIC
```

```
                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 58800    SPEED (MPH): 50     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY           EVENING     NIGHT
       ---           -------     -----
AUTOS
       71.93         11.97        8.90
M-TRUCKS
        3.83          0.22        0.47
H-TRUCKS
        2.32          0.07        0.29

ACTIVE HALF-WIDTH (FT): 30      SITE CHARACTERISTICS: SOFT
```

```
                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  75.92

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
    186.4        397.3        853.9       1838.4
```

```
                         TABLE PND830AIH3
                FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/17/04
ROADWAY SEGMENT: IMPERIAL HWY WEST OF KRAEMER BLVD
NOTES: EXISTING TRAFFIC
----------------------------------------------------------------------

                      * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 45030    SPEED (MPH): 50     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
        71.93        11.97        8.90
M-TRUCKS
         3.83         0.22        0.47
H-TRUCKS
         2.32         0.07        0.29

ACTIVE HALF-WIDTH (FT): 30      SITE CHARACTERISTICS: SOFT

----------------------------------------------------------------------

                 * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  74.76

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
    156.9        333.0        715.0       1539.0

----------------------------------------------------------------------
```

```
                             TABLE PND830AIH2
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/17/04
ROADWAY SEGMENT: IMPERIAL HWY WEST OF VALENCIA AVENUE
NOTES: EXISTING TRAFFIC
______________________________________________________________________

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 44550    SPEED (MPH): 50     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93       11.97        8.90
M-TRUCKS
        3.83        0.22        0.47
H-TRUCKS
        2.32        0.07        0.29

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  75.52

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
    154.1        330.1        710.3        1529.5

______________________________________________________________________
```

```
                              TABLE PND830AIH1
                    FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/17/04
ROADWAY SEGMENT: IMPERIAL HWY EAST OF VALENCIA AVENUE
NOTES: EXISTING TRAFFIC
----------------------------------------------------------------------

                         * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 38580    SPEED (MPH): 50     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93       11.97        8.90
M-TRUCKS
        3.83        0.22        0.47
H-TRUCKS
        2.32        0.07        0.29

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

----------------------------------------------------------------------

                    * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  74.90

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
    140.2        300.0        645.4        1389.7

----------------------------------------------------------------------
```

```
                         TABLE PND830ACCR
                FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 2/17/04
ROADWAY SEGMENT: CARBON CANYON ROAD EAST OF VALENCIA AVENUE
NOTES: EXISTING TRAFFIC
____________________________________________________________________

                    * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 18180    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       75.51        12.57        9.34
M-TRUCKS
        1.56         0.09        0.19
H-TRUCKS
        0.64         0.02        0.08

ACTIVE HALF-WIDTH (FT): 18       SITE CHARACTERISTICS: SOFT
____________________________________________________________________

                * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  68.41

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     54.4        112.0        238.8        513.3
____________________________________________________________________
```

```
                              TABLE LR1EX
                    FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: LAMBERT RD W/O VALENCIA AVE
NOTES: EXISTING TRAFFIC

                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 17900    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  68.34

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
     53.9        110.9        236.4        508.0
```

```
                             TABLE LR2EX
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: LAMBERT RD SR-57 TO ASSOCIATED RD
NOTES: EXISTING TRAFFIC

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 45100    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  72.35

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     95.8        203.4        436.8        940.2
```

```
                         TABLE PND830ABSW
               FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/17/04
ROADWAY SEGMENT: BIRCH STREET WEST OF VALENCIA AVENUE
NOTES: EXISTING TRAFFIC
____________________________________________________________________

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12450    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT
____________________________________________________________________

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  66.76

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          87.8        185.9         399.0
____________________________________________________________________
```

```
                             TABLE BS2EX
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: BIRCH ST SR-57 TO ASSOCIATED RD
NOTES: EXISTING TRAFFIC


                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 21060    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT


                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  69.04

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     59.4        123.3        263.3        566.1
```

```
                              TABLE PND830ARD
                   FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/17/04
ROADWAY SEGMENT: ROSE DRIVE EAST OF VALENCIA AVENUE
NOTES: EXISTING TRAFFIC
______________________________________________________________________

                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 17010    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  68.12

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     0.0         107.3       228.6        491.1

______________________________________________________________________
```

```
                             TABLE SR571EX
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: SR-57 NORTH OF LAMBERT ROAD
NOTES: EXISTING TRAFFIC

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 214000    SPEED (MPH): 65     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       69.53       11.57        8.60
M-TRUCKS
        3.38        0.20        0.41
H-TRUCKS
        5.46        0.17        0.68

ACTIVE HALF-WIDTH (FT): 42      SITE CHARACTERISTICS: SOFT

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  84.79

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
    793.1       1706.6       3675.1       7915.7
```

```
                             TABLE SR572EX
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: SR-57 IMPERIAL HWY TO LAMBERT ROAD
NOTES: EXISTING TRAFFIC


                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 220000    SPEED (MPH): 65     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       69.53       11.57        8.60
M-TRUCKS
        3.38        0.20        0.41
H-TRUCKS
        5.46        0.17        0.68

ACTIVE HALF-WIDTH (FT): 42      SITE CHARACTERISTICS: SOFT


                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  84.91

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
    807.9       1738.3        3743.4       8062.9
```

```
                         TABLE SR57EX
                FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 2/20/04
ROADWAY SEGMENT: SR-57 SOUTH OF IMPERIAL HWY
NOTES: EXISTING TRAFFIC
----------------------------------------------------------------------

                    * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 246000    SPEED (MPH): 65     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       69.53        11.57        8.60
M-TRUCKS
        3.38         0.20        0.41
H-TRUCKS
        5.46         0.17        0.68

ACTIVE HALF-WIDTH (FT): 42      SITE CHARACTERISTICS: SOFT

----------------------------------------------------------------------

               * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  85.39

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
    870.2       1872.6       4032.8       8686.3

----------------------------------------------------------------------
```

OLINDA ALPHA LANDFILL EXPANSION

FHWA TRAFFIC NOISE MODEL PRINTOUTS

FUTURE BASELINE CONDITIONS

```
                              TABLE VA1FB
                   FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: VALENCIA AVE N/O SANTA FE RD
NOTES: FUTURE NO PROJECT
______________________________________________________________________

                         * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2675    SPEED (MPH): 35     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       75.51        12.57        9.34
M-TRUCKS
        1.56         0.09        0.19
H-TRUCKS
        0.64         0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                    * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  58.47

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0          0.0          0.0         95.0

______________________________________________________________________
```

```
                              TABLE VA2FB
                   FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: VALENCIA AVE LAMBERT RD TO SANTA FE ROAD
NOTES: FUTURE NO PROJECT
_____________________________________________________________________

                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2675    SPEED (MPH): 35     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       75.51        12.57        9.34
M-TRUCKS
        1.56         0.09        0.19
H-TRUCKS
        0.64         0.02        0.08

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

_____________________________________________________________________

                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  58.47

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
      0.0          0.0         0.0         95.0

_____________________________________________________________________
```

TABLE VA3FB
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 2/20/04
ROADWAY SEGMENT: VALENCIA AVE BIRCH ST TO LAMBERT RD
NOTES: FUTURE ~~WITH~~ NO PROJECT

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 20026   SPEED (MPH): 45   GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18   SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.83

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
57.6	119.3	254.6	547.4

TABLE VA4FB
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 2/20/04
ROADWAY SEGMENT: VALENCIA AVE IMPERIAL HWY TO BIRCH ST
NOTES: FUTURE ~~WITH~~ NO PROJECT

```
                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 10078    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       75.51        12.57        9.34
M-TRUCKS
        1.56         0.09        0.19
H-TRUCKS
        0.64         0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT
```

```
                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  65.84

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
      0.0         76.8       161.7        346.7
```

```
                             TABLE IH1FB
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: IMPERIAL HWY SR-57 TO ASSOCIATED RD
NOTES: FUTURE NO PROJECT
______________________________________________________________________

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 59496    SPEED (MPH): 50     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93       11.97        8.90
M-TRUCKS
        3.83        0.22        0.47
H-TRUCKS
        2.32        0.07        0.29

ACTIVE HALF-WIDTH (FT): 30      SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  75.97

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
    187.8        400.4        860.6       1852.9

______________________________________________________________________
```

```
                              TABLE IH2FB
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: IMPERIAL HWY W/O KRAEMER BLVD
NOTES: FUTURE NO PROJECT
______________________________________________________________________

                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 48496    SPEED (MPH): 50     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93       11.97        8.90
M-TRUCKS
        3.83        0.22        0.47
H-TRUCKS
        2.32        0.07        0.29

ACTIVE HALF-WIDTH (FT): 30      SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  75.08

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
    164.5        349.7        751.1       1616.9

______________________________________________________________________
```

```
                             TABLE IH3FB
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: IMPERIAL HWY W/O VALENCIA AVE
NOTES: FUTURE NO PROJECT
______________________________________________________________________

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 48389    SPEED (MPH): 50     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93       11.97        8.90
M-TRUCKS
        3.83        0.22        0.47
H-TRUCKS
        2.32        0.07        0.29

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  75.88

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
    162.7        348.8        750.5       1616.2

______________________________________________________________________
```

```
                             TABLE IH4FB
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: IMPERIAL HWY E/O VALENCIA AVE
NOTES: FUTURE NO PROJECT
______________________________________________________________________

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 44764    SPEED (MPH): 50     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93       11.97        8.90
M-TRUCKS
        3.83        0.22        0.47
H-TRUCKS
        2.32        0.07        0.29

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT
______________________________________________________________________

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  75.54

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
    154.6        331.2        712.5        1534.4
______________________________________________________________________
```

```
                              TABLE CCRFB
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: CARBON CANYONRD E/O VALENCIA AVE
NOTES: FUTURE NO PROJECT


                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 38965    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       75.51        12.57        9.34
M-TRUCKS
        1.56         0.09        0.19
H-TRUCKS
        0.64         0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT


                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  71.72

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
     87.2        184.7        396.3        852.9
```

```
                             TABLE LR1FB
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: LAMBERT RD W/O VALENCIA AVE
NOTES: FUTURE NO PROJECT


                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 35684    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT


                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  71.33

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     82.4        174.2        373.8        804.3
```

```
                              TABLE LR2FB
                   FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: LAMBERT RD SR-57 TO ASSOCIATED RD
NOTES: FUTURE NO PROJECT
_______________________________________________________________________

                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 47684    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

_______________________________________________________________________

                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  72.59

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
     99.3        211.0        453.3        975.7

_______________________________________________________________________
```

```
                         TABLE BS1FB
                FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: BIRCH ST W/O VALENCIA AVE
NOTES: FUTURE NO PROJECT
----------------------------------------------------------------------

                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 17000    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       75.51        12.57        9.34
M-TRUCKS
        1.56         0.09        0.19
H-TRUCKS
        0.64         0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

----------------------------------------------------------------------

                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  68.11

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
      0.0        107.3        228.5        490.9

----------------------------------------------------------------------
```

```
                             TABLE BS2FB
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: BIRCH ST SR-57 TO ASSOCIATED RD
NOTES: FUTURE NO PROJECT


                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 28000    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT


                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  70.28

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     70.8        148.5        318.1        684.3
```

```
                             TABLE RDFB
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: ROSE DR E/O VALENCIA AVE
NOTES: FUTURE NO PROJECT
______________________________________________________________________

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 21949    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  69.22

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
    60.9         126.6        270.6        581.9

______________________________________________________________________
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                              TABLE SR571FB
                    FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: SR-57 NORTH OF LAMBERT ROAD
NOTES: FUTURE NO PROJECT
______________________________________________________________________

                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 330557    SPEED (MPH): 65     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       69.53        11.57       8.60
M-TRUCKS
        3.38         0.20       0.41
H-TRUCKS
        5.46         0.17       0.68

ACTIVE HALF-WIDTH (FT): 42       SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  86.68

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
   1059.2       2280.1        4910.6      10577.2

______________________________________________________________________
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```
                              TABLE SR572FB
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: SR-57 IMPERIAL HWY TO LAMBERT ROAD
NOTES: FUTURE NO PROJECT
------------------------------------------------------------------------

                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 317473    SPEED (MPH): 65     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       69.53        11.57        8.60
M-TRUCKS
        3.38         0.20        0.41
H-TRUCKS
        5.46         0.17        0.68

ACTIVE HALF-WIDTH (FT): 42       SITE CHARACTERISTICS: SOFT

------------------------------------------------------------------------

                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  86.50

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
   1031.1       2219.5        4780.2      10296.2

------------------------------------------------------------------------
```

```
                             TABLE SR573FB
                 FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 2/20/04
ROADWAY SEGMENT: SR-57 SOUTH OF IMPERIAL HWY
NOTES: FUTURE NO PROJECT


                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 316827    SPEED (MPH): 65     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       69.53       11.57        8.60
M-TRUCKS
        3.38        0.20        0.41
H-TRUCKS
        5.46        0.17        0.68

ACTIVE HALF-WIDTH (FT): 42      SITE CHARACTERISTICS: SOFT


                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  86.49

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
   1029.7       2216.5       4773.7      10282.2
```

OLINDA ALPHA LANDFILL EXPANSION

FHWA TRAFFIC NOISE MODEL PRINTOUTS

FUTURE WITH PROJECT CONDITIONS

```
                             TABLE VA1FP
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: VALENCIA AVE FUTURE WITH PROJECT
NOTES: FUTURE WITH PROJECT
______________________________________________________________________

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 5000    SPEED (MPH): 35     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       37.51        6.37        4.47
M-TRUCKS
        5.79        0.41        0.08
H-TRUCKS
       43.41        1.93        0.03

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  70.45

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     59.9        128.6        276.8        596.1

______________________________________________________________________
```

```
                             TABLE VA2FP
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: VALENCIA AVE LAMBERT RD TO SANTA FE RD
NOTES: FUTURE WITH PROJECT
______________________________________________________________________

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 5000    SPEED (MPH): 35     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       47.47        8.00        5.73
M-TRUCKS
        4.66        0.32        0.11
H-TRUCKS
       32.21        1.44        0.06

ACTIVE HALF-WIDTH (FT): 6      SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  69.33

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     50.6        108.3        233.1        502.0

______________________________________________________________________
```

```
                             TABLE VA3FP
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: VALENCIA AVE BIRCH ST TO LAMBERT RD
NOTES: FUTURE WITH PROJECT


                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 22000    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93       11.97        8.90
M-TRUCKS
        3.83        0.22        0.47
H-TRUCKS
        2.32        0.07        0.29

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT


                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  71.45

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     83.9        177.4        380.5        818.9

```

```
                              TABLE VA4FP
                   FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: VALENCIA AVENUE IMPERIAL HWY TO BIRCH ST
NOTES: FUTURE WITH PROJECT
----------------------------------------------------------------------

                         * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12000    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93        11.97       8.90
M-TRUCKS
        3.83         0.22       0.47
H-TRUCKS
        2.32         0.07       0.29

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

----------------------------------------------------------------------

                    * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  68.82

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     57.6        119.2       254.4        546.8

----------------------------------------------------------------------
```

```
                             TABLE IH1FP
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: IMPERIAL HWY SR-57 TO ASSOCIATED RD
NOTES: FUTURE WITH PROJECT


                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 61000    SPEED (MPH): 50     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93       11.97        8.90
M-TRUCKS
        3.83        0.22        0.47
H-TRUCKS
        2.32        0.07        0.29

ACTIVE HALF-WIDTH (FT): 30      SITE CHARACTERISTICS: SOFT


                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  76.08

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
    190.9        407.1       875.1        1884.0
```

TABLE IH2FP
FHWA ROADWAY NOISE LEVEL ANALYSIS

```
RUN DATE: 2/20/04
ROADWAY SEGMENT: IMPERIAL HWY W/O KRAEMER BLVD
NOTES: FUTURE WITH PROJECT
______________________________________________________________________

                         * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 50000    SPEED (MPH): 50     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93       11.97        8.90
M-TRUCKS
        3.83        0.22        0.47
H-TRUCKS
        2.32        0.07        0.29

ACTIVE HALF-WIDTH (FT): 30      SITE CHARACTERISTICS: SOFT
______________________________________________________________________

                    * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  75.21

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
    167.8        356.9        766.6        1650.2
______________________________________________________________________
```

```
                             TABLE IH3FP
                 FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 2/20/04
ROADWAY SEGMENT: IMPERIAL HWY W/O VALENCIA AVE
NOTES: FUTURE WITH PROJECT

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 50000    SPEED (MPH): 50     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93       11.97        8.90
M-TRUCKS
        3.83        0.22        0.47
H-TRUCKS
        2.32        0.07        0.29

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  76.02

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
    166.3        356.5         767.0       1651.8
```

```
                             TABLE IH4FP
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: IMPERIAL HWY E/O VALENCIA AVE
NOTES: FUTURE WITH PROJECT

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 45000    SPEED (MPH): 50     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       71.93       11.97        8.90
M-TRUCKS
        3.83        0.22        0.47
H-TRUCKS
        2.32        0.07        0.29

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT


                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  75.57

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
    155.1        332.3        715.0        1539.8
```

```
                             TABLE CCRFP
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: CARBON CANYONRD E/O VALENCIA AVE
NOTES: FUTURE WITH PROJECT


                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 39000    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT


                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  71.72

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     87.2        184.8        396.5        853.4
```

```
                        TABLE LR1FP
              FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: LAMBERT RD W/O VALENCIA AVE
NOTES: FUTURE WITH PROJECT
______________________________________________________________________

                     * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 36000    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       75.51        12.57        9.34
M-TRUCKS
        1.56         0.09        0.19
H-TRUCKS
        0.64         0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  71.37

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
     82.9        175.3        375.9        809.1

______________________________________________________________________
```

```
                              TABLE LR2FP
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: LAMBERT RD SR-57 TO ASSOCIATED RD
NOTES: FUTURE WITH PROJECT
-----------------------------------------------------------------------

                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 48000    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       75.51        12.57        9.34
M-TRUCKS
        1.56         0.09        0.19
H-TRUCKS
        0.64         0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

-----------------------------------------------------------------------

                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  72.62

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     99.7        212.0       455.3        980.0

-----------------------------------------------------------------------
```

```
                              TABLE BS1FP
                   FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: BIRCH ST W/O VALENCIA AVE
NOTES: FUTURE WITH PROJECT


                        * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 17000    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT


                   * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  68.11

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
      0.0        107.3        228.5        490.9
```

```
                       TABLE BS2FP
             FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: BIRCH ST SR-57 TO ASSOCIATED RD
NOTES: FUTURE WITH PROJECT
----------------------------------------------------------------------

                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 28000    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       75.51        12.57        9.34
M-TRUCKS
        1.56         0.09        0.19
H-TRUCKS
        0.64         0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT

----------------------------------------------------------------------

                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  70.28

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     70.8        148.5       318.1        684.3

----------------------------------------------------------------------
```

```
                             TABLE RDFP
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: ROSE DR E/O VALENCIA AVE
NOTES: FUTURE WITH PROJECT


                       * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 22000    SPEED (MPH): 45     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       75.51       12.57        9.34
M-TRUCKS
        1.56        0.09        0.19
H-TRUCKS
        0.64        0.02        0.08

ACTIVE HALF-WIDTH (FT): 18      SITE CHARACTERISTICS: SOFT


                  * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  69.23

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
     61.0        126.8        271.0        582.8
```

```
                              TABLE SR571FP
                    FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: SR-57 NORTH OF LAMBERT ROAD
NOTES: FUTURE WITH PROJECT


                         * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 331000    SPEED (MPH): 65     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY          EVENING     NIGHT
       ---          -------     -----
AUTOS
       69.53        11.57        8.60
M-TRUCKS
        3.38         0.20        0.41
H-TRUCKS
        5.46         0.17        0.68

ACTIVE HALF-WIDTH (FT): 42      SITE CHARACTERISTICS: SOFT


                    * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  86.68

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
   1060.1       2282.1        4915.0      10586.6
```

```
                              TABLE SR572FP
                    FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: SR-57 IMPERIAL HWY TO LAMBERT ROAD
NOTES: FUTURE WITH PROJECT
______________________________________________________________________

                         * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 318000    SPEED (MPH): 65     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       69.53       11.57        8.60
M-TRUCKS
        3.38        0.20        0.41
H-TRUCKS
        5.46        0.17        0.68

ACTIVE HALF-WIDTH (FT): 42      SITE CHARACTERISTICS: SOFT

______________________________________________________________________

                    * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  86.51

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL      60 CNEL      55 CNEL
   -------      -------      -------      -------
   1032.2       2222.0        4785.5      10307.6

______________________________________________________________________
```

```
                              TABLE SR573FP
                 FHWA ROADWAY NOISE LEVEL ANALYSIS


RUN DATE: 2/20/04
ROADWAY SEGMENT: SR-57 SOUTH OF IMPERIAL HWY
NOTES: FUTURE WITH PROJECT
______________________________________________________________________

                         * * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 318000    SPEED (MPH): 65     GRADE: .5

       TRAFFIC DISTRIBUTION PERCENTAGES
       DAY         EVENING     NIGHT
       ---         -------     -----
AUTOS
       69.53       11.57        8.60
M-TRUCKS
        3.38        0.20        0.41
H-TRUCKS
        5.46        0.17        0.68

ACTIVE HALF-WIDTH (FT): 42      SITE CHARACTERISTICS: SOFT
______________________________________________________________________

                    * * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) =  86.51

    DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL
   70 CNEL      65 CNEL     60 CNEL      55 CNEL
   -------      -------     -------      -------
   1032.2       2222.0       4785.5      10307.6
______________________________________________________________________
```

APPENDIX I

CULTURAL RESOURCE ASSESSMENT FOR THE OLINDA ALPHA LANDFILL EXPANSION

CULTURAL RESOURCE ASSESSMENT
FOR THE
OLINDA ALPHA LANDFILL EXPANSION

ORANGE COUNTY, CALIFORNIA

LSA

February 27, 2004

CULTURAL RESOURCE ASSESSMENT FOR THE OLINDA ALPHA LANDFILL EXPANSION

ORANGE COUNTY, CALIFORNIA

Submitted to:

County of Orange
Resources and Development Management Department
300 North Flower Street
Santa Ana, California 92702-4048

Prepared by:

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LSA Associates, Inc.
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LSA Project No. PND830

National Archaeological Data Base Information:
Type of Study: Records Search, Survey
Sites Recorded: None
USGS Quadrangle: *Yorba Linda 7.5*N
Survey Area: 33 Acres
Key Words: Negative survey report

February 27, 2004

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FIGURES

ABSTRACT

LSA Associates, Inc. (LSA) completed an archaeological assessment of the Olinda Alpha Landfill in Orange County, California, for a proposed expansion of the landfill footprints. This work is part of the Regional Landfill Options for Orange County (RELOOC) Strategic Plan, initiated by the County of Orange Integrated Waste Management Department (IWMD). The purpose of the assessment was to determine whether cultural resources are present in the project area. A records search and field survey were conducted for the project area in February 2004.

No cultural material was observed during the field survey. The project area is located on a steep slope that exhibits several large disturbed (terraced) areas. Due to the low potential for buried or otherwise unknown cultural resources, monitoring of project-related ground-disturbing construction activities by a qualified archaeological monitor is unnecessary.

If human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 24 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

INTRODUCTION

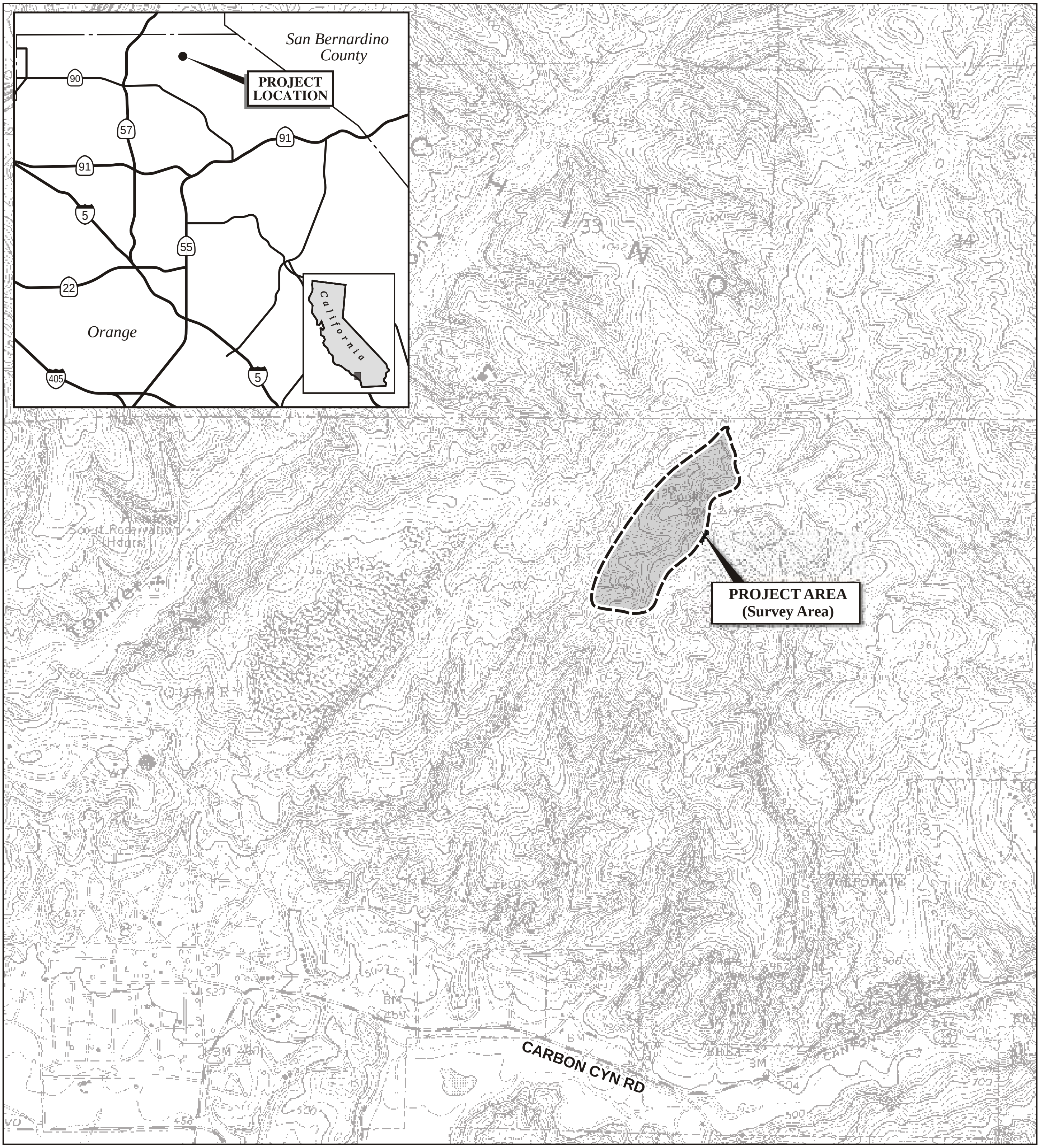
LSA has been contracted by P&D Consultants to conduct an archaeological assessment of an area east of the Olinda Alpha Landfill in Orange County, California. The purpose of the study was to determine whether cultural resources are present in the project area and if so, to assess their importance under the California Environmental Quality Act (CEQA). Sites determined important under CEQA are eligible for listing on the California Register.

The records search indicates that no surveys have been conducted within the project area. Approximately 11 sites have been documented within 1 mile of the project. No previously recorded sites are located within the project area.

As part of RELOOC initiated by IWMD, the County is proposing short-term improvements to the existing Olinda Alpha Landfill, including vertical and horizontal expansion. The current landfill covers 565 acres, with 420 acres permitted for refuse disposal. The height of the landfill will be increased from its current permitted level of 1,300 feet above mean sea level (AMSL) to 1,415 feet AMSL, or a net vertical increase of 115 feet. The horizontal expansion would include landform modifications to the northeast part of the landfill. This modification would expand the existing refuse footprint approximately 33 acres within the existing property boundary of the Olinda Alpha Landfill.

The proposed project is within the boundary of the Olinda Alpha Landfill located at 1942 North Valencia Avenue in unincorporated Orange County adjacent to and within the sphere of influence of the City of Brea. The Olinda Alpha Landfill is generally bounded by Lambert Road to the south and Valencia Avenue to the southwest (Figure 1).

The field survey was conducted on February 13, 2004, by LSA archeologist Roderic McLean. Mr. McLean also prepared the report under the supervision of County Certified Archaeologist Deborah K.B. McLean.



LSA

FIGURE 1

SOURCE: USGS 7.5' QUAD - YORBA LINDA, CA

Relooc Strategic Plan

Project Location

I:\PND830\G\Proj Loc.cdr (2/23/04)

CULTURAL SETTING

PREHISTORIC

The development of a regional chronology marking the major stages of cultural evolution in the Southern California area has been an important topic of archaeological research. In general, cultural developments in Southern California have occurred gradually and have shown long-term stability; thus, developing chronologies and applying them to specific locales have often been problematic. Southern California researchers have used changing artifact assemblages and evolving ecological adaptations to divide regional prehistory into four stages. Wallace (1955; 1978) and Warren (1968) have developed the two chronologies most commonly cited. Wallace (1955) uses major cultural developments to divide area prehistory into four time periods, or "cultural horizons": the Early Period, the Milling Stone Period, the Intermediate Period, and the Late Period. The following overview is based primarily on Wallace's chronology, which has been revised slightly by Koerper (1981) and Koerper and Drover (1983).

The Early Period (Prior to 6000 BC)

The Early Period covers the interval from the first presence of humans in Southern California until postglacial times (5500 to 6000 BC). Artifacts and cultural activities from this period represent a predominantly hunting culture; diagnostic artifacts include extremely large, often fluted bifaces associated with use of the spear and the atlatl. In Southern California, important Early Period sites have been found near prehistoric Lake Mohave and along the San Dieguito River (Wallace 1955, 1978:27; Moratto 1984:81, 93–99).

The Milling Stone Period (6000 BC–3000 BC)

The transition from the Early Period to the Milling Stone Period is marked by an increased emphasis on the processing of seeds and edible plants and is estimated to have occurred between 6000 BC and 3000 BC. According to Wallace (1978:28), wild seeds and edible plants formed the primary food source during this period, with only limited use of shellfish and faunal resources; plant resources were processed using deep-basined mills and handstones, hence the term Milling Stone Period. Milling Stone Period settlements were larger and were occupied for longer periods of time than those of the Early Period, and mortuary practices included both flexed and extended burials, as well as reburials. Grave offerings were few, although rock cairns were sometimes placed over the bodies (Wallace 1955:192, Table 1; 1978:28).

Diagnostic artifacts recovered from Milling Stone Period archaeological sites include metates and manos, and large projectile points indicating the continued use of darts and atlatls. Among the more enigmatic artifacts from this period are discoidals and cogged stones. Discoidals are round to ovoid ground stones with flat or slightly convex faces and edges, while cogged stones are discoidals with serrated edges resembling the teeth on gears. Both types of artifacts appear sometime around 4000

BC, and are dated to the Milling Stone Period; their use remains unclear, and they may have had a ceremonial function (Moratto 1984:149–150).

Wallace (1978:28) offers two possible scenarios to explain the cultural changes that occurred during the Milling Stone Period: quite possibly, both processes occurred simultaneously in different geographical areas. In some regions (such as western San Diego County), Milling Stone cultures may have evolved gradually as the earlier hunting peoples learned to exploit a wider variety of food resources; in other areas, people migrating from interior regions may have introduced to coastal areas the technology for processing seeds and plant foods. Evidence for such migrations may be found in climatic data. The onset of the Milling Stone Period corresponds to an interval of warm, dry weather known as the Altithermal; during the Altithermal, many of the inland lakes disappeared, and the region became less habitable, perhaps triggering the coastal migrations believed to have occurred at this time (Wallace 1978:28).

The Intermediate Period (3000 BC–AD 500)

By approximately 3000 BC, the inhabitants of Southern California were exploiting a diverse array of food resources including seeds and edible plants, shellfish, fish, and mammals. Along the coast, a greater reliance was placed on marine food resources as evidenced by the recovery of near-shore and pelagic (deep-water) fish remains from archaeological sites. In the interior regions such as the Mojave Desert, the return of cooler, moister conditions led to increased populations along streams and lakes. Hunting appears to have been the primary food gathering activity in these interior areas; the best-known sites in this region are located at Pinto Basin in northeastern Riverside County (Moratto 1984:153; Wallace 1978:30–31).

Intermediate Period sites are characterized by the appearance of the mortar and pestle (although the mano and metate continued in use) and small projectile points. The use of the mortar and pestle may indicate an increased reliance on acorns as a food source, while the small projectile points suggest that the bow and arrow was in limited use (Elsasser 1978:55; Wallace 1978:30–31). The circular shell fishhook also makes its appearance in coastal sites during this period; the circular fishhook is found most abundantly in areas adjacent to a rocky coastline and may have been less subject to fouling than gorges and other types of hooks (Strudwick 1986:283–284). Intermediate Period burials were generally by interment in a flexed position, face down, although a site at Big Tujunga Wash in the San Fernando Valley contained both reburials under stone cairns and cremations (Elsasser 1978:55; Wallace 1955:193–195).

Researchers have had difficulty distinguishing Intermediate Period sites, since many of the tool types appear in earlier and later periods; the few known sites have often been identified using radiocarbon or obsidian hydration methods.

The Late Period (AD 500–1769)

The Late Period, which began in approximately AD 500, witnessed a number of important cultural developments in Southern California, including the concentration of larger populations in settlements and communities, greater utilization of the available food resources, and the development of regional subcultures. Cremation was the preferred method of burial during the Late Period, and elaborate mortuary customs with abundant grave goods were common. Other cultural traits diagnostic of the Late Period include increased use of the bow and arrow, steatite containers, circular shell fishhooks, asphaltum (as an adhesive), bone tools and personal ornaments of bone, shell and stone (Bean and Smith 1978; Elsasser 1978:56; Moratto 1984:159; Wallace 1955:195). Because many of these artifacts are also recovered from earlier periods, other indicators must sometimes be used to distinguish Late Period sites. Among the most useful of these indicators are lithic artifacts manufactured from obsidian and fused shale. Obsidian from Obsidian Buttes near the Salton Sea was used sporadically in the manufacture of lithic artifacts until sometime after AD 1000; in Orange County, Grimes Canyon fused shale obtained from Ventura County was also used in tool manufacture (Demcak 1981; Hall 1988).

A number of the cultural elements found in Southern California during the Late Period have been linked to the migration of Uto-Aztecan speaking peoples from the Great Basin; these traits include the manufacture of ceramics, the use of small triangular arrow points, and interment by cremation. The date of the Uto-Aztecan migration (which probably occurred in several successive waves over an extended period of time) remains uncertain; it has been dated as early as 2000 BC and as late as AD 700. Linguistic evidence suggests a date of AD 1 to 500 (Koerper 1979; Kroeber 1925:574–580; Moratto 1984:161). The Los Angeles-Orange county region was home to one Uto-Aztecan speaking group known as the Gabrielino, the name derived from the incorporation of these Indian peoples into Mission San Gabriel. The current project is located within the traditional territory of the Gabrielino.

ETHNOGRAPHY

The Gabrielino Indians

The Gabrielino practiced a hunter-gatherer lifestyle and lived in permanent communities located near the intersection of two or more environmental zones (habitats); commonly chosen sites included: rivers, streams and inland watercourses; sheltered coastal bays and estuaries; and the transition zone marking the interface between prairies and foothills. The most important factors in choosing a community site were the presence of a stable food supply and some measure of protection from flooding. Community populations generally ranged from 50 to 100 inhabitants, although larger settlements may have existed. Gabrielino communities located in the interior regions maintained permanent geographical territories or usage areas that may have averaged 30 square miles; however, it is unclear whether this pattern also held for the coastal settlements, where food resources may have been more plentiful (White 1963:117; Oxendine 1983:44). In addition to these permanent settlements, the Gabrielino occupied temporary campsites that were used on a seasonal basis for hunting, fishing, and gathering wild plant foods and shellfish (McCawley 1996:25).

Three distinctive settlement-subsistence patterns have been identified for the Gabrielino communities. The first pattern was found in the interior mountains, where primary settlements were located in the lower reaches of canyons that offered protection against cold weather during the winter. During spring and summer, individual families traveled to seasonal camps to gather bulbs, seeds, and plant foods; in the fall they moved to oak groves to gather acorns. A second pattern prevailed on the inland prairies; each winter, the populations of these communities divided into family units and migrated to coastal shellfish-gathering camps. The third settlement and subsistence pattern was found among the coastal settlements located in the region north of San Pedro; during the winter season (when the seas were too rough for fishing), the inhabitants of these communities dispersed to inland camps to hunt and gather acorns and plant foods (Hudson 1971).

Politically, each Gabrielino community comprised one or more kinship groups (known as lineages), which were united under the leadership of a *tomyaar,* or chief. Each lineage comprised several related nuclear families; membership in a lineage was traced through the father, and allowed an individual to claim use rights over the territory owned by that group. The *tomyaar* was the focus of the religious and secular life of the community and served as chief administrator, fiscal officer, war leader, legal arbitrator and religious leader (Bean and Smith 1978; Harrington 1942:32, item 1263; 1986:R102 F642). The *tomyaar* was aided in his duties by a Council of Elders, which consisted of the leaders of the lineages residing in the community as well as other wealthy and influential individuals. Council positions were hereditary, and descended from father to son. Shamans also played an important role in Gabrielino society, serving as the principal doctors, psychotherapists, philosophers and intellectuals; often, the *tomyaar* himself was an important and influential shaman (Bean 1974:25–26).

The Gabrielino culture was characterized by an active and elaborate system of rituals and ceremonies. Rituals included individual rites of passage, village rites, seasonal ceremonies, and participation in the widespread *Chengiichngech* cult. The cult of the culture hero, *Chengiichngech*, was observed and recorded by Franciscan Friar Gerónimo Boscana during his residences at Missions San Juan Capistrano and San Luis Rey (Harrington 1933; Boscana 1933).

The Franciscans' goal was to convert the Indians to Christianity and incorporate them into Spanish society. The Gabrielino and other Indian groups learned metallurgy, plant and animal domestication, and Spanish building construction methods. In turn, the Spanish learned how and where indigenous peoples lived, and gathered information about native life ways as well as ceremonial and ritual practices. Occasionally this information was recorded. Father Gerónimo Boscana prepared an account of Gabrielino and neighboring Juaneño life ways and beliefs (Harrington 1933; Hanna 1978). Boscana's account, *Chinigchinich*, was written during his residency at both San Juan Capistrano (1814–1826) and San Luis Rey (1811–1814) missions, and describes the native cosmology and ritual practiced at the time of Spanish contact (Bean and Smith 1978:548). By the early 1800s, Spanish army officers and veterans living in California began receiving grants of land and establishing large, private grazing areas.

Ultimately, Spanish colonization resulted in the disappearance of Gabrielino society and culture. Two important factors that contributed to this decline included the removal of the youngest, healthiest, and most productive Gabrielino from their traditional communities and their incorporation into the Mission System; and the contamination of the native population with highly infectious diseases to which they were not adapted. This led to epidemics and reduced birth rates. As a result, the traditional Gabrielino communities were depopulated and the survivors integrated into local *Californio* and, later, Mexican-American communities. When anthropologist A. L. Kroeber sought Gabrielino descendants during the 1920s, he was unable to locate a group claiming Gabrielino heritage. Today, the federal government does not recognize a local tribe or band, although there are individual spokespeople who have Gabrielino ancestors (Rosenthal et al. 1991).

HISTORY

Spanish Mission Period (1769–1821)

The first recorded contact between the Gabrielino and Europeans occurred in 1542 when the Juan Rodriguez Cabrillo Expedition arrived at Santa Catalina Island (Wagner 1941). In the Orange County area, the first recorded contact occurred when Gaspar de Portolá's expedition crossed the region in July 1769. According to Spanish records, Portolá camped near the mouth of Brea Canyon approximately two miles west of the project area. A large village of Indians was encountered. The name of the village was not recorded. The period between 1769 and 1821, when Mexico gained independence from Spain (McGroarty 1911:117, 148; Avina 1932:29; Robinson 1979:13), is often referred to as the Spanish Mission Period (Robinson 1979:51–52). In 1771, Father Junipero Serra established a Franciscan mission at San Gabriel.

In 1819, an *asistencia* was established in San Bernardino, and those inhabitants not directly affected by Mission San Gabriel became a part of the Mission system through the San Bernardino *Asistencia*. Spanish records indicate that the primary Native American villages included within this *Asistencia* were *Guachama*, located near the present town of Loma Linda, and *Hurungna*, known as *Jurupa* to the Spanish, located near the present city of Riverside (URS 1988:VIII:79). Farming and cattle ranching were introduced to the inhabitants of *Guachama* by the padres of the San Bernardino *Asistencia* as early as 1819 (Hoover et al. 1962:39).

Mexican Period (1821–1848)

In 1821, Mexico was formed after gaining its independence from Spain, and in 1848 the United States formally obtained California in the Treaty of Guadalupe Hidalgo (Cleland 1962:xiii). The period from 1821 to 1848 is here referred to as the Mexican Period.

In 1833, 11 years after gaining independence from Spain, the Mexican government=s Secularization Act changed missions into civil parishes, and those natives who had inhabited regions adjacent to a Spanish Period mission were to obtain half of all mission possessions, including land. However, this did not occur in most instances, and the Secularization Act resulted in the transfer of large mission tracts to politically prominent individuals rather than to local natives.

American Period (Post-1848)

Following the end of hostilities between Don Pio Pico, the last Mexican Governor of California, and the United States in January of 1847, the United States officially obtained California from Mexico through the Treaty of Guadalupe Hidalgo on February 2, 1848 (Cleland 1962:xiii). Thus, the American Period begins in 1848. In 1850, California was accepted into the Union of the United States primarily due to the population increase created by the Gold Rush of 1849.

The cattle industry in California reached its greatest prosperity during the first years of the American Period. Mexican Period land grants had created large, pastoral estates in California, and a high demand for beef during the Gold Rush led to a cattle boom that lasted from 1849 to 1855. In 1855, however, the demand for California beef began to decline as a result of sheep imports from New Mexico, cattle imports from the Mississippi and Missouri valleys, and the development of stock breeding farms. When the beef market collapsed, California ranchers were unprepared. Many had borrowed heavily during the boom, mortgaging their land at interest rates as high as ten percent per month. The collapse of the cattle market meant that many of these ranchos were lost through foreclosure, while others were sold to pay debts and taxes (Cleland 1941:108–114).

Nature, too, conspired to force economic change. During the winter of 1861–1862, a disastrous series of floods struck California. According to rainfall statistics, more than 45 inches of rain fell in parts of California between November 1861, and February 1862 (Brewer 1930:253). It has been estimated that the 1862 flood was the largest flood in the recorded history of the Santa Ana River. At Agua Mansa, the high water line marked on the front steps of the church was used to estimate a flow rate of 320,000 cubic feet per second, more than three times the estimated high water maximum recorded in 1938 (Sidler 1973:19 in URS 1988:VIII–81). Lesser flooding episodes along the Santa Ana River also occurred in 1867 and 1891. This unprecedented deluge was then followed by two years of drought (Cleland 1941:130–131). The drought of the 1860s was a turning point in the economic history of Southern California. The era of the great cattle ranchos ended and many of the landowners who survived the collapse of the cattle industry were forced to sell their property due to the drought. This was not the fate of all rancheros; some, such as the Cota and Yorba families, survived (Foster 1996).

Local History

Brea was established in 1894 when landowner Abel Stearns sold 1,200 acres to the Union Oil Company, west of the village of Olinda (founded circa 1896). In 1908, a new town called Randolph was constructed for the oil workers. In 1911, the name was changed to Brea (Spanish for tar). The town of Olinda has since disappeared and is now the location of a park.

METHODS

RECORDS SEARCH

On February 11, 2004, LSA conducted a records search through the South Central Coastal Information Center of the Historical Resource Information System at California State University, Fullerton. Documents and literature regarding known cultural resources and previous archaeological studies within one mile of the project area were reviewed. This included an examination of the National Register of Historic Places; the California Register of Historic Resources; Office of Historic Preservation; Archaeological Determinations of Eligibility and Directory of Properties in the Historic Property Data File; and historic maps.

FIELD METHODS

On February 13, 2004, the project area was surveyed by LSA archaeologist Roderic McLean. The purpose of the survey was to identify any cultural resources present within the project area. Steep slopes and recent terracing characterize the project area. At minimum, 30 percent of the project area is disturbed. Ground visibility within the project area was dependent on vegetation density. Areas where native soils were exposed were scrutinized carefully, as were rodent burrows and their associated back dirt piles. Soil profiles were examined for evidence of cultural stratigraphy.

RESULTS

RECORDS SEARCH

The results of the records search indicate that no archaeological surveys have been conducted within the project area. The original landfill area was surveyed by the Archaeological Planning Collaborative (1979). A second survey was performed east of the project area (Brown et al. 1990). A historic site, CA-ORA-1291H, is recorded approximately one-quarter mile east of the project area. The site is described on the site record as a historic rock retaining wall along with a trash pit. Pieces of a wood stove and amethyst glass were observed. Additionally, 11 prehistoric sites are recorded within 1 mile of the project area. All are located at the base of the mountain to the south and southwest.

FIELD SURVEY

No cultural resources were identified within the project area. At minimum, 30 percent of the project area is disturbed. Additionally, the project area involves a very steep landform. Other than rock shelters, rock art, and rock mines, steep landforms are considered to have a very low sensitivity for cultural resources. The project area is devoid of rock outcrops that would be used for prehistoric activities, and no mining has taken place.

DISCUSSION

Human activity often leaves behind evidence of its existence in the form of buried deposits (archaeological sites). In addition, evidence of human activity can be preserved by elements of the built environment. In other words, buildings, structures, parking lots, and other man-made features may cap buried cultural deposits. Broadly, this evidence can be characterized as being either prehistoric or historic. Historic resources are considered to be those deposited or constructed after European contact in an area. In Southern California, this contact is typically considered to be in 1769 when the Portolá expedition crossed Orange County. Historic resources can be either part of the built environment (standing buildings, structures, or objects), or can be buried, with little surface expression. These buried historic resources, along with prehistoric archaeological sites, are typically called archaeological resources. All of these resource types (prehistoric and historic archaeological deposits and the historic built environment) are called cultural resources. Prehistoric archaeological sites can exist in many disparate and seemingly odd locations. These deposits can be as varied as village sites; temporary camps; isolated activity areas such as mining, food processing, or resource gathering; or even isolated artifacts such as a solitary projectile point that may have been lost as someone traveled from one place to another.

There are many factors that influence the location of prehistoric cultural resources including proximity to water and useful resources (e.g., oak trees that provided edible acorns), hunting areas, coastal resources areas, and sources of other natural resources. Another important factor in the location of prehistoric sites is the land form that was contemporary with the site. Level areas atop hills, ridges, and knolls were usually preferred over steep topography such as mountains or hillsides. Often, sites were chosen simply because of the view they afforded.

Probably the single most important factor influencing the location of sites is proximity to potable water. Long-term habitation sites such as villages, as well as smaller temporary camps, were often located along watercourses or near springs. The location of a dependable spring almost always marks the location of some type of archaeological deposit. Stable, level areas in proximity to both marine resources and fresh water are zones of even greater preference. When several of these factors are found in association, the likelihood that a site will be found increases dramatically.

Camp sites, or more permanent habitation sites such as villages and towns, are often situated on level to semilevel ground near water. Often, archeologists focus their research on level areas near fresh water given the high potential for cultural resources. Habitation sites often exhibit important information regarding subsistence strategies, changes in diet and technology over time, and social organization. The presence of important information may indicate that the cultural resource is significant under federal and state laws. Cemeteries are also often associated with habitation sites.

While proximity to fresh water is still paramount, habitation areas are not limited to relatively level land forms. Based on the type of resource being exploited at a location, habitation can occur on gentle sloping land forms, atop mesas, and atop mountains. Valley bottoms with perennial drainages are common locations for habitation sites. Valleys also receive alluvial and colluvial deposition, increasing the likelihood that archaeological resources will be preserved, if present. Even without a surface expression, the potential for buried resources exists in these types of areas where active depositional processes can bury the archaeological site.

Steep sloping land forms, narrow ridges, and hilltops are often considered to have a low potential for containing cultural resources. Habitation will not normally be found in these locations, but other types of cultural resources can be found in these areas. Ridgelines may have been actively used as movement corridors and may retain evidence of this use. Rock outcrops may exhibit rock art, and rock shelters and caves may contain prehistoric deposits or rock art. Quarry activities, both prehistoric and historic, are found in hilly, mountainous land forms. Prehistoric people utilized stone tools, and the raw materials are often located in mountainous areas. Historic mining activities, as well as logging camps, are also found in these settings.

In order to characterize the likelihood of discovering a cultural resource in a specific area, the following three-tiered classification system will be used:

- HIGH POTENTIAL (SENSITIVITY): Level/semilevel land forms near potable water
- MODERATE: Water and other resources available within 0.5–2.0 miles
- LOW: Water unavailable/steep, rugged slopes

RECOMMENDATIONS

The proposed project is located on a steep anticline that is considered to have a low potential for cultural resources. Monitoring of ground disturbing activities by a qualified archeologist is not recommended due to the previous disturbance of the area and its steepness.

If human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 24 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

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APPENDIX J
PALEONTOLOGICAL RESOURCE ASSESSMENT FOR THE OLINDA ALPHA LANDFILL EXPANSION

PALEONTOLOGICAL RESOURCE ASSESSMENT FOR THE OLINDA ALPHA LANDFILL EXPANSION

ORANGE COUNTY, CALIFORNIA

LSA

February 27, 2004

PALEONTOLOGICAL RESOURCE ASSESSMENT FOR THE OLINDA ALPHA LANDFILL EXPANSION

ORANGE COUNTY, CALIFORNIA

Submitted to:

County of Orange
Resources and Development Management Department
300 North Flower Street
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LSA Project No. PND830

Data Base Information:

Type of Study: Records Search, Survey
Sites Recorded: None
USGS Quadrangle: *Yorba Linda 7.5*N
Survey Area: 33 Acres
Key Words: Negative survey report, Soquel member of the Puente Formation

February 27, 2004

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FIGURES

ABSTRACT

LSA Associates, Inc. (LSA) completed a paleontological assessment of the Olinda Alpha Landfill in Orange County, California, for a proposed expansion of the landfill footprints. This work is part of the Regional Landfill Options for Orange County (RELOOC) Strategic Plan, initiated by the County of Orange Integrated Waste Management Department (IWMD). The purpose of the assessment is to determine whether paleontological resources are present within the project area, and if so, to assess their importance and to recommend mitigation measures to reduce potential impacts to levels that are less than significant, as required by the California Environmental Quality Act (CEQA) Section 15064.5. Work was also conducted in compliance County of Orange Standard Conditions of Approval (SCA) 'A7 and in accordance with paleontological mitigation guidelines developed by the Society of Vertebrate Paleontology (SVP 1995). A locality search and field survey were conducted for the project area in February 2004.

No paleontological material was observed during the field survey. The project area is located on a steep slope that exhibits several large disturbed (terraced) areas. Review of geologic maps shows that sediments from the Miocene Puente Formation underlie the project area. Fossils have been recovered from the Puente Formation immediately adjacent to an expansion area in the existing landfill and from other Puente Formation outcrops in Orange County and surrounding counties. The potential exists to encounter fossils whenever these sediments are encountered. Therefore, LSA recommends that a Paleontological Resources Impact Mitigation Program (PRIMP) be implemented and followed. The PRIMP shall include, but not be limited to, the following: paleontological monitoring; preparation of any collected specimens to the point of identification; curation of specimens to a museum or similar institution; and preparation of a mitigation report documenting any findings.

INTRODUCTION

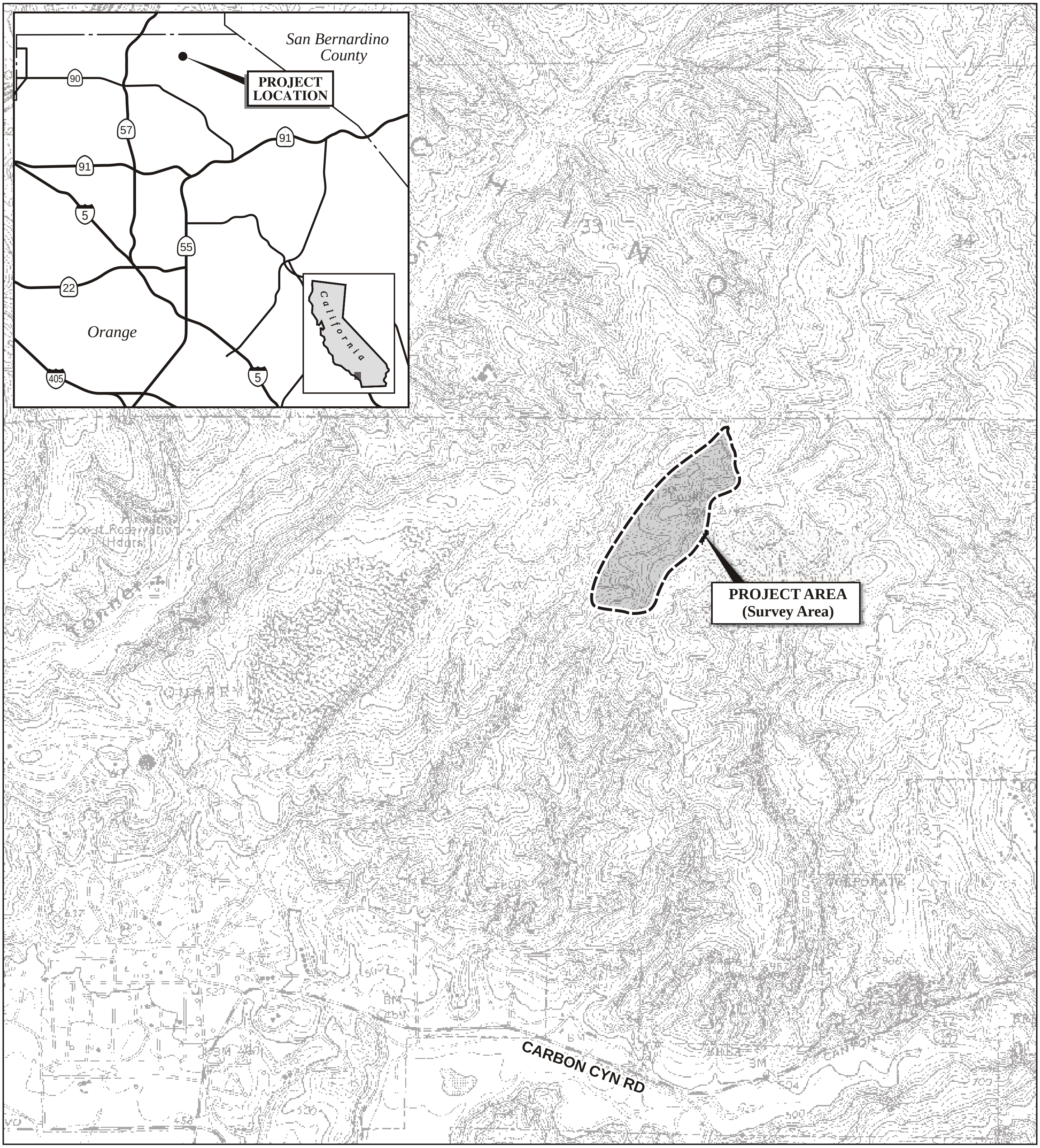
LSA has been contracted by P&D Consultants to conduct a paleontological assessment of an area east of the Olinda Alpha Landfill in Orange County, California. The purpose of the study is to determine whether paleontological resources are present, and if so, to assess their importance and to recommend mitigation measures to reduce potential impacts to levels that are less than significant, as required by CEQA Section 15064.5. CEQA Section 15064.5 states that a project may have a significant effect on the environment if the project may cause substantial adverse change to a historic, archaeological, or paleontological resource. An impact to paleontological resources is considered significant if it can be reasonably argued that the project would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature..

As part of RELOOC initiated by IWMD, the County is proposing short-term improvements to the existing Olinda Alpha Landfill, including vertical and horizontal expansion. The current landfill covers 565 acres, with 420 acres permitted for refuse disposal. The height of the landfill will be increased from its current permitted level of 1,300 feet above mean sea level (AMSL) to 1,415 feet AMSL, or a net vertical increase of 115 feet. The horizontal expansion would include landform modifications to the northeast part of the landfill. This modification would expand the existing refuse footprint approximately 33 acres within the existing property boundary of the Olinda Alpha Landfill.

The proposed project is within the boundary of the Olinda Alpha Landfill located at 1942 North Valencia Avenue in unincorporated Orange County adjacent to and within the sphere of influence of the City of Brea. The Olinda Alpha Landfill is generally bounded by Lambert Road to the south and Valencia Avenue to the southwest. Specifically, the expansion area is located within an unsectioned portion of Township 3 South, Range 9 West, as found on the *Yorba Linda* 7.5N topographic quadrangle (Figure 1).

The field survey was conducted on February 13, 2004, by LSA archeologist Roderic McLean. Brooks Smith prepared the report under the supervision of County Certified Paleontologist Steven W. Conkling.

All work was completed in compliance with SCA 'A7 and in accordance with paleontological mitigation guidelines developed by the SVP (SVP 1995). Please note that this report serves only as documentation of the paleontological findings for the project area and in no way represents a geological assessment. Therefore, this report should not be used as such.



LSA

FIGURE 1

SOURCE: USGS 7.5' QUAD - YORBA LINDA, CA

Relooc Strategic Plan

Project Location

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METHODS

LOCALITY SEARCH

A paleontological locality search was conducted through the Orange County paleontological records maintained at LSA. It included a review of the area geology and any known paleontological resources recovered from the surrounding area and the geologic formations that will likely be encountered during excavation activities.

The purpose of the locality search was to establish the status and extent of previously recorded paleontological resources within and adjacent to the project area. With this knowledge, LSA could make an informed assessment of the potential effects of the proposed project on paleontological resources and evaluate the kinds of fossils that might be uncovered during ground-disturbing activities.

FIELD METHODS

The survey consisted of a visual inspection of exposed soil, ground surface, and bedrock outcrops. Where possible, the surveyor walked the project area in transects spaced approximately five meters apart. Surface scrapes were conducted to better expose obscured areas. If any resources were located in situ, the surveyor was prepared to assess the find for significance and, if necessary, document them. If the find was deemed to be significant, the surveyor was instructed to note its location with a Garmin Global Positioning System (GPS) unit. The use of GPS units allows localities to be quickly and accurately plotted on a standard 7.5N topographical map. The surveyor was also instructed to fill out a Fossil Locality Sheet that contains important information such as field number of the locality; tentative identification of the find description of the sediments; formation name; location of the find within the project; GPS information; and elevation.

The purpose of this survey was to identify any paleontological resources that may be impacted by the proposed project. In this way LSA could document and collect paleontological remains prior to the beginning of ground disturbing activities and locate areas within the project that might contain abundant remains.

RESULTS

LOCALITY SEARCH

The results of the locality search indicate that the proposed landfill expansion area is located at the northern end of the Peninsular Range geomorphic province, a 900-mile (1,450 km) northwest-southeast trending structural block that extends from the tip of Baja California to the Transverse Ranges and includes the Los Angeles Basin (Norris and Webb 1976). The total width of the province is approximately 225 miles (362 km), with a maximum landbound width of 65 miles (105 km) (Sharp 1976). It contains extensive pre-Cretaceous (> 65 million years ago) igneous and metamorphic rock covered by limited exposures of post-Cretaceous sedimentary deposits. Within Orange County, these post-Cretaceous sedimentary deposits are believed to be one of the most important Tertiary marine fossil producing areas in the world due to the completeness of the geologic record and general abundance of the fossils (Raschke 1984). Belyea and Minch (1989) report that the Santa Ana Mountains contain exposures of the most complete section of Late Mesozoic and Cenozoic (approximately 150 million years ago to the present) stratigraphy in the entire Peninsular Ranges.

Specifically, the project is located in the Puente Hills. These hills are located in the eastern Los Angeles Basin and in parts of San Bernardino, Riverside, Los Angeles, and Orange Counties. The hills are bounded on the northwest by the San Gabriel Valley, on the northeast by the San Bernardino Valley, and on the south by the Santa Ana River and the central portion of the Los Angeles plain. They are structurally and stratigraphically related to the Santa Ana Mountains to the south and the San Jose Hills to the northwest (Schoellhamer et al. 1981). The southeastern portion of the Puente Hills, south of Brea Canyon, is also known as the Chino Hills. The Chino Hills are a structural unit that had been uplifted and folded by movement along both the Whittier and the Chino Faults. This expansion project is located on the southern flank of the Chino Hills (Durham and Yerkes 1964; Rogers 1966) approximately one mile north of the Whittier Fault.

Within the project area, Morton and Miller (1981) and Morton et al. (1999) recorded one geologic unit, the late Miocene Soquel member of the Puente Formation. The late Miocene marine Puente Formation is divided into four members: the La Vida Member (Tplv), which consists of predominantly siltstones; the Soquel Member (Tps), which consists of predominantly sandstones; the Yorba Member (Tpy), which consists of predominantly siltstones; and the Sycamore Canyon Member (Tpsc), which consists of predominantly sandstones.

The Puente Formation is exposed in the Santa Ana Mountains and the Puente Hills and was deposited in a deep-water basin (Lyons et al. 1990). It ranges in thickness from 575 meters in the central Santa Ana Mountains near El Toro to over 4,100 meters in the Puente Hills (Yerkes et al. 1965, Schoellhamer et al. 1981). The Puente Formation was named by Eldridge and Arnold (1907) from exposures in the Puente Hills. Davies and Woodford (1949) divided the Puente Formation into three members, only one of which was named. Schoellhamer and others assigned the current four members and their names in 1954. The siltstone units of the Puente Formation generally produce more fossils than the sandstone units, with the Yorba member producing the most fossils of the four. However, the only member exposed within the project is the Soquel member.

The Soquel member of the Puente Formation consists of Late Miocene marine sediments. They are composed of pale yellow to yellow brown silty sandstone and pebbly sandstone with interbeds of light to dark gray and pale yellow brown siltstone and occasional conglomerate and breccia. Sand grains are subangular to subrounded quartzo-feldspathic and biotite rich. The conglomerate clasts are angular to subangular and are mainly derived from a plutonic source. Sandstones are massive to thickly bedded, while siltstones are thinly bedded to platy. Dolomatic concretions occur near the base.

Within the Puente Hills, the thickness of the Soquel member ranges from 2,000 to 2,800 feet. It has a gradational, and locally unconformable, contact with the underlying La Vida member and a gradational contact with the overlying Yorba member. It correlates with part of the Monterey Formation in Southern Orange County and part of the Modelo Formation in Los Angeles County. Lyons et al (1990) has interpreted the Soquel member in the Puente Hills to represent a series of coalescing depositional lobes deposited at the base of the continental slope. Sediments were derived from prograding fan deltas on the narrow continental shelf and transported to the base of the continental slope by gullies cut into the continental slope. Fossils are rare, but late Miocene forams and fossil fish have been found. During paleontological monitoring of the existing Olinda Alpha landfill in 1998, RMW Paleo Associates collected what they identified as the first Argonauts from Orange County.

FIELD SURVEY

On February 13, 2004, the project area was surveyed by LSA archaeologist Roderic McLean. Steep slopes and recent terracing characterize the project area. At a minimum, 30 percent of the project area is disturbed. Ground visibility within the project area was dependent on vegetation density. Areas where native soils were exposed were scrutinized carefully, as were rodent burrows and their associated back dirt piles. Bedrock outcrops were also examined for evidence of paleontological remains.

No paleontological resources were identified within the project area during the field survey. At a minimum, 30 percent of the project area is disturbed and/or obscured by vegetation. Additionally, the project area involves a very steep landform that limited access to many places within the project area. The potential still exists for paleontological remains to occur within the project area in areas that could not be accessed, or that are still buried beneath the ground surface.

DISCUSSION

Planners and paleontologists have worked together to help preserve Orange County's long fossil heritage. In response to CEQA, a system is used to determine the potential for the occurrence of fossils during the initial scoping phase of each project. When an earthmoving project begins, a standard Paleontological Resource Impact Mitigation Program (PRIMP) can be followed that will reduce the impacts to the fossils to a less than significant level.

During the initial scoping phase, a paleontologist can be retained to complete an assessment report to determine a level of sensitivity for the project. These sensitivity ratings are either High, Low, or Undetermined.

LOW POTENTIAL

Following a literature search, records check, and field survey, areas may be determined by a qualified vertebrate paleontologist as having Low potential for containing significant paleontological resources subject to adverse impacts. Low potential can not be determined simply by looking for rock unit qualifications on a geologic map. For instance, an area mapped as Alluvium may actually be a thin surficial layer of nonfossiliferous sediments that cover fossil-rich Pleistocene sediments. Also, an area mapped as granite may be covered by a Pleistocene soil horizon that contains fossils. The actual sensitivity must be determined by both a records search and a field inspection.

HIGH POTENTIAL

Sedimentary rock units with High potential for containing significant nonrenewable paleontological resources are rock units within which vertebrate or significant invertebrate fossils have been determined to be present or likely to be present. These units include, but are not limited to, sedimentary formations that contain significant nonrenewable paleontological resources anywhere within their geographical extent and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. High sensitivity includes not only the potential for yielding abundant vertebrate fossils but also for production of a few significant fossils that may provide new and significant data (taxonomic, phylogenetic, ecologic, and/or stratigraphic data).

High sensitivity (High A) is based on geologic formations or mappable rock units that are rocks that contain fossilized body elements and trace fossils such as tracks, nests, and eggs.

High sensitivity (High B) is a sensitivity equivalent to High A but is based on the occurrence of fossils at a specified depth below the surface. High B indicates that fossils are likely to be encountered at depth and may be impacted during excavation by construction activities. A standard condition is attached to the environmental planning document for the project, specifying that during grading stage review, a PRIMP is a condition for any excavation that reaches or exceeds a specified depth.

UNDETERMINED POTENTIAL

Areas underlain by sedimentary rocks for which literature and unpublished studies are not available have undetermined potential for containing significant paleontological resources. These areas must be inspected by a field survey conducted by a qualified vertebrate paleontologist. A specific determination of High potential or Low potential for containing significant nonrenewable paleontological resources can then be made.

RECOMMENDATIONS

Although no paleontological resources were identified during the field survey, based on the results of the locality search, sensitive paleontological sediments that can contain fossil remains exist within the project area. Therefore, there is the potential to encounter paleontological resources during ground-disturbing activities. The sediments of the Puente Formation have a sensitivity of High for containing paleontological resources. In order to mitigate potential adverse impacts to nonrenewable paleontological resources, as required by CEQA Section 1564.5, LSA recommends that a paleontologist be retained and that a PRIMP be followed for the project. The PRIMP should be consistent with the guidelines of the SVP (SVP 1995) and should include, but not be limited to, the following:

- Attendance at the pregrade conference.
- Monitoring of excavation activities by a qualified paleontological monitor in areas identified as likely to contain paleontological resources. The monitor should be equipped to salvage fossils and/or matrix samples as they are unearthed in order to avoid construction delays. The monitor must be empowered to temporarily halt or divert equipment in the area of the find in order to allow removal of abundant or large specimens.
- Because the underlying sediments may contain abundant fossil remains that can only be recovered by a screening and picking matrix, it is recommended that these sediments occasionally be spot screened through one-eighth to one-twentieth-inch mesh screens to determine if microfossils exist. If microfossils are encountered, additional sediment samples (up to 6,000 pounds) shall be collected and processed through one-twentieth-inch mesh screens to recover additional fossils.
- Preparation of recovered specimens to a point of identification and permanent preservation. This includes the washing and picking of mass samples to recover small invertebrate and vertebrate fossils and the removal of surplus sediment from around larger specimens to reduce the volume of storage for the repository and the storage cost for the developer.
- Identification and curation of specimens into a museum repository with permanent retrievable storage.
- Preparation of a report of findings with an appended itemized inventory of specimens. When submitted to the Lead Agency, the report and inventory would signify completion of the program to mitigate impacts to paleontological resources.

By following the above guidelines, impacts to nonrenewable paleontological resources will be reduced to a level that is less than significant, as required by CEQA.

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APPENDIX K
HYDROLOGY STUDY OLINDA ALPHA LANDFILL RELOOC 1415 MAXIMUM ELEVATION

HYDROLOGY STUDY
OLINDA ALPHA LANDFILL
RELOOC 1415 MAXIMUM ELEVATION

Orange County, California

April 2004

Prepared For:

County of Orange
Integrated Waste Management Department
320 North Flower Street, Suite 400
Santa Ana, CA 92703

Prepared By:

BRYAN A. STIRRAT & ASSOCIATES, INC.
1360 Valley Vista Drive
Diamond Bar, California 91765
(909) 860-7777

HYDROLOGY REPORT

Table of Contents

1.0 SURFACE HYDROLOGY & SOIL LOSS ANALYSIS

1.1 WATERSHED LOCATION AND HISTORIC OVERVIEW

According to the Watershed and Coastal Resources Division of the Public Facilities and Resources Department of Orange County the Olinda Alpha Landfill (OAL) is located in the Northeast portion of the Coyote Creek Watershed that drains to the San Gabriel River and then to the Pacific Ocean.

The OAL was originally two separately permitted landfills, Olinda Landfill (OL) and Olinda Alpha Landfill (*OAL*) and geologically separated by a ridge between two canyons. In the revised "Olinda / Olinda Alpha Landfill Vertical Expansion Project, Master Storm Drain Design" (MSDD) (Bryan A. Stirrat and Associates, April 11, 1994)) the calculated runoff for the landfill was divided into two main tributaries. The pre-landfill hydrology for the westerly portion of the OAL (or the OL) was 216 acres and had a 100-year peak discharge of 463 CFS. The easterly portion of the OAL (*OAL*) was 336 acres with a 100-year peak discharge of 681 CFS. The currently-permitted developed condition for the OAL has a top deck maximum vertical elevation of 1300 feet above mean sea level (MSL) and it is being proposed to expand the current vertical elevation to 1415 feet MSL. Currently, the OAL has two detention/desilting basins. These basins were designed to receive developed condition peak flows, but will release flows to pre-developed condition. The layout of the MSDD would conform to this design criteria and discharge flow according to its original design intent. By designing the grading to its original design intent, no modification is necessary to the existing basins.

The runoff flow path and tributary areas of the OAL Master Plan are consistent with the existing (pre-developed) conditions. OAL will collect the initial flows from the deck of northerly side of the landfill and then direct the runoff via a network of benches and down drains down the slopes to the perimeter (West and East) channels. Once the runoff has been routed to the perimeter channels it will then be directed in a southerly direction to the detention / desilting basins.

1.2 HYDROLOGY

The Orange County Public Facilities and Resources Department (PFRD), now called the Resources Development and Management Department, Hydrology Manual (1999) and the Advance Engineering Software (AES) computer program Rational Method was used to calculate the 100-year, 24-hour run-off peak for the entire OAL. The AES computer program was designed especially for Orange County and utilizes the latest rainfall data, nomographs, charts and equations for the Rational Method indicated in the manual. AES is also the accepted software used by PFRD which is the agency responsible for the major flood control facilities downstream of the landfill.

The Rational Method (Q=CIA) described in the hydrology manual relates rainfall intensity (I), runoff coefficient (C), and the drainage area (A) to the direct peak runoff (Q) from the drainage area. The values of C & I are based on drainage area characteristics such as land use, soil type, land surface, and the time of concentration. Time of concentration (TC) is defined as the interval of time required for the flow at any point to become maximum under uniform rainfall intensity.

According to the PFRD Hydrology Manual, Orange County has soil types A, B, C, and D. These soil types are categorized from highly-permeable, unsaturated soil type A (least producing runoff) to the least permeable saturated soil type D (highest producing runoff). Although the watershed area of the landfill has soil types A, B, C, and predominantly D, Soil type D was assumed for the entire site to give a more conservative result. In addition, lower soil permeability (lower than Soil Type D) values were used to model the existing waste area (0.05 inches per hour) and the exposed liner area (0.01 inches per hour). The rationale behind using lower permeability values for the waste and liner areas is to model the effects of compaction due to heavy equipment in the waste areas and the low-permeable HDPE membrane in the lined areas.

1.3 HYDRAULICS

Once the peak flows were calculated a unit hydrograph and basin analyses were prepared, using the AES software. The unit hydrograph studies do verify that both basins, A and B, are adequately sized for capacity and to maintain the discharge to the original design intent. Detention Basins A and B were designed for the purpose of limiting the runoff from the OAL to the pre-developed condition and provide desilting for the runoff. The basins will continue to serve that function with the proposed vertical and lateral expansion for the project.

The lower portion of the east channel (approximately 3000 linear feet up from the basin up) is to be reconstructed in the summer of 2004. The reconstructed channel alignment and material have been designed to accommodate a greater flow capacity and allow for differential settlement. As indicated in the design report for the reconstruction of the east channel, the capacity analysis for the channel is 476 CFS. However, the peak runoff for the east tributary is 705 CFS; therefore the balance of the peak runoff will require an alternate conveyance method (i.e. trapezoidal channel along the main access road or series of downdrains from the deck) to direct the remaining runoff prior to reaching final grades.

The proposed final grades will increase the peak flow in the west channel by 30 CFS. The west channel has been analyzed with the additional flow and it has been determined that the west channel has sufficient capacity to convey the increased flow.

At the point of peak confluence, the East Basin will have a peak inflow of 705 CFS which is 62 CFS less than the MSDD peak inflow calculation if 767 CFS for the basin. Although the West Basin (Basin B) will have a peak inflow of 645 CFS which is 30 CFS more than the MSDD peak inflow of 615 CFS to the basin, the West Basin has been analyzed at the critical reaches to verify that the channel will have enough capacity to handle the additional peak flow.

	East Tributary (CFS)		West Tributary (CFS)	
	Inflow	**Basin A Discharge**	**Inflow**	**Basin B Discharge**
Pre-developed	681	NA	463	NA
MSDD	767	618	615	457
Expansion	705	642	645	463

1.4 SOIL LOSS

The Universal Soil Loss Equation (USLE) is the method used to calculate the annual soil loss for the OAL due to erosion. Unlike the hydrology study which assumes an overall gross slope, it is necessary to assume a greater amount of detail with regard to the ultimate design of the slopes in order to calculate the average soil loss for the site using the USLE. The slopes have been assumed to be designed with benches at 40-foot intervals. It will be necessary to place fiber rolls and other erosion control devices in between the benches to reduce soil erosion. This will also reduce the slope length and slope factors (LS) to less than 10. If the LS factor exceeds 10 the potential of exceeding the maximum loss rate of 2 tons of soil per acre per year (standard practice threshold). The calculated soil loss for the site expansion is 1.3 tons per acre per year. The soil loss study and accompanying maps are included in Appendix A.

APPENDIX A

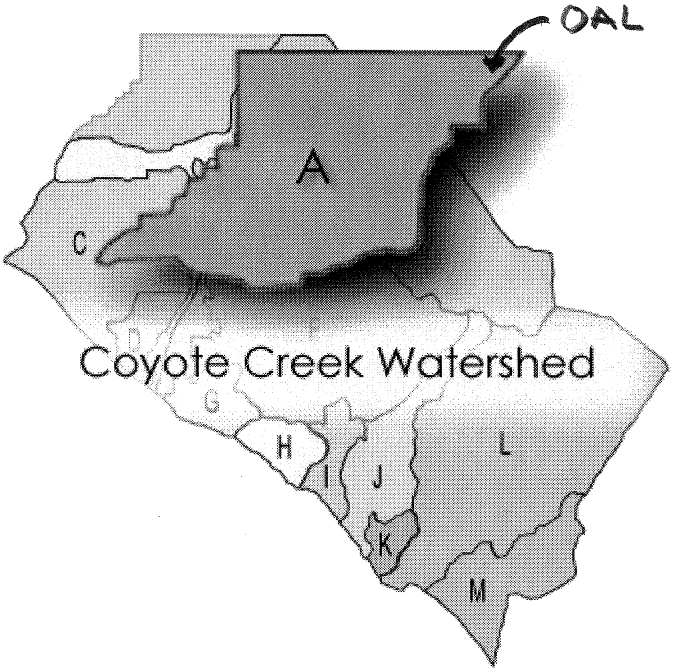
HYDROLOGY STUDY

Watershed Introduction
Supervisorial District Maps
Regional Board Boundary Map
City Boundary Maps
Detailed Maps
Aerial Maps
Wetlands Map
Coastal Maps
Description of Corps of Engineers Process
TMDLs
Resource Links

Select a Watershed [Watersheds & Coastal Resources ▼]

Coyote Creek Introduction Page
Meeting Calendar
Drainage & Elevation M
City/County Boundary
Land Use Map
Reports & Studies
Email Contact

Introduction to Coyote Creek Watershed



The Coyote Creek Watershed covers 41.3 square miles in the northwest corner of Orange County. It includes portions of the cities of Brea, Buena Park, Fullerton, La Habra, and La Palma. Coyote Creek, its main tributary, flows from Riverside County and empties into the San Gabriel River.

In 2001, the U.S. Army Corps of Engineers initiated a comprehensive watershed study. A Reconnaissance Study was completed in June 2001. Although it is titled the "Westminster Watershed Reconnaissance Study", it covers three Orange County watersheds: Coyote Creek, Carbon Creek, and Westminster. In fall 2002, the Corps of Engineers is scheduled to begin the Feasibility Phase of the watershed study. This phase will cover both the Coyote Creek and Carbon Creek watersheds in one effort.

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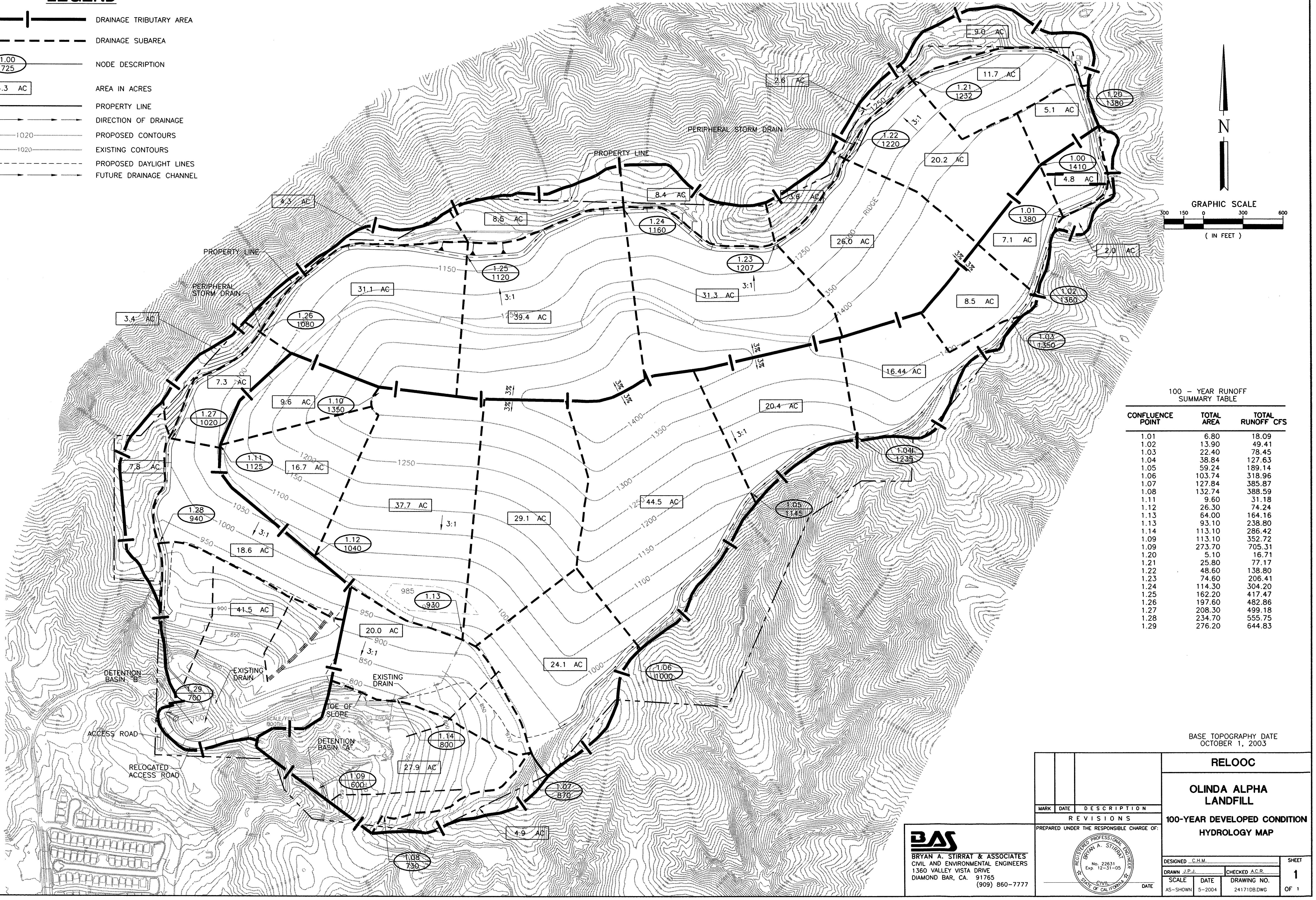
LEGEND

━━━━┃━━━━	DRAINAGE TRIBUTARY AREA
— — — — — —	DRAINAGE SUBAREA
1.00 / 725	NODE DESCRIPTION
4.3 AC	AREA IN ACRES
――――――	PROPERTY LINE
— → — → —	DIRECTION OF DRAINAGE
·······1020·······	PROPOSED CONTOURS
·······1020·······	EXISTING CONTOURS
- - - - - - -	PROPOSED DAYLIGHT LINES
— → — → —	FUTURE DRAINAGE CHANNEL



100 - YEAR RUNOFF SUMMARY TABLE

CONFLUENCE POINT	TOTAL AREA	TOTAL RUNOFF CFS
1.01	6.80	18.09
1.02	13.90	49.41
1.03	22.40	78.45
1.04	38.84	127.63
1.05	59.24	189.14
1.06	103.74	318.96
1.07	127.84	385.87
1.08	132.74	388.59
1.11	9.60	31.18
1.12	26.30	74.24
1.13	64.00	164.16
1.13	93.10	238.80
1.14	113.10	286.42
1.09	113.10	352.72
1.09	273.70	705.31
1.20	5.10	16.71
1.21	25.80	77.17
1.22	48.60	138.80
1.23	74.60	206.41
1.24	114.30	304.20
1.25	162.20	417.47
1.26	197.60	482.86
1.27	208.30	499.18
1.28	234.70	555.75
1.29	276.20	644.83

BASE TOPOGRAPHY DATE
OCTOBER 1, 2003

MARK	DATE	DESCRIPTION

REVISIONS

BAS
BRYAN A. STIRRAT & ASSOCIATES
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PREPARED UNDER THE RESPONSIBLE CHARGE OF:

BRYAN A. STIRRAT
No. 22631
Exp. 12-31-05

DATE

RELOOC

OLINDA ALPHA LANDFILL

100-YEAR DEVELOPED CONDITION HYDROLOGY MAP

DESIGNED C.H.M.
DRAWN J.P.J.
CHECKED A.C.R.

SCALE	DATE	DRAWING NO.	SHEET
AS-SHOWN	5-2004	24171DB.DWG	1 OF 1

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
       (c) Copyright 1983-2002 Advanced Engineering Software (aes)
          Ver. 8.0  Release Date: 01/01/2002  License ID 1211

                         Analysis prepared by:

                       Bryan A. Stirrat & Associates
                           1360 Valley Vista Dr.
                           Diamond Bar, CA 91765

 ************************** DESCRIPTION OF STUDY **************************
 * 100-Year 24-Hour Hydrology Study                                        *
 * Olinda Alpha RELOOC 1400 Ultimate Elevation                             *
 * CHM                                                                     *
 **************************************************************************

  FILE NAME: OLIN14.DAT
  TIME/DATE OF STUDY: 14:40 05/13/2004
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                  --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:  CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.  (FT)     (FT)     SIDE / SIDE/ WAY    (FT)   (FT)   (FT)  (FT)    (n)
===  =====  =========  =================  ======  =====  ====== =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167  0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.01 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   400.00
  ELEVATION DATA: UPSTREAM(FEET) =   1410.00  DOWNSTREAM(FEET) =   1380.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.682
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.237
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
```

```
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN   (MIN.)
 NATURAL POOR COVER
 "GRASS"                     -        4.80      0.05       1.00     0    9.68
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     18.09
 TOTAL AREA(ACRES) =      4.80   PEAK FLOW RATE(CFS) =      18.09

****************************************************************************
 FLOW PROCESS FROM NODE      1.00 TO NODE      1.01 IS CODE =  81
----------------------------------------------------------------------------

 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.68
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.254
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "GRASS"                     D        2.00      0.20       1.00    98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     2.00      SUBAREA RUNOFF(CFS) =    7.30
 EFFECTIVE AREA(ACRES) =      6.80   AREA-AVERAGED Fm(INCH/HR) =  0.09
 AREA-AVERAGED Fp(INCH/HR) =  0.09   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =      6.80       PEAK FLOW RATE(CFS) =      25.46

****************************************************************************
 FLOW PROCESS FROM NODE      1.01 TO NODE      1.02 IS CODE =  51
----------------------------------------------------------------------------

 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    1380.00  DOWNSTREAM(FEET) =   1360.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    600.00   CHANNEL SLOPE =  0.0333
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    3.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.021
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED                -        7.10      0.05       1.00     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     38.15
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.88
 AVERAGE FLOW DEPTH(FEET) =   0.45   TRAVEL TIME(MIN.) =   1.01
 Tc(MIN.) =  10.69
 SUBAREA AREA(ACRES) =     7.10       SUBAREA RUNOFF(CFS) =   25.38
 EFFECTIVE AREA(ACRES) =   13.90      AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.07   AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =    13.90         PEAK FLOW RATE(CFS) =      49.41

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.52   FLOW VELOCITY(FEET/SEC.) =  10.78
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.02 =  1000.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.02 TO NODE      1.03 IS CODE =  51
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1360.00  DOWNSTREAM(FEET) =   1350.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   250.00   CHANNEL SLOPE =  0.0400
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    3.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.955
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP    (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        8.50     0.05       1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      64.35
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.58
  AVERAGE FLOW DEPTH(FEET) =    0.58   TRAVEL TIME(MIN.) =   0.33
  Tc(MIN.) =  11.03
  SUBAREA AREA(ACRES) =    8.50        SUBAREA RUNOFF(CFS) =   29.87
  EFFECTIVE AREA(ACRES) =   22.40      AREA-AVERAGED Fm(INCH/HR) =   0.06
  AREA-AVERAGED Fp(INCH/HR) =   0.06   AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =   22.40          PEAK FLOW RATE(CFS) =      78.45

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =  13.55
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.03 =  1250.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE      1.03 TO NODE      1.04 IS CODE =  51
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1235.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1400.00   CHANNEL SLOPE =  0.0821
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    3.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.709
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP    (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       16.44     0.05       1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     105.52
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  18.97
  AVERAGE FLOW DEPTH(FEET) =    0.62   TRAVEL TIME(MIN.) =   1.23
  Tc(MIN.) =  12.26
  SUBAREA AREA(ACRES) =   16.44        SUBAREA RUNOFF(CFS) =   54.14
  EFFECTIVE AREA(ACRES) =   38.84      AREA-AVERAGED Fm(INCH/HR) =   0.06
  AREA-AVERAGED Fp(INCH/HR) =   0.06   AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =   38.84          PEAK FLOW RATE(CFS) =     127.63

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.70   FLOW VELOCITY(FEET/SEC.) =  20.24
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.04 =  2650.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE      1.04 TO NODE      1.05 IS CODE =  51
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1235.00  DOWNSTREAM(FEET) =   1145.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00   CHANNEL SLOPE =  0.1000
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.603
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)   CN
 USER-DEFINED                -       20.40     0.05       1.00      -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     160.24
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  23.33
 AVERAGE FLOW DEPTH(FEET) =   0.75   TRAVEL TIME(MIN.) =   0.64
 Tc(MIN.) =  12.90
 SUBAREA AREA(ACRES) =   20.40       SUBAREA RUNOFF(CFS) =   65.22
 EFFECTIVE AREA(ACRES) =   59.24     AREA-AVERAGED Fm(INCH/HR) =   0.06
 AREA-AVERAGED Fp(INCH/HR) =   0.06  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =   59.24         PEAK FLOW RATE(CFS) =     189.14

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.83   FLOW VELOCITY(FEET/SEC.) =  24.69
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.05 =  3550.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.05 TO NODE      1.06 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1145.00  DOWNSTREAM(FEET) =   1000.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1500.00   CHANNEL SLOPE =  0.0967
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.469
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)   CN
 USER-DEFINED                -       44.50     0.05       1.00      -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     257.61
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  26.99
 AVERAGE FLOW DEPTH(FEET) =   1.00   TRAVEL TIME(MIN.) =   0.93
 Tc(MIN.) =  13.83
 SUBAREA AREA(ACRES) =   44.50       SUBAREA RUNOFF(CFS) =  136.94
 EFFECTIVE AREA(ACRES) =  103.74     AREA-AVERAGED Fm(INCH/HR) =   0.05
 AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =  103.74         PEAK FLOW RATE(CFS) =     318.96

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.13   FLOW VELOCITY(FEET/SEC.) =  29.00
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.06 =  5050.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.06 TO NODE      1.07 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1000.00  DOWNSTREAM(FEET) =    870.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00   CHANNEL SLOPE =  0.1444
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    3.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.406
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap      SCS
      LAND USE             GROUP    (ACRES)  (INCH/HR)  (DECIMAL)   CN
 USER-DEFINED                -       24.10      0.05        1.00     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     355.36
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  34.29
 AVERAGE FLOW DEPTH(FEET) =   1.08   TRAVEL TIME(MIN.) =   0.44
 Tc(MIN.) =  14.26
 SUBAREA AREA(ACRES) =   24.10       SUBAREA RUNOFF(CFS) =   72.79
 EFFECTIVE AREA(ACRES) =  127.84     AREA-AVERAGED Fm(INCH/HR) =   0.05
 AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =  127.84         PEAK FLOW RATE(CFS) =     385.87

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.12   FLOW VELOCITY(FEET/SEC.) =  35.54
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.07 =  5950.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.07 TO NODE      1.08 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    870.00  DOWNSTREAM(FEET) =    730.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.1273
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.022   MAXIMUM DEPTH(FEET) =    3.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.305
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap      SCS
      LAND USE             GROUP    (ACRES)  (INCH/HR)  (DECIMAL)   CN
 USER-DEFINED                -        4.90      0.05        1.00     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     393.05
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  26.11
 AVERAGE FLOW DEPTH(FEET) =   1.47   TRAVEL TIME(MIN.) =   0.70
 Tc(MIN.) =  14.96
 SUBAREA AREA(ACRES) =    4.90       SUBAREA RUNOFF(CFS) =   14.35
 EFFECTIVE AREA(ACRES) =  132.74     AREA-AVERAGED Fm(INCH/HR) =   0.05
 AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =  132.74         PEAK FLOW RATE(CFS) =     388.59

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.46   FLOW VELOCITY(FEET/SEC.) =  26.08
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.08 =  7050.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.08 TO NODE      1.09 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
 ELEVATION DATA: UPSTREAM(FEET) =    730.00  DOWNSTREAM(FEET) =    600.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.2167
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.276
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap      SCS
      LAND USE             GROUP    (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED                -         0.00      0.05       1.00      -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.00
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     388.59
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  40.44
 AVERAGE FLOW DEPTH(FEET) =    1.01   TRAVEL TIME(MIN.) =   0.25
 Tc(MIN.) =  15.21
 SUBAREA AREA(ACRES) =    0.00        SUBAREA RUNOFF(CFS) =    0.00
 EFFECTIVE AREA(ACRES) =  132.74      AREA-AVERAGED Fm(INCH/HR) =   0.05
 AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =  132.74          PEAK FLOW RATE(CFS) =     388.59
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.01   FLOW VELOCITY(FEET/SEC.) =  40.44
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.09 =  7650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.08 TO NODE      1.09 IS CODE =   1
----------------------------------------------------------------------------

 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.21
 RAINFALL INTENSITY(INCH/HR) =   3.28
 AREA-AVERAGED Fm(INCH/HR) =  0.05
 AREA-AVERAGED Fp(INCH/HR) =  0.05
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =  132.74
 TOTAL STREAM AREA(ACRES) =  132.74
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     388.59

****************************************************************************
 FLOW PROCESS FROM NODE      1.10 TO NODE      1.11 IS CODE =  21
----------------------------------------------------------------------------

 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1200.00
 ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1125.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.509
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.659
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap      SCS   Tc
      LAND USE             GROUP    (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL POOR COVER
 "GRASS"                     -         9.60      0.05       1.00    98   12.51
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     31.18
```

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 TOTAL AREA(ACRES) =       9.60   PEAK FLOW RATE(CFS) =      31.18

****************************************************************************
 FLOW PROCESS FROM NODE      1.11 TO NODE      1.12 IS CODE =  51
----------------------------------------------------------------------------

 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1125.00  DOWNSTREAM(FEET) =   1040.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1200.00   CHANNEL SLOPE =  0.0708
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =    2.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.187
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      16.70      0.05       1.00     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      54.79
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    5.71
 AVERAGE FLOW DEPTH(FEET) =    0.60   TRAVEL TIME(MIN.) =    3.50
 Tc(MIN.) =  16.01
 SUBAREA AREA(ACRES) =   16.70      SUBAREA RUNOFF(CFS) =   47.14
 EFFECTIVE AREA(ACRES) =   26.30    AREA-AVERAGED Fm(INCH/HR) =   0.05
 AREA-AVERAGED Fp(INCH/HR) =    0.05  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =   26.30        PEAK FLOW RATE(CFS) =       74.24

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.70   FLOW VELOCITY(FEET/SEC.) =   6.18
 LONGEST FLOWPATH FROM NODE      1.10 TO NODE      1.12 =  2400.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.12 TO NODE      1.13 IS CODE =  51
----------------------------------------------------------------------------

 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1040.00  DOWNSTREAM(FEET) =    930.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1300.00   CHANNEL SLOPE =  0.0846
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =    2.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.900
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      37.70      0.05       1.00     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     122.63
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    7.60
 AVERAGE FLOW DEPTH(FEET) =    0.86   TRAVEL TIME(MIN.) =    2.85
 Tc(MIN.) =  18.86
 SUBAREA AREA(ACRES) =   37.70      SUBAREA RUNOFF(CFS) =   96.70
 EFFECTIVE AREA(ACRES) =   64.00    AREA-AVERAGED Fm(INCH/HR) =   0.05
 AREA-AVERAGED Fp(INCH/HR) =    0.05  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =   64.00        PEAK FLOW RATE(CFS) =      164.16

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.00   FLOW VELOCITY(FEET/SEC.) =   8.25
 LONGEST FLOWPATH FROM NODE      1.10 TO NODE      1.13 =  3700.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE      1.12 TO NODE      1.13 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.86
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.900
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      29.10      0.05       1.00      -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   29.10      SUBAREA RUNOFF(CFS) =   74.64
  EFFECTIVE AREA(ACRES) =    93.10   AREA-AVERAGED Fm(INCH/HR) =  0.05
  AREA-AVERAGED Fp(INCH/HR) =  0.05  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    93.10       PEAK FLOW RATE(CFS) =     238.80

****************************************************************************
  FLOW PROCESS FROM NODE      1.13 TO NODE      1.14 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    930.00  DOWNSTREAM(FEET) =    800.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   800.00   CHANNEL SLOPE =  0.1625
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.864
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      20.00      0.05       1.00      -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    264.13
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  32.44
  AVERAGE FLOW DEPTH(FEET) =   0.87   TRAVEL TIME(MIN.) =   0.41
  Tc(MIN.) =  19.27
  SUBAREA AREA(ACRES) =   20.00       SUBAREA RUNOFF(CFS) =   50.65
  EFFECTIVE AREA(ACRES) =  113.10     AREA-AVERAGED Fm(INCH/HR) =   0.05
  AREA-AVERAGED Fp(INCH/HR) =    0.05  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =  113.10         PEAK FLOW RATE(CFS) =     286.42

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.92   FLOW VELOCITY(FEET/SEC.) =  33.26
  LONGEST FLOWPATH FROM NODE      1.10 TO NODE      1.14 =  4500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.14 TO NODE      1.09 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    800.00  DOWNSTREAM(FEET) =    600.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00   CHANNEL SLOPE =  0.2222
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.830
  SUBAREA LOSS RATE DATA(AMC III):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP    (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED                -       27.90     0.05       1.00      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    321.32
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  38.40
AVERAGE FLOW DEPTH(FEET) =   0.90   TRAVEL TIME(MIN.) =   0.39
Tc(MIN.) =  19.66
SUBAREA AREA(ACRES) =   27.90       SUBAREA RUNOFF(CFS) =   69.79
EFFECTIVE AREA(ACRES) =  141.00     AREA-AVERAGED Fm(INCH/HR) =   0.05
AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
TOTAL AREA(ACRES) =  141.00         PEAK FLOW RATE(CFS) =     352.72

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.94   FLOW VELOCITY(FEET/SEC.) =  39.95
LONGEST FLOWPATH FROM NODE      1.10 TO NODE      1.09 =  5400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.14 TO NODE      1.09 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.66
  RAINFALL INTENSITY(INCH/HR) =   2.83
  AREA-AVERAGED Fm(INCH/HR) =  0.05
  AREA-AVERAGED Fp(INCH/HR) =  0.05
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =  141.00
  TOTAL STREAM AREA(ACRES) =  141.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    352.72

  ** CONFLUENCE DATA **
   STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
   NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)         (ACRES)    NODE
      1     388.59   15.21     3.276   0.05( 0.05) 1.00    132.7       1.00
      2     352.72   19.66     2.830   0.05( 0.05) 1.00    141.0       1.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
   NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)         (ACRES)    NODE
      1     705.31   15.21     3.276   0.05( 0.05) 1.00    241.8       1.00
      2     687.47   19.66     2.830   0.05( 0.05) 1.00    273.7       1.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    705.31    Tc(MIN.) =    15.21
  EFFECTIVE AREA(ACRES) =   241.82   AREA-AVERAGED Fm(INCH/HR) =  0.05
  AREA-AVERAGED Fp(INCH/HR) =  0.05  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    273.74
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.09 =  7650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.00
  ELEVATION DATA: UPSTREAM(FEET) =   1410.00  DOWNSTREAM(FEET) =   1380.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.349
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.690
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "GRASS"                   -        5.10      0.05       1.00     98   12.35
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =     16.71
  TOTAL AREA(ACRES) =      5.10   PEAK FLOW RATE(CFS) =     16.71

****************************************************************************
  FLOW PROCESS FROM NODE      1.20 TO NODE      1.21 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1380.00  DOWNSTREAM(FEET) =   1232.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1450.00   CHANNEL SLOPE =  0.1021
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.426
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       11.70      0.05       1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     34.50
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.59
  AVERAGE FLOW DEPTH(FEET) =   0.30   TRAVEL TIME(MIN.) =   1.78
  Tc(MIN.) =  14.13
  SUBAREA AREA(ACRES) =   11.70       SUBAREA RUNOFF(CFS) =   35.55
  EFFECTIVE AREA(ACRES) =   16.80     AREA-AVERAGED Fm(INCH/HR) =   0.05
  AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   16.80         PEAK FLOW RATE(CFS) =      51.04

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.38   FLOW VELOCITY(FEET/SEC.) =  15.73
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.21 =  2050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.20 TO NODE      1.21 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.13
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.426
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "GRASS"                   D        9.00      0.20       1.00     98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
```

```
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     9.00      SUBAREA RUNOFF(CFS) =   26.13
 EFFECTIVE AREA(ACRES) =     25.80   AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.10  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     25.80       PEAK FLOW RATE(CFS) =      77.17

****************************************************************************
 FLOW PROCESS FROM NODE      1.21 TO NODE      1.22 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1232.00  DOWNSTREAM(FEET) =   1220.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   800.00   CHANNEL SLOPE =  0.0150
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.259
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      20.20      0.05       1.00     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    106.35
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.78
 AVERAGE FLOW DEPTH(FEET) =   1.03   TRAVEL TIME(MIN.) =   1.24
 Tc(MIN.) =  15.36
 SUBAREA AREA(ACRES) =   20.20       SUBAREA RUNOFF(CFS) =   58.34
 EFFECTIVE AREA(ACRES) =   46.00     AREA-AVERAGED Fm(INCH/HR) =   0.08
 AREA-AVERAGED Fp(INCH/HR) =    0.08  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =   46.00         PEAK FLOW RATE(CFS) =     131.65

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.16   FLOW VELOCITY(FEET/SEC.) =  11.60
 LONGEST FLOWPATH FROM NODE       1.00 TO NODE      1.22 =  2850.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.21 TO NODE      1.22 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.36
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.259
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "GRASS"                    D       2.60      0.20       1.00    98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =      2.60     SUBAREA RUNOFF(CFS) =    7.16
 EFFECTIVE AREA(ACRES) =     48.60   AREA-AVERAGED Fm(INCH/HR) =  0.09
 AREA-AVERAGED Fp(INCH/HR) =  0.09  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     48.60       PEAK FLOW RATE(CFS) =     138.80

****************************************************************************
 FLOW PROCESS FROM NODE      1.22 TO NODE      1.23 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =    1220.00  DOWNSTREAM(FEET) =    1207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =    800.00   CHANNEL SLOPE =  0.0162
  CHANNEL BASE(FEET) =     8.00   "Z" FACTOR =    1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    3.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.148
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       26.00      0.05       1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     175.01
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.38
  AVERAGE FLOW DEPTH(FEET) =    1.31   TRAVEL TIME(MIN.) =    1.00
  Tc(MIN.) =  16.36
  SUBAREA AREA(ACRES) =    26.00       SUBAREA RUNOFF(CFS) =    72.48
  EFFECTIVE AREA(ACRES) =    74.60     AREA-AVERAGED Fm(INCH/HR) =    0.07
  AREA-AVERAGED Fp(INCH/HR) =    0.07  AREA-AVERAGED Ap =    1.00
  TOTAL AREA(ACRES) =    74.60         PEAK FLOW RATE(CFS) =      206.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.48   FLOW VELOCITY(FEET/SEC.) =  13.70
  LONGEST FLOWPATH FROM NODE       1.00 TO NODE       1.23 =  3650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE       1.23 TO NODE       1.24 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    1207.00  DOWNSTREAM(FEET) =    1160.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   1200.00   CHANNEL SLOPE =  0.0392
  CHANNEL BASE(FEET) =     8.00   "Z" FACTOR =    1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    3.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.033
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       31.30      0.05       1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     248.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  19.62
  AVERAGE FLOW DEPTH(FEET) =    1.28   TRAVEL TIME(MIN.) =    1.02
  Tc(MIN.) =  17.38
  SUBAREA AREA(ACRES) =    31.30       SUBAREA RUNOFF(CFS) =    84.04
  EFFECTIVE AREA(ACRES) =   105.90     AREA-AVERAGED Fm(INCH/HR) =    0.07
  AREA-AVERAGED Fp(INCH/HR) =    0.07  AREA-AVERAGED Ap =    1.00
  TOTAL AREA(ACRES) =   105.90         PEAK FLOW RATE(CFS) =      282.78

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.38   FLOW VELOCITY(FEET/SEC.) =  20.33
  LONGEST FLOWPATH FROM NODE       1.00 TO NODE       1.24 =  4850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE       1.23 TO NODE       1.24 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.38
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.033
```

```
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "GRASS"                    D        8.40      0.20       1.00     98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     8.40     SUBAREA RUNOFF(CFS) =   21.42
 EFFECTIVE AREA(ACRES) =   114.30   AREA-AVERAGED Fm(INCH/HR) =  0.08
 AREA-AVERAGED Fp(INCH/HR) =  0.08  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =   114.30       PEAK FLOW RATE(CFS) =     304.20

****************************************************************************
 FLOW PROCESS FROM NODE      1.24 TO NODE      1.25 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1160.00  DOWNSTREAM(FEET) =   1120.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1300.00   CHANNEL SLOPE =  0.0308
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.936
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       39.40      0.05       1.00     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    355.38
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  20.20
 AVERAGE FLOW DEPTH(FEET) =   1.67   TRAVEL TIME(MIN.) =   1.07
 Tc(MIN.) =  18.45
 SUBAREA AREA(ACRES) =   39.40      SUBAREA RUNOFF(CFS) =  102.34
 EFFECTIVE AREA(ACRES) =  153.70    AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.07  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =  153.70        PEAK FLOW RATE(CFS) =     396.54

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.78   FLOW VELOCITY(FEET/SEC.) =  20.87
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.25 =  6150.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.24 TO NODE      1.25 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  18.45
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.936
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "GRASS"                    D        8.50      0.20       1.00     98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     8.50     SUBAREA RUNOFF(CFS) =   20.93
 EFFECTIVE AREA(ACRES) =   162.20   AREA-AVERAGED Fm(INCH/HR) =  0.08
 AREA-AVERAGED Fp(INCH/HR) =  0.08  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =   162.20       PEAK FLOW RATE(CFS) =     417.47
```

```
****************************************************************************
 FLOW PROCESS FROM NODE      1.25 TO NODE      1.26 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1120.00  DOWNSTREAM(FEET) =   1080.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1900.00   CHANNEL SLOPE =  0.0211
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.790
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap      SCS
      LAND USE             GROUP    (ACRES)  (INCH/HR)  (DECIMAL)   CN
 USER-DEFINED                -       31.10      0.05       1.00      -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    455.84
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  18.87
 AVERAGE FLOW DEPTH(FEET) =   2.15   TRAVEL TIME(MIN.) =   1.68
 Tc(MIN.) =  20.13
 SUBAREA AREA(ACRES) =   31.10        SUBAREA RUNOFF(CFS) =   76.69
 EFFECTIVE AREA(ACRES) =  193.30     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.07  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =  193.30          PEAK FLOW RATE(CFS) =     472.84

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.18   FLOW VELOCITY(FEET/SEC.) =  19.26
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.26 =  8050.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.25 TO NODE      1.26 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  20.13
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.790
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap      SCS
      LAND USE             GROUP    (ACRES)  (INCH/HR)  (DECIMAL)   CN
 NATURAL POOR COVER
 "GRASS"                     D        4.30      0.20       1.00     98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    4.30      SUBAREA RUNOFF(CFS) =   10.02
 EFFECTIVE AREA(ACRES) =   197.60   AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.07  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =   197.60       PEAK FLOW RATE(CFS) =     482.86

****************************************************************************
 FLOW PROCESS FROM NODE      1.26 TO NODE      1.27 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1080.00  DOWNSTREAM(FEET) =   1020.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.0545
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.739
 SUBAREA LOSS RATE DATA(AMC III):
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```
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       7.30     0.05       1.00      -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    491.69
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  27.18
 AVERAGE FLOW DEPTH(FEET) =   1.71   TRAVEL TIME(MIN.) =   0.67
 Tc(MIN.) =  20.80
 SUBAREA AREA(ACRES) =    7.30       SUBAREA RUNOFF(CFS) =   17.67
 EFFECTIVE AREA(ACRES) =  204.90     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.07  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =  204.90         PEAK FLOW RATE(CFS) =     491.41

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.77   FLOW VELOCITY(FEET/SEC.) =  26.06
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.27 =  9150.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.26 TO NODE      1.27 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  20.80
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.739
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "GRASS"                    D       3.40     0.20       1.00     98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    3.40     SUBAREA RUNOFF(CFS) =    7.77
 EFFECTIVE AREA(ACRES) =   208.30   AREA-AVERAGED Fm(INCH/HR) =  0.08
 AREA-AVERAGED Fp(INCH/HR) =  0.08  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =   208.30       PEAK FLOW RATE(CFS) =     499.18

****************************************************************************
 FLOW PROCESS FROM NODE      1.27 TO NODE      1.28 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    1020.00  DOWNSTREAM(FEET) =    940.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    800.00   CHANNEL SLOPE =  0.1000
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.709
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      18.60     0.05       1.00      -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     521.44
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  34.18
 AVERAGE FLOW DEPTH(FEET) =   1.49   TRAVEL TIME(MIN.) =   0.39
 Tc(MIN.) =  21.19
 SUBAREA AREA(ACRES) =   18.60      SUBAREA RUNOFF(CFS) =   44.51
 EFFECTIVE AREA(ACRES) =  226.90    AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.07  AREA-AVERAGED Ap =   1.00
```

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  TOTAL AREA(ACRES) =  226.90        PEAK FLOW RATE(CFS) =     538.13

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.52   FLOW VELOCITY(FEET/SEC.) =  34.57
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.28 =  9950.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.27 TO NODE      1.28 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.19
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.709
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA       Fp          Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "GRASS"                    D        7.80      0.20       1.00     98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     7.80     SUBAREA RUNOFF(CFS) =   17.61
  EFFECTIVE AREA(ACRES) =   234.70   AREA-AVERAGED Fm(INCH/HR) =  0.08
  AREA-AVERAGED Fp(INCH/HR) =  0.08  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   234.70       PEAK FLOW RATE(CFS) =     555.75

****************************************************************************
  FLOW PROCESS FROM NODE      1.28 TO NODE      1.29 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    940.00  DOWNSTREAM(FEET) =    700.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1400.00   CHANNEL SLOPE =  0.1714
  CHANNEL BASE(FEET) =    8.00    "Z" FACTOR =    1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    3.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.668
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA       Fp          Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       41.50      0.05       1.00      -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    604.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  43.08
  AVERAGE FLOW DEPTH(FEET) =   1.39   TRAVEL TIME(MIN.) =   0.54
  Tc(MIN.) =  21.74
  SUBAREA AREA(ACRES) =   41.50       SUBAREA RUNOFF(CFS) =   97.78
  EFFECTIVE AREA(ACRES) =  276.20     AREA-AVERAGED Fm(INCH/HR) =   0.07
  AREA-AVERAGED Fp(INCH/HR) =    0.07  AREA-AVERAGED Ap =    1.00
  TOTAL AREA(ACRES) =  276.20         PEAK FLOW RATE(CFS) =     644.83

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.44   FLOW VELOCITY(FEET/SEC.) =  43.93
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.29 = 11350.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)       =     276.20  TC(MIN.) =     21.74
  EFFECTIVE AREA(ACRES) =     276.20  AREA-AVERAGED Fm(INCH/HR)=  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.07  AREA-AVERAGED Ap =  1.00
  PEAK FLOW RATE(CFS)     =     644.83
============================================================================
```

```
===============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
____________________________________________________________________________
****************************************************************************

              F L O O D    R O U T I N G    A N A L Y S I S
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                           Analysis prepared by:

                       Bryan A. Stirrat & Associates
                           1360 Valley Vista Dr.
                           Diamond Bar, CA 91765

 ************************** DESCRIPTION OF STUDY **************************
 * Olinda Alpha Landfill Unit Hydrograph and Detention Basin A Analysis     *
 * RELOOC Elevation 1410 Expansion                                          *
 * CHM                                                                      *
 ****************************************************************************

  FILE NAME: OL14DETA.DAT
  TIME/DATE OF STUDY: 11:02 05/14/2004


****************************************************************************
  FLOW PROCESS FROM NODE     1.00 TO NODE     1.09 IS CODE = 1.1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     273.700 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.230 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.050
         LOW LOSS FRACTION = 0.050
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.52
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.10
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.50
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.50
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  3.40
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  5.70

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 0.988
          30-MINUTE FACTOR = 0.988
           1-HOUR FACTOR = 0.988
           3-HOUR FACTOR = 0.998
           6-HOUR FACTOR = 0.999
          24-HOUR FACTOR = 0.999

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  36.232
```

```
        RUNOFF HYDROGRAPH LISTING LIMITS:
        MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  14.00
        MODEL TIME(HOURS) FOR END OF RESULTS =  18.00

======================================================================
                   UNIT HYDROGRAPH DETERMINATION
----------------------------------------------------------------------
    INTERVAL           "S" GRAPH           UNIT HYDROGRAPH
     NUMBER           MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------
       1                 2.758                 91.284
       2                12.436                320.366
       3                37.461                828.348
       4                63.912                875.517
       5                74.844                361.857
       6                81.961                235.599
       7                87.149                171.714
       8                90.869                123.119
       9                93.713                 94.143
      10                95.733                 66.876
      11                97.046                 43.466
      12                97.985                 31.088
      13                98.222                  7.826
      14                98.409                  6.201
      15                98.597                  6.209
      16                98.784                  6.199
      17                98.972                  6.206
      18                99.159                  6.199
      19                99.346                  6.199
      20                99.533                  6.199
      21                99.721                  6.199
      22                99.908                  6.199
      23               100.000                  3.048

----------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =        5.8238
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     124.0481
----------------------------------------------------------------------
```

```
============================================================================

                        2 4 - H O U R    S T O R M
                    R U N O F F    H Y D R O G R A P H

============================================================================
               HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)  Q(CFS)   0.      200.0     400.0     600.0     800.0
----------------------------------------------------------------------------
  14.000     43.7460     88.38  .   Q     .   V     .         .         .
  14.083     44.3682     90.34  .   Q     .   V     .         .         .
  14.167     45.0078     92.87  .   Q     .   V     .         .         .
  14.250     45.6724     96.49  .   Q     .   V     .         .         .
  14.333     46.3635    100.35  .    Q    .   V     .         .         .
  14.417     47.0753    103.35  .    Q    .    V    .         .         .
  14.500     47.8072    106.27  .    Q    .    V    .         .         .
  14.583     48.5595    109.24  .    Q    .    V    .         .         .
  14.667     49.3331    112.33  .    Q    .    V    .         .         .
  14.750     50.1291    115.57  .    Q    .     V   .         .         .
  14.833     50.9489    119.04  .    Q    .     V   .         .         .
  14.917     51.7942    122.74  .     Q   .     V   .         .         .
  15.000     52.6674    126.78  .     Q   .     V   .         .         .
  15.083     53.5707    131.17  .     Q   .      V  .         .         .
  15.167     54.5077    136.04  .     Q   .      V  .         .         .
  15.250     55.4820    141.48  .      Q  .      V  .         .         .
  15.333     56.4988    147.63  .      Q  .       V .         .         .
  15.417     57.5618    154.35  .      Q  .       V .         .         .
  15.500     58.6736    161.44  .       Q .       V .         .         .
  15.583     59.8330    168.34  .       Q .        V.         .         .
  15.667     61.0520    177.00  .       Q .        V.         .         .
  15.750     62.3580    189.62  .        Q.         V         .         .
  15.833     63.7730    205.46  .         Q         V         .         .
  15.917     65.3338    226.63  .         .Q        .V        .         .
  16.000     67.1386    262.06  .         .  Q      .V        .         .
  16.083     69.5704    353.10  .         .      Q  . V       .         .
  16.167     73.0353    503.10  .         .         .  V Q    .         .
  16.250     77.9304    710.77  .         .         .    V    .    Q    .
  16.333     82.6778    689.32  .         .         .     V   .   Q     .
  16.417     85.7586    447.33  .         .         . Q    V  .         .
  16.500     88.2188    357.23  .         .      Q  .       V .         .
  16.583     90.2947    301.42  .         .    Q    .        V.         .
  16.667     92.0743    258.40  .         . Q       .        V.         .
  16.750     93.6280    225.60  .         .Q        .         V         .
  16.833     94.9824    196.65  .        Q.         .         V         .
  16.917     96.1665    171.94  .       Q .         .         .V        .
  17.000     97.2245    153.61  .      Q  .         .         .V        .
  17.083     98.1481    134.11  .     Q   .         .         .V        .
  17.167     99.0065    124.63  .     Q   .         .         .V        .
  17.250     99.8083    116.43  .    Q    .         .         . V       .
  17.333    100.5605    109.21  .    Q    .         .         . V       .
  17.417    101.2746    103.70  .    Q    .         .         . V       .
  17.500    101.9564     98.99  .   Q     .         .         . V       .
  17.583    102.6095     94.84  .   Q     .         .         .  V      .
  17.667    103.2370     91.11  .   Q     .         .         .  V      .
  17.750    103.8404     87.61  .   Q     .         .         .  V      .
  17.833    104.4201     84.17  .   Q     .         .         .  V      .
  17.917    104.9696     79.78  .  Q      .         .         .  V      .
  18.000    105.4921     75.86  .  Q      .         .         .   V     .
```

```
****************************************************************************
  FLOW PROCESS FROM NODE      1.09 TO NODE      1.09 IS CODE = 3.1
----------------------------------------------------------------------------
  >>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
============================================================================

                       INFLOW
                     (STREAM 1)
                          |
                          |
                          V                   __effective depth
                   -----------                |   (and volume)
                  |           |     |         |
                  |           |     |....V........
                  | detention |<-->|              outflow
                  |   basin   |     |.........________
                   -----------      |    ^     |  \
                          |         |  dead    |   basin outlet
                          V         | storage |
                       OUTFLOW        ---------
                     (STREAM 1)


          ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 1
          THROUGH A FLOW-THROUGH DETENTION BASIN
          SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
            DEAD STORAGE(AF) =      0.000
            SPECIFIED DEAD STORAGE(AF) FILLED =      0.000
            SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET =      0.000
            DETENTION BASIN CONSTANT LOSS RATE(CFS) =    0.00

          BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

           INTERVAL     DEPTH       OUTFLOW      STORAGE
            NUMBER      (FT)         (CFS)        (AF)
                1        0.00         0.00        0.000
                2        2.00        80.00        1.400
                3        4.00       220.00        3.800
                4        6.00       365.00        5.500
                5        8.00       530.00        6.900
                6       10.00       760.00        7.800

============================================================================
  MODIFIED-PULS BASIN ROUTING MODEL RESULTS(5-MINUTE COMPUTATION INTERVALS):
  (Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
         MEAN OUTFLOW is the average value during the unit interval.)

             CLOCK                                                MEAN
              TIME  DEAD-STORAGE  INFLOW     LOSS   EFFECTIVE  OUTFLOW  EFFECTIVE
             (HRS)  FILLED(AF)    (CFS)     (CFS)  DEPTH(FT)   (CFS)   VOLUME(AF)
----------------------------------------------------------------------------
            14.083        0.000    90.34     0.00       2.10     86.1      1.519
            14.167        0.000    92.87     0.00       2.13     88.0      1.553
            14.250        0.000    96.49     0.00       2.16     90.2      1.597
            14.333        0.000   100.35     0.00       2.21     93.0      1.648
            14.417        0.000   103.35     0.00       2.25     95.9      1.699
```

```
      14.500       0.000   106.27     0.00       2.29     98.9      1.749
      14.583       0.000   109.24     0.00       2.33    101.9      1.800
      14.667       0.000   112.33     0.00       2.38    104.8      1.852
      14.750       0.000   115.57     0.00       2.42    107.9      1.905
      14.833       0.000   119.04     0.00       2.47    111.0      1.960
      14.917       0.000   122.74     0.00       2.51    114.3      2.018
      15.000       0.000   126.78     0.00       2.57    117.8      2.079
      15.083       0.000   131.17     0.00       2.62    121.6      2.145
      15.167       0.000   136.04     0.00       2.68    125.6      2.217
      15.250       0.000   141.48     0.00       2.75    130.0      2.297
      15.333       0.000   147.63     0.00       2.82    134.9      2.385
      15.417       0.000   154.35     0.00       2.90    140.3      2.482
      15.500       0.000   161.44     0.00       2.99    146.2      2.587
      15.583       0.000   168.34     0.00       3.08    152.4      2.696
      15.667       0.000   177.00     0.00       3.18    159.2      2.819
      15.750       0.000   189.62     0.00       3.31    167.3      2.973
      15.833       0.000   205.46     0.00       3.47    177.4      3.166
      15.917       0.000   226.63     0.00       3.68    190.3      3.416
      16.000       0.000   262.06     0.00       3.99    208.4      3.786
      16.083       0.000   353.10     0.00       4.82    249.4      4.500
      16.167       0.000   503.10     0.00       6.25    332.6      5.674
      16.250       0.000   710.77     0.00       8.61    492.9      7.175
      16.333       0.000   689.32     0.00       9.34    641.9      7.501
      16.417       0.000   447.33     0.00       7.49    586.0      6.546
      16.500       0.000   357.23     0.00       6.58    450.5      5.904
      16.583       0.000   301.42     0.00       5.82    382.3      5.347
      16.667       0.000   258.40     0.00       5.23    330.7      4.849
      16.750       0.000   225.60     0.00       4.71    290.4      4.403
      16.833       0.000   196.65     0.00       4.24    254.4      4.005
      16.917       0.000   171.94     0.00       3.87    224.2      3.645
      17.000       0.000   153.61     0.00       3.60    201.4      3.316
      17.083       0.000   134.11     0.00       3.32    182.1      2.985
      17.167       0.000   124.63     0.00       3.09    164.5      2.711
      17.250       0.000   116.43     0.00       2.90    149.8      2.481
      17.333       0.000   109.21     0.00       2.74    137.4      2.287
      17.417       0.000   103.70     0.00       2.61    127.1      2.126
      17.500       0.000    98.99     0.00       2.49    118.5      1.992
      17.583       0.000    94.84     0.00       2.40    111.2      1.879
      17.667       0.000    91.11     0.00       2.32    105.1      1.783
      17.750       0.000    87.61     0.00       2.25     99.9      1.698
      17.833       0.000    84.17     0.00       2.19     95.2      1.622
      17.917       0.000    79.78     0.00       2.12     90.8      1.547
      18.000       0.000    75.86     0.00       2.06     86.4      1.474
----------------------------------------------------------------------------
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =    124.048 AF
    BASIN  STORAGE =      0.000 AF (WITH      0.000 AF INITIALLY FILLED)
    OUTFLOW VOLUME =    124.048 AF
    LOSS    VOLUME =      0.000 AF
============================================================================

  END OF FLOODSCx ROUTING ANALYSIS
```

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****************************************************************************

          F L O O D   R O U T I N G   A N A L Y S I S
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 ************************** DESCRIPTION OF STUDY **************************
* 100-YEAR DETENTION BASIN ANALYSIS                                        *
* OLINDA ALPHA LANDFILL - DETENTION BASIN B                                *
*                                                                          *
 **************************************************************************

  FILE NAME: OLINBASB.DAT
  TIME/DATE OF STUDY: 14:12   5/14/2004


****************************************************************************
  FLOW PROCESS FROM NODE     1.00 TO NODE     1.29 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>UNIT-HYDROGRAPH ANALYSIS<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =     276.200 ACRES
         BASEFLOW =    .000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =     .350 HOURS
          CAUTION: LAG TIME IS LESS THAN  .50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         FOOTHILL S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =   .050
         LOW LOSS FRACTION =  .050
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=   .52
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  1.09
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.45
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.43
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  3.36
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  5.63

         PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR =  .988
          30-MINUTE FACTOR =  .988
           1-HOUR FACTOR =  .988
           3-HOUR FACTOR =  .998
           6-HOUR FACTOR =  .999
          24-HOUR FACTOR =  .999

         UNIT HYDROGRAPH TIME UNIT =    5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  23.810
```

```
RUNOFF HYDROGRAPH LISTING LIMITS:
MODEL TIME(HOURS) FOR BEGINNING OF RESULTS = 14.00
MODEL TIME(HOURS) FOR END OF RESULTS = 18.00

============================================================================
                     UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL         "S" GRAPH          UNIT HYDROGRAPH
     NUMBER         MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1               1.611                 53.817
        2               6.381                159.326
        3              14.227                262.076
        4              28.973                492.551
        5              54.224                843.460
        6              65.769                385.663
        7              72.966                240.384
        8              78.381                180.889
        9              82.667                143.143
       10              86.085                114.183
       11              88.929                 94.983
       12              91.247                 77.444
       13              93.179                 64.532
       14              94.748                 52.411
       15              95.963                 40.575
       16              96.953                 33.073
       17              97.692                 24.699
       18              98.100                 13.616
       19              98.385                  9.536
       20              98.643                  8.596
       21              98.881                  7.957
       22              99.071                  6.357
       23              99.262                  6.357
       24              99.452                  6.357
       25              99.642                  6.357
       26              99.833                  6.357
       27             100.000                  5.594

----------------------------------------------------------------------------

         TOTAL STORM RAINFALL(INCHES) =  5.63
         TOTAL SOIL-LOSS(INCHES) =   .25
         TOTAL EFFECTIVE RAINFALL(INCHES) =  5.37

----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =          5.8060
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     123.6420
----------------------------------------------------------------------------
```

```
============================================================================

                        2 4 - H O U R   S T O R M
                    R U N O F F   H Y D R O G R A P H

============================================================================
                 HYDROGRAPH IN FIVE-MINUTE INTERVALS(CFS)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      175.0     350.0     525.0     700.0
----------------------------------------------------------------------------
  14.083     43.5824     90.55  .    Q    .   V     .         .         .
  14.167     44.2184     92.36  .    Q    .   V     .         .         .
  14.250     44.8688     94.43  .    Q    .   V     .         .         .
  14.333     45.5344     96.64  .    Q    .   V     .         .         .
  14.417     46.2184     99.33  .    Q    .   V     .         .         .
  14.500     46.9189    101.71  .    Q    .    V    .         .         .
  14.583     47.6370    104.27  .    Q    .    V    .         .         .
  14.667     48.3727    106.82  .     Q   .    V    .         .         .
  14.750     49.1281    109.67  .     Q   .    V    .         .         .
  14.833     49.9033    112.56  .     Q   .     V   .         .         .
  14.917     50.7011    115.85  .     Q   .     V   .         .         .
  15.000     51.5222    119.21  .     Q   .     V   .         .         .
  15.083     52.3699    123.09  .      Q  .     V   .         .         .
  15.167     53.2453    127.11  .      Q  .      V  .         .         .
  15.250     54.1531    131.81  .      Q  .      V  .         .         .
  15.333     55.0950    136.76  .      Q  .      V  .         .         .
  15.417     56.0746    142.24  .       Q .       V .         .         .
  15.500     57.0894    147.35  .       Q .       V .         .         .
  15.583     58.1436    153.07  .       Q .       V .         .         .
  15.667     59.2308    157.87  .        Q.        V.         .         .
  15.750     60.3486    162.31  .        Q.        V.         .         .
  15.833     61.5353    172.31  .        Q.        V.         .         .
  15.917     62.8353    188.75  .         Q         V         .         .
  16.000     64.3051    213.42  .         . Q       V         .         .
  16.083     66.1541    268.47  .         .    Q    .V        .         .
  16.167     68.5447    347.12  .         .        Q. V       .         .
  16.250     71.5231    432.45  .         .         .  VQ     .         .
  16.333     75.2920    547.25  .         .         .   V     .Q        .
  16.417     79.8051    655.31  .         .         .    V    .      Q  .
  16.500     82.8570    443.13  .         .         .    QV   .         .
  16.583     85.2670    349.92  .         .        Q.      V  .         .
  16.667     87.3386    300.80  .         .      Q  .       V .         .
  16.750     89.1912    268.99  .         .    Q    .       V .         .
  16.833     90.8517    241.11  .         .  Q      .        V.         .
  16.917     92.3577    218.68  .         . Q       .        V.         .
  17.000     93.7258    198.64  .         .Q        .         V         .
  17.083     94.9770    181.67  .         Q         .         V         .
  17.167     96.1209    166.10  .        Q.         .         .V        .
  17.250     97.1660    151.74  .       Q .         .         .V        .
  17.333     98.1282    139.71  .      Q  .         .         .V        .
  17.417     99.0095    127.97  .      Q  .         .         . V       .
  17.500     99.8134    116.73  .     Q   .         .         . V       .
  17.583    100.5671    109.43  .     Q   .         .         . V       .
  17.667    101.2854    104.30  .    Q    .         .         . V       .
  17.750    101.9732     99.88  .    Q    .         .         . V       .
  17.833    102.6313     95.56  .    Q    .         .         .  V      .
  17.917    103.2665     92.23  .    Q    .         .         .  V      .
  18.000    103.8807     89.18  .    Q    .         .         .  V      .
```

```
****************************************************************************
  FLOW PROCESS FROM NODE      1.29 TO NODE      1.29 IS CODE =   3
----------------------------------------------------------------------------
  >>>>>MODEL FLOW-THROUGH DETENTION BASIN ROUTING<<<<<
============================================================================


         ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 1
         THROUGH A FLOW-THROUGH DETENTION BASIN
         USING FIVE-MINUTE UNIT INTERVALS:
         SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
           DEAD STORAGE(AF) =        .000
           SPECIFIED DEAD STORAGE(AF) FILLED =        .000
           SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET =        .000
           DETENTION BASIN CONSTANT LOSS RATE(CFS) =      .00


         BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

          INTERVAL     DEPTH     OUTFLOW    STORAGE
           NUMBER       (FT)      (CFS)       (AF)
               1         .00        .00       .000
               2         .20     115.00       .200
               3        1.00     125.00       .600
               4        2.50     130.00      1.300
               5        4.00     220.00      3.300
               6        6.00     415.00      5.500
               7        8.00     470.00      7.400


                     INFLOW
                   (STREAM 1)
                        |
                        |
                        |
                        V                    __effective depth
                  -----------                |   (and volume)
                 |           |     |         |
                 |           |     |....V........
                 | detention |<-->|          outflow
                 |   basin   |     |.........________
                  -----------      |    ^    |  \
                        |          |  dead   |  basin outlet
                        V          | storage |
                     OUTFLOW        ---------
                   (STREAM 1)

============================================================================
         BASIN ROUTING MODEL RESULTS(5-MINUTE INTERVALS):

             TIME  DEAD-STORAGE  INFLOW  EFFECTIVE OUTFLOW  EFFECTIVE
            (HRS)   FILLED(AF)    (CFS)  DEPTH(FT)  (CFS)   VOLUME(AF)
----------------------------------------------------------------------------
           14.083        .000      90.6       .16     90.1       .158
           14.167        .000      92.4       .16     91.9       .161
           14.250        .000      94.4       .17     93.9       .165
           14.333        .000      96.6       .17     96.1       .169
           14.417        .000      99.3       .17     98.6       .174
```

```
        14.500          .000     101.7        .18    101.1        .178
        14.583          .000     104.3        .18    103.6        .182
        14.667          .000     106.8        .19    106.2        .187
        14.750          .000     109.7        .19    108.9        .192
        14.833          .000     112.6        .20    111.8        .197
        14.917          .000     115.8        .22    114.2        .208
        15.000          .000     119.2        .27    115.5        .234
        15.083          .000     123.1        .36    116.4        .280
        15.167          .000     127.1        .49    117.8        .344
        15.250          .000     131.8        .65    119.6        .427
        15.333          .000     136.8        .86    122.0        .529
        15.417          .000     142.2       1.11    124.3        .653
        15.500          .000     147.4       1.43    125.9        .801
        15.583          .000     153.1       1.81    127.1        .980
        15.667          .000     157.9       2.25    128.4       1.182
        15.750          .000     162.3       2.57    131.7       1.393
        15.833          .000     172.3       2.74    139.3       1.621
        15.917          .000     188.8       2.94    150.4       1.885
        16.000          .000     213.4       3.19    164.0       2.225
        16.083          .000     268.5       3.63    184.6       2.803
        16.167          .000     347.1       4.32    224.3       3.649
        16.250          .000     432.5       5.19    293.4       4.607
        16.333          .000     547.3       6.28    379.2       5.764
        16.417          .000     655.3       7.81    443.7       7.221
        16.500          .000     443.1       7.67    462.9       7.085
        16.583          .000     349.9       6.94    450.8       6.390
        16.667          .000     300.8       6.01    428.1       5.514
        16.750          .000     269.0       5.31    381.5       4.739
        16.833          .000     241.1       4.80    322.7       4.177
        16.917          .000     218.7       4.42    279.3       3.760
        17.000          .000     198.6       4.12    246.2       3.432
        17.083          .000     181.7       3.89    222.5       3.151
        17.167          .000     166.1       3.68    207.0       2.870
        17.250          .000     151.7       3.46    194.1       2.578
        17.333          .000     139.7       3.24    181.1       2.293
        17.417          .000     128.0       3.04    168.4       2.014
        17.500          .000     116.7       2.83    156.1       1.744
        17.583          .000     109.4       2.65    144.5       1.502
        17.667          .000     104.3       2.49    134.5       1.294
        17.750          .000      99.9       2.05    129.2       1.092
        17.833          .000      95.6       1.58    127.7        .870
        17.917          .000      92.2       1.08    126.1        .637
        18.000          .000      89.2        .61    122.7        .406
----------------------------------------------------------------------------
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =    123.642 AF
    BASIN  STORAGE =       .000 AF (WITH       .000 AF INITIALLY FILLED)
    OUTFLOW VOLUME =    123.642 AF
    LOSS    VOLUME =       .000 AF
============================================================================

  END OF FLOOD ROUTING ANALYSIS
```

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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                           Analysis prepared by:

                       Bryan A. Stirrat & Associates
                           1360 Valley Vista Dr.
                           Diamond Bar, CA 91765

 ************************** DESCRIPTION OF STUDY **************************
* 2-Year 24-Hour Hydrology Study                                           *
* Olinda Alpha RELOOC 1400 Ultimate Elevation                              *
* CHM                                                                      *
 **************************************************************************

  FILE NAME: OA14Y2.DAT
  TIME/DATE OF STUDY: 10:17 06/08/2004
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)      (FT)   SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.01 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   400.00
  ELEVATION DATA: UPSTREAM(FEET) =   1410.00  DOWNSTREAM(FEET) =   1380.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.682
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.549
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
```

```
 "GRASS"                      -        4.80      0.05      1.00     0    9.68
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      6.48
 TOTAL AREA(ACRES) =      4.80   PEAK FLOW RATE(CFS) =      6.48

****************************************************************************
 FLOW PROCESS FROM NODE      1.00 TO NODE      1.01 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.68
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.549
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "GRASS"                      D        2.00      0.20      1.00    98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    2.00       SUBAREA RUNOFF(CFS) =    2.43
 EFFECTIVE AREA(ACRES) =      6.80   AREA-AVERAGED Fm(INCH/HR) =  0.09
 AREA-AVERAGED Fp(INCH/HR) =  0.09   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     6.80        PEAK FLOW RATE(CFS) =       8.90

****************************************************************************
 FLOW PROCESS FROM NODE      1.01 TO NODE      1.02 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1380.00  DOWNSTREAM(FEET) =   1360.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    600.00   CHANNEL SLOPE =  0.0333
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =    1.500
 MANNING'S FACTOR = 0.015  MAXIMUM DEPTH(FEET) =   3.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.426
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED                 -        7.10      0.05      1.00     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     13.30
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.65
 AVERAGE FLOW DEPTH(FEET) =   0.24   TRAVEL TIME(MIN.) =   1.50
 Tc(MIN.) =  11.19
 SUBAREA AREA(ACRES) =    7.10        SUBAREA RUNOFF(CFS) =    8.79
 EFFECTIVE AREA(ACRES) =   13.90      AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.07  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =   13.90          PEAK FLOW RATE(CFS) =      16.94

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.28   FLOW VELOCITY(FEET/SEC.) =   7.25
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.02 =  1000.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.02 TO NODE      1.03 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1360.00  DOWNSTREAM(FEET) =   1350.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    250.00   CHANNEL SLOPE =  0.0400
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =    1.500
```

```
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -         8.50      0.05      1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     22.07
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.03
  AVERAGE FLOW DEPTH(FEET) =   0.29   TRAVEL TIME(MIN.) =   0.46
  Tc(MIN.) =  11.65
  SUBAREA AREA(ACRES) =    8.50       SUBAREA RUNOFF(CFS) =   10.27
  EFFECTIVE AREA(ACRES) =   22.40     AREA-AVERAGED Fm(INCH/HR) =   0.06
  AREA-AVERAGED Fp(INCH/HR) =   0.06  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =   22.40         PEAK FLOW RATE(CFS) =      26.81

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.34   FLOW VELOCITY(FEET/SEC.) =   9.25
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.03 =  1250.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.03 TO NODE      1.04 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1235.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1400.00   CHANNEL SLOPE =  0.0821
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.281
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        16.44      0.05      1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     35.93
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.78
  AVERAGE FLOW DEPTH(FEET) =   0.33   TRAVEL TIME(MIN.) =   1.83
  Tc(MIN.) =  13.47
  SUBAREA AREA(ACRES) =   16.44       SUBAREA RUNOFF(CFS) =   18.22
  EFFECTIVE AREA(ACRES) =   38.84     AREA-AVERAGED Fm(INCH/HR) =   0.06
  AREA-AVERAGED Fp(INCH/HR) =   0.06  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =   38.84         PEAK FLOW RATE(CFS) =      42.77

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.36   FLOW VELOCITY(FEET/SEC.) =  13.78
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.04 =  2650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.04 TO NODE      1.05 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1235.00  DOWNSTREAM(FEET) =   1145.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00   CHANNEL SLOPE =  0.1000
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.232
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       20.40     0.05      1.00      -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     53.63
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.85
 AVERAGE FLOW DEPTH(FEET) =   0.39   TRAVEL TIME(MIN.) =   0.95
 Tc(MIN.) =  14.42
 SUBAREA AREA(ACRES) =   20.40       SUBAREA RUNOFF(CFS) =   21.71
 EFFECTIVE AREA(ACRES) =   59.24     AREA-AVERAGED Fm(INCH/HR) =   0.06
 AREA-AVERAGED Fp(INCH/HR) =   0.06  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =   59.24         PEAK FLOW RATE(CFS) =      62.77

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.43   FLOW VELOCITY(FEET/SEC.) =  16.80
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.05 =  3550.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.05 TO NODE      1.06 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1145.00  DOWNSTREAM(FEET) =   1000.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1500.00  CHANNEL SLOPE =  0.0967
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.171
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       44.50     0.05      1.00      -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     85.21
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  18.53
 AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   1.35
 Tc(MIN.) =  15.77
 SUBAREA AREA(ACRES) =   44.50       SUBAREA RUNOFF(CFS) =   44.88
 EFFECTIVE AREA(ACRES) =  103.74     AREA-AVERAGED Fm(INCH/HR) =   0.05
 AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =  103.74         PEAK FLOW RATE(CFS) =     104.37

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.59   FLOW VELOCITY(FEET/SEC.) =  19.90
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.06 =  5050.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.06 TO NODE      1.07 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1000.00  DOWNSTREAM(FEET) =    870.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00  CHANNEL SLOPE =  0.1444
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.144
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       24.10     0.05      1.00      -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
```

```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    116.24
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  23.49
  AVERAGE FLOW DEPTH(FEET) =   0.56   TRAVEL TIME(MIN.) =   0.64
  Tc(MIN.) =  16.41
  SUBAREA AREA(ACRES) =   24.10       SUBAREA RUNOFF(CFS) =   23.74
  EFFECTIVE AREA(ACRES) =  127.84     AREA-AVERAGED Fm(INCH/HR) =   0.05
  AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =  127.84         PEAK FLOW RATE(CFS) =     125.64

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.58   FLOW VELOCITY(FEET/SEC.) =  24.21
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.07 =  5950.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.07 TO NODE      1.08 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    870.00  DOWNSTREAM(FEET) =    730.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.1273
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.022   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.106
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.90     0.05      1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    127.97
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  18.21
  AVERAGE FLOW DEPTH(FEET) =   0.77   TRAVEL TIME(MIN.) =   1.01
  Tc(MIN.) =  17.41
  SUBAREA AREA(ACRES) =    4.90       SUBAREA RUNOFF(CFS) =    4.66
  EFFECTIVE AREA(ACRES) =  132.74     AREA-AVERAGED Fm(INCH/HR) =   0.05
  AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =  132.74         PEAK FLOW RATE(CFS) =     125.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.76   FLOW VELOCITY(FEET/SEC.) =  18.12
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.08 =  7050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.08 TO NODE      1.09 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    730.00  DOWNSTREAM(FEET) =    600.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.2167
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.093
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp        Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.00     0.05      1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.00
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    125.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  27.47
  AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   0.36
  Tc(MIN.) =  17.78
```

```
  SUBAREA AREA(ACRES) =     0.00       SUBAREA RUNOFF(CFS) =     0.00
  EFFECTIVE AREA(ACRES) =  132.74      AREA-AVERAGED Fm(INCH/HR) =   0.05
  AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =  132.74          PEAK FLOW RATE(CFS) =     125.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.52   FLOW VELOCITY(FEET/SEC.) =  27.47
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.09 =  7650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.08 TO NODE      1.09 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.78
  RAINFALL INTENSITY(INCH/HR) =   1.09
  AREA-AVERAGED Fm(INCH/HR) =  0.05
  AREA-AVERAGED Fp(INCH/HR) =  0.05
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =  132.74
  TOTAL STREAM AREA(ACRES) =  132.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     125.87

****************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.11 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1200.00
  ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1125.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.509
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.337
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "GRASS"                    -        9.60      0.05      1.00    98   12.51
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =     11.12
  TOTAL AREA(ACRES) =      9.60   PEAK FLOW RATE(CFS) =     11.12

****************************************************************************
  FLOW PROCESS FROM NODE      1.11 TO NODE      1.12 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1125.00  DOWNSTREAM(FEET) =   1040.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1200.00   CHANNEL SLOPE =  0.0708
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   2.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.111
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       16.70      0.05      1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     19.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.19
  AVERAGE FLOW DEPTH(FEET) =   0.34   TRAVEL TIME(MIN.) =   4.78
  Tc(MIN.) =  17.29
  SUBAREA AREA(ACRES) =   16.70       SUBAREA RUNOFF(CFS) =   15.94
  EFFECTIVE AREA(ACRES) =   26.30     AREA-AVERAGED Fm(INCH/HR) =   0.05
  AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =   26.30         PEAK FLOW RATE(CFS) =      25.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.40   FLOW VELOCITY(FEET/SEC.) =   4.49
  LONGEST FLOWPATH FROM NODE      1.10 TO NODE      1.12 =  2400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.12 TO NODE      1.13 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1040.00  DOWNSTREAM(FEET) =    930.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1300.00   CHANNEL SLOPE =  0.0846
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   2.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.989
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       37.70     0.05       1.00      -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     41.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.58
  AVERAGE FLOW DEPTH(FEET) =   0.49   TRAVEL TIME(MIN.) =   3.89
  Tc(MIN.) =  21.17
  SUBAREA AREA(ACRES) =   37.70       SUBAREA RUNOFF(CFS) =   31.85
  EFFECTIVE AREA(ACRES) =   64.00     AREA-AVERAGED Fm(INCH/HR) =   0.05
  AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =   64.00         PEAK FLOW RATE(CFS) =      54.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.57   FLOW VELOCITY(FEET/SEC.) =   6.05
  LONGEST FLOWPATH FROM NODE      1.10 TO NODE      1.13 =  3700.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.12 TO NODE      1.13 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.17
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.989
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       29.10     0.05       1.00      -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   29.10     SUBAREA RUNOFF(CFS) =   24.58
  EFFECTIVE AREA(ACRES) =    93.10   AREA-AVERAGED Fm(INCH/HR) =  0.05
  AREA-AVERAGED Fp(INCH/HR) =  0.05  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    93.10       PEAK FLOW RATE(CFS) =      78.64

****************************************************************************
  FLOW PROCESS FROM NODE      1.13 TO NODE      1.14 IS CODE =  51
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    930.00  DOWNSTREAM(FEET) =    800.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   800.00   CHANNEL SLOPE =  0.1625
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.973
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        20.00      0.05       1.00      -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      86.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  22.01
  AVERAGE FLOW DEPTH(FEET) =   0.45   TRAVEL TIME(MIN.) =   0.61
  Tc(MIN.) =  21.78
  SUBAREA AREA(ACRES) =   20.00       SUBAREA RUNOFF(CFS) =   16.61
  EFFECTIVE AREA(ACRES) =  113.10     AREA-AVERAGED Fm(INCH/HR) =   0.05
  AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =  113.10         PEAK FLOW RATE(CFS) =      93.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.48   FLOW VELOCITY(FEET/SEC.) =  22.65
  LONGEST FLOWPATH FROM NODE      1.10 TO NODE      1.14 =  4500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.14 TO NODE      1.09 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    800.00  DOWNSTREAM(FEET) =    600.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00   CHANNEL SLOPE =  0.2222
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.958
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        27.90      0.05       1.00      -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     105.32
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  26.19
  AVERAGE FLOW DEPTH(FEET) =   0.46   TRAVEL TIME(MIN.) =   0.57
  Tc(MIN.) =  22.35
  SUBAREA AREA(ACRES) =   27.90       SUBAREA RUNOFF(CFS) =   22.81
  EFFECTIVE AREA(ACRES) =  141.00     AREA-AVERAGED Fm(INCH/HR) =   0.05
  AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =  141.00         PEAK FLOW RATE(CFS) =     115.26

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.49   FLOW VELOCITY(FEET/SEC.) =  26.86
  LONGEST FLOWPATH FROM NODE      1.10 TO NODE      1.09 =  5400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.14 TO NODE      1.09 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.35
  RAINFALL INTENSITY(INCH/HR) =   0.96
  AREA-AVERAGED Fm(INCH/HR) =  0.05
  AREA-AVERAGED Fp(INCH/HR) =  0.05
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =  141.00
  TOTAL STREAM AREA(ACRES) =  141.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    115.26

  ** CONFLUENCE DATA **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    125.87  17.78    1.093  0.05( 0.05) 1.00   132.7        1.00
      2    115.26  22.35    0.958  0.05( 0.05) 1.00   141.0        1.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    231.14  17.78    1.093  0.05( 0.05) 1.00   244.9        1.00
      2    224.86  22.35    0.958  0.05( 0.05) 1.00   273.7        1.10

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    231.14    Tc(MIN.) =    17.78
  EFFECTIVE AREA(ACRES) =   244.90   AREA-AVERAGED Fm(INCH/HR) =  0.05
  AREA-AVERAGED Fp(INCH/HR) =  0.05  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    273.74
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.09 =  7650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.00
  ELEVATION DATA: UPSTREAM(FEET) =   1410.00  DOWNSTREAM(FEET) =   1380.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.349
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.347
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "GRASS"                    -         5.10      0.05       1.00    98   12.35
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =      5.95
  TOTAL AREA(ACRES) =      5.10   PEAK FLOW RATE(CFS) =       5.95

****************************************************************************
  FLOW PROCESS FROM NODE      1.20 TO NODE      1.21 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1380.00  DOWNSTREAM(FEET) =   1232.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1450.00   CHANNEL SLOPE =  0.1021
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
```

```
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.203
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA       Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       11.70      0.05       1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     12.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    8.96
  AVERAGE FLOW DEPTH(FEET) =   0.16   TRAVEL TIME(MIN.) =    2.70
  Tc(MIN.) =  15.04
  SUBAREA AREA(ACRES) =   11.70       SUBAREA RUNOFF(CFS) =   12.14
  EFFECTIVE AREA(ACRES) =   16.80     AREA-AVERAGED Fm(INCH/HR) =   0.05
  AREA-AVERAGED Fp(INCH/HR) =   0.05  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =   16.80         PEAK FLOW RATE(CFS) =      17.43

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.20   FLOW VELOCITY(FEET/SEC.) =  10.43
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.21 =  2050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.20 TO NODE      1.21 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.04
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.203
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA       Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "GRASS"                    D        9.00      0.20       1.00    98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    9.00      SUBAREA RUNOFF(CFS) =    8.12
  EFFECTIVE AREA(ACRES) =    25.80   AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.10  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    25.80       PEAK FLOW RATE(CFS) =      25.55

****************************************************************************
  FLOW PROCESS FROM NODE      1.21 TO NODE      1.22 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1232.00  DOWNSTREAM(FEET) =   1220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   800.00   CHANNEL SLOPE =  0.0150
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.128
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA       Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       20.20      0.05       1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     35.35
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    7.45
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =    1.79
  Tc(MIN.) =  16.83
  SUBAREA AREA(ACRES) =   20.20       SUBAREA RUNOFF(CFS) =   19.59
  EFFECTIVE AREA(ACRES) =   46.00     AREA-AVERAGED Fm(INCH/HR) =   0.08
  AREA-AVERAGED Fp(INCH/HR) =   0.08  AREA-AVERAGED Ap =   1.00
```

```
  TOTAL AREA(ACRES) =   46.00          PEAK FLOW RATE(CFS) =      43.40

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.58   FLOW VELOCITY(FEET/SEC.) =   8.44
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.22 =  2850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.21 TO NODE      1.22 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.83
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.128
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "GRASS"                    D        2.60      0.20       1.00    98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =    2.17
  EFFECTIVE AREA(ACRES) =    48.60   AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.09  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    48.60       PEAK FLOW RATE(CFS) =      45.57

****************************************************************************
  FLOW PROCESS FROM NODE      1.22 TO NODE      1.23 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1220.00  DOWNSTREAM(FEET) =   1207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   800.00   CHANNEL SLOPE =  0.0162
  CHANNEL BASE(FEET) =    8.00    "Z" FACTOR =    1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       26.00      0.05       1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     57.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    9.02
  AVERAGE FLOW DEPTH(FEET) =   0.70   TRAVEL TIME(MIN.) =    1.48
  Tc(MIN.) =  18.31
  SUBAREA AREA(ACRES) =   26.00       SUBAREA RUNOFF(CFS) =   23.97
  EFFECTIVE AREA(ACRES) =   74.60     AREA-AVERAGED Fm(INCH/HR) =   0.07
  AREA-AVERAGED Fp(INCH/HR) =   0.07  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =   74.60         PEAK FLOW RATE(CFS) =      67.21

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.77   FLOW VELOCITY(FEET/SEC.) =   9.50
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.23 =  3650.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.23 TO NODE      1.24 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1207.00  DOWNSTREAM(FEET) =   1160.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1200.00   CHANNEL SLOPE =  0.0392
  CHANNEL BASE(FEET) =    8.00    "Z" FACTOR =    1.500
```

```
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.028
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.30      0.05      1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      80.98
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.50
  AVERAGE FLOW DEPTH(FEET) =   0.67   TRAVEL TIME(MIN.) =   1.48
  Tc(MIN.) =  19.80
  SUBAREA AREA(ACRES) =   31.30       SUBAREA RUNOFF(CFS) =   27.54
  EFFECTIVE AREA(ACRES) =  105.90     AREA-AVERAGED Fm(INCH/HR) =   0.07
  AREA-AVERAGED Fp(INCH/HR) =   0.07  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =  105.90         PEAK FLOW RATE(CFS) =       91.60

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.71   FLOW VELOCITY(FEET/SEC.) =  14.14
  LONGEST FLOWPATH FROM NODE       1.00 TO NODE      1.24 =  4850.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.23 TO NODE      1.24 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.80
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.028
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "GRASS"                    D        8.40      0.20      1.00    98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    8.40      SUBAREA RUNOFF(CFS) =    6.26
  EFFECTIVE AREA(ACRES) =   114.30   AREA-AVERAGED Fm(INCH/HR) =  0.08
  AREA-AVERAGED Fp(INCH/HR) =  0.08  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   114.30       PEAK FLOW RATE(CFS) =       97.85

****************************************************************************
  FLOW PROCESS FROM NODE      1.24 TO NODE      1.25 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    1160.00  DOWNSTREAM(FEET) =   1120.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1300.00   CHANNEL SLOPE =  0.0308
  CHANNEL BASE(FEET) =    8.00    "Z" FACTOR =    1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.984
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       39.40      0.05      1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    114.42
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.09
  AVERAGE FLOW DEPTH(FEET) =   0.87   TRAVEL TIME(MIN.) =   1.54
  Tc(MIN.) =  21.33
  SUBAREA AREA(ACRES) =   39.40       SUBAREA RUNOFF(CFS) =   33.13
  EFFECTIVE AREA(ACRES) =  153.70     AREA-AVERAGED Fm(INCH/HR) =   0.07
  AREA-AVERAGED Fp(INCH/HR) =   0.07  AREA-AVERAGED Ap =   1.00
```

```
  TOTAL AREA(ACRES) =  153.70         PEAK FLOW RATE(CFS) =     126.54

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOW VELOCITY(FEET/SEC.) =  14.55
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.25 =  6150.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.24 TO NODE      1.25 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.33
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.984
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "GRASS"                    D        8.50      0.20      1.00    98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    8.50      SUBAREA RUNOFF(CFS) =    6.00
  EFFECTIVE AREA(ACRES) =   162.20   AREA-AVERAGED Fm(INCH/HR) =  0.08
  AREA-AVERAGED Fp(INCH/HR) =  0.08  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   162.20       PEAK FLOW RATE(CFS) =     132.54

****************************************************************************
  FLOW PROCESS FROM NODE      1.25 TO NODE      1.26 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1120.00  DOWNSTREAM(FEET) =   1080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1900.00   CHANNEL SLOPE =  0.0211
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =    1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.927
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.10      0.05      1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     144.81
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.40
  AVERAGE FLOW DEPTH(FEET) =   1.12   TRAVEL TIME(MIN.) =   2.36
  Tc(MIN.) =  23.70
  SUBAREA AREA(ACRES) =   31.10       SUBAREA RUNOFF(CFS) =   24.54
  EFFECTIVE AREA(ACRES) =  193.30     AREA-AVERAGED Fm(INCH/HR) =   0.07
  AREA-AVERAGED Fp(INCH/HR) =   0.07  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =  193.30         PEAK FLOW RATE(CFS) =     148.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.13   FLOW VELOCITY(FEET/SEC.) =  13.52
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.26 =  8050.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.25 TO NODE      1.26 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.70
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.927
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "GRASS"                     D       4.30      0.20      1.00     98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    4.30      SUBAREA RUNOFF(CFS) =    2.81
 EFFECTIVE AREA(ACRES) =   197.60   AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.07  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =   197.60       PEAK FLOW RATE(CFS) =     151.48

****************************************************************************
 FLOW PROCESS FROM NODE      1.26 TO NODE      1.27 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1080.00  DOWNSTREAM(FEET) =   1020.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.0545
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =    1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.906
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED                -       7.30      0.05      1.00      -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    154.29
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  18.81
 AVERAGE FLOW DEPTH(FEET) =   0.88    TRAVEL TIME(MIN.) =   0.97
 Tc(MIN.) =  24.67
 SUBAREA AREA(ACRES) =    7.30        SUBAREA RUNOFF(CFS) =    5.62
 EFFECTIVE AREA(ACRES) =  204.90      AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.07   AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =  204.90          PEAK FLOW RATE(CFS) =     153.33

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.87   FLOW VELOCITY(FEET/SEC.) =  18.83
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.27 =  9150.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      1.26 TO NODE      1.27 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  24.67
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.906
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "GRASS"                     D       3.40      0.20      1.00     98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =    2.16
 EFFECTIVE AREA(ACRES) =   208.30   AREA-AVERAGED Fm(INCH/HR) =  0.08
 AREA-AVERAGED Fp(INCH/HR) =  0.08  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =   208.30       PEAK FLOW RATE(CFS) =     155.49

****************************************************************************
 FLOW PROCESS FROM NODE      1.27 TO NODE      1.28 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1020.00  DOWNSTREAM(FEET) =    940.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   800.00   CHANNEL SLOPE =  0.1000
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.894
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.60      0.05       1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    162.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  23.40
  AVERAGE FLOW DEPTH(FEET) =   0.76   TRAVEL TIME(MIN.) =   0.57
  Tc(MIN.) =  25.24
  SUBAREA AREA(ACRES) =   18.60       SUBAREA RUNOFF(CFS) =   14.12
  EFFECTIVE AREA(ACRES) =  226.90     AREA-AVERAGED Fm(INCH/HR) =   0.07
  AREA-AVERAGED Fp(INCH/HR) =   0.07  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =  226.90         PEAK FLOW RATE(CFS) =     167.40

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.77   FLOW VELOCITY(FEET/SEC.) =  23.63
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.28 =  9950.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      1.27 TO NODE      1.28 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.24
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.894
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "GRASS"                    D        7.80      0.20       1.00    98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =    4.87
  EFFECTIVE AREA(ACRES) =   234.70   AREA-AVERAGED Fm(INCH/HR) =  0.08
  AREA-AVERAGED Fp(INCH/HR) =  0.08  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   234.70       PEAK FLOW RATE(CFS) =     172.27

****************************************************************************
  FLOW PROCESS FROM NODE      1.28 TO NODE      1.29 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    940.00  DOWNSTREAM(FEET) =    700.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1400.00   CHANNEL SLOPE =  0.1714
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   1.500
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.878
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       41.50      0.05       1.00     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.05
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    187.74
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  29.41
  AVERAGE FLOW DEPTH(FEET) =   0.70   TRAVEL TIME(MIN.) =   0.79
```

```
  Tc(MIN.) =  26.03
  SUBAREA AREA(ACRES) =   41.50       SUBAREA RUNOFF(CFS) =   30.92
  EFFECTIVE AREA(ACRES) =  276.20     AREA-AVERAGED Fm(INCH/HR) =   0.07
  AREA-AVERAGED Fp(INCH/HR) =   0.07  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =  276.20         PEAK FLOW RATE(CFS) =     199.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.73   FLOW VELOCITY(FEET/SEC.) =  30.12
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      1.29 = 11350.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)       =    276.20  TC(MIN.) =     26.03
  EFFECTIVE AREA(ACRES) =    276.20  AREA-AVERAGED Fm(INCH/HR)=  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.07  AREA-AVERAGED Ap =  1.00
  PEAK FLOW RATE(CFS)     =    199.87
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

JOB OLINDA ALPHA LANDFILL - VEHICLE EXPANSION
SHEET NO. 1 OF 2
CALCULATED BY C.H.M DATE 01/08/2004
CHECKED BY DATE
SCALE

SEDIMENT CALCULATIONS

CRITERIA : $A_s = \frac{1.2\,Q_2}{V_s}$ (EROSION & SEDIMENT CONTROL HANDBOOK)

WHERE : A_s - AREA OF WATER SURFACE WITHIN THE BASIN

Q_2 - PEAK RUNNOFF FROM 2-YR STORM

V_s - SETTLING VELOCITY OF A PARTICLE

BASIN A

GIVEN: $Q_2 = 125.9$ CFS (DEVELOPED CONDITION)

$A_s = 30{,}250$ SF @ ELEVATION 610

$V_s = \frac{1.2\,(126)}{(30{,}250)} = 0.0050$ FPS *

PER TABLE 8.1, THE BASIN SIZE CAN FILTER OUT PARTICLES BETWEEN COARSE SILT AND MEDIUM SILT

* THE SEDIMENT BASIN IS INSUFFICIENT IN SIZE TO REMOVE THE TARGET PARTICLE SIZE, MEIUM SILT, BY ITSELF. THEREFORE EROSION CONTROL DEVICES, SUCH AS FIBER ROLES, WILL BE INSTALLED DURING CONSTRUCTION TO PREVENT SEDIMENT LOSS.

BAS

(909) 860-7777

BRYAN A. STIRRAT & ASSOCIATES
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1360 VALLEY VISTA DRIVE • DIAMOND BAR, CA 91765

JOB OLINDA ALPHA LANDFILL - VERTICLE EXPANSION
SHEET NO. 2 OF 2
CALCULATED BY C.H.M. DATE 01/08/2004
CHECKED BY DATE
SCALE

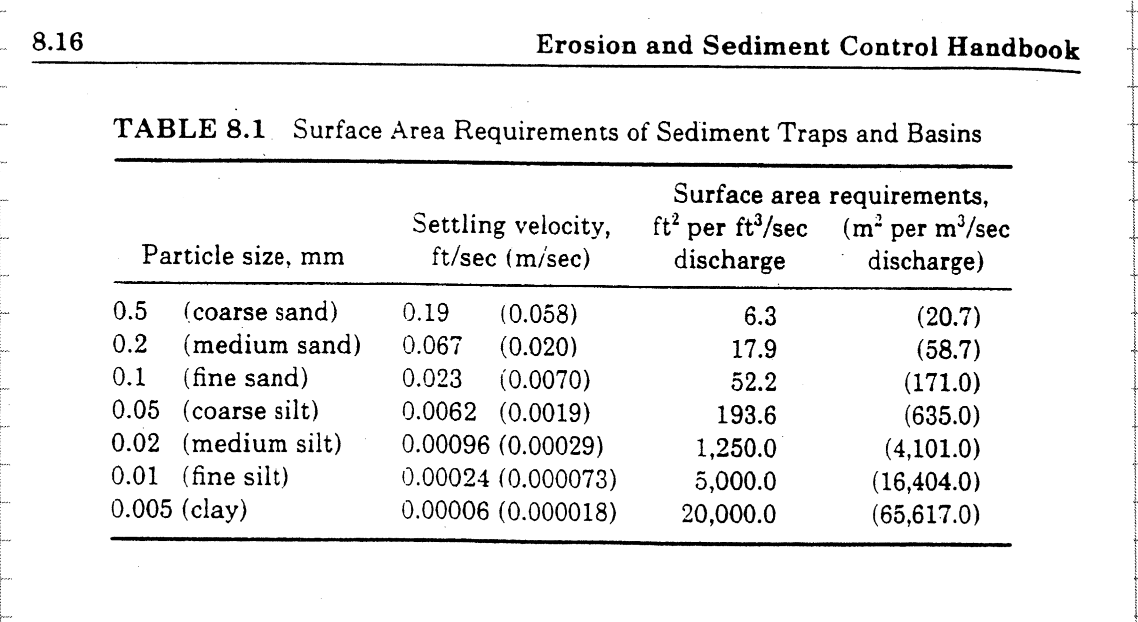
BASIN B

GIVEN: $Q_2 = 199.9$ (DEVELOPED CONDITION)

$A_S = 36{,}800$ SF

$V_S = \dfrac{1.2\ (200)}{36{,}800\ \text{SF}} = 0.0065$ FPS *

PER TABLE 8.1, BASIN B COULD SETTLE OUT COARSE SILT.



8.16 **Erosion and Sediment Control Handbook**

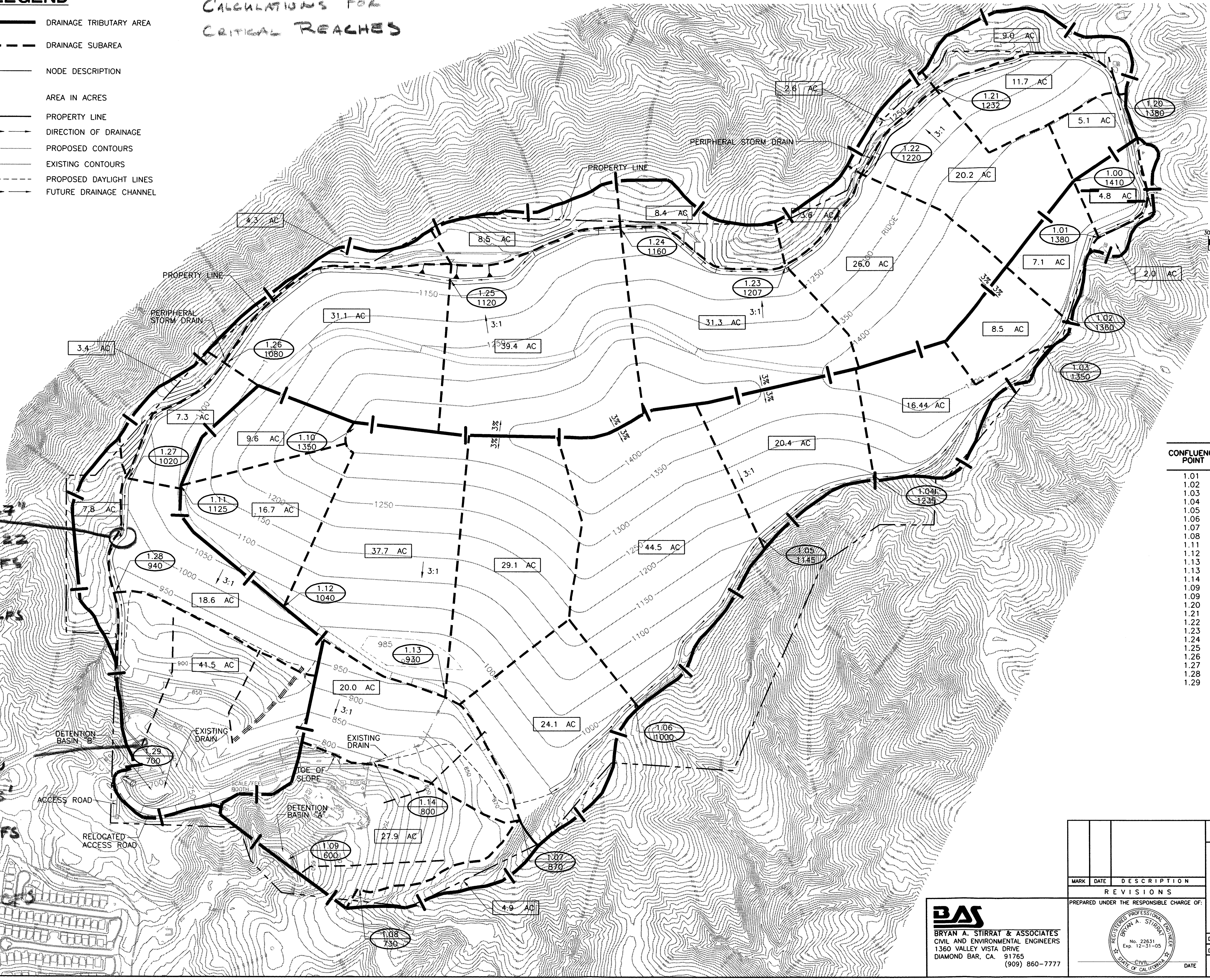
TABLE 8.1 Surface Area Requirements of Sediment Traps and Basins

Particle size, mm		Settling velocity, ft/sec (m/sec)		Surface area requirements, ft^2 per ft^3/sec discharge	(m^2 per m^3/sec discharge)
0.5	(coarse sand)	0.19	(0.058)	6.3	(20.7)
0.2	(medium sand)	0.067	(0.020)	17.9	(58.7)
0.1	(fine sand)	0.023	(0.0070)	52.2	(171.0)
0.05	(coarse silt)	0.0062	(0.0019)	193.6	(635.0)
0.02	(medium silt)	0.00096	(0.00029)	1,250.0	(4,101.0)
0.01	(fine silt)	0.00024	(0.000073)	5,000.0	(16,404.0)
0.005	(clay)	0.00006	(0.000018)	20,000.0	(65,617.0)

LEGEND

——|——	DRAINAGE TRIBUTARY AREA
— — — —	DRAINAGE SUBAREA
1.00 725	NODE DESCRIPTION
4.3 AC	AREA IN ACRES
————	PROPERTY LINE
—→—→—	DIRECTION OF DRAINAGE
······1020······	PROPOSED CONTOURS
······1020······	EXISTING CONTOURS
- - - - -	PROPOSED DAYLIGHT LINES
—→—→—	FUTURE DRAINAGE CHANNEL

CALCULATIONS FOR
CRITICAL REACHES



#1 TRAP CHAN
b=4'-5" D=37"
z=2 n=0.022
Q_{100}= 500 CFS
S=0.074
Q_{CAP}= 708 CFS
OK

#2 TRAP CHAN
b= 6' D=3'
Q_{100}= 100CFS
S=0.05
Q_{CAP}= 694 CFS
OK

100 – YEAR RUNOFF
SUMMARY TABLE

CONFLUENCE POINT	TOTAL AREA	TOTAL RUNOFF CFS	
1.01	6.80	18.09	
1.02	13.90	49.41	
1.03	22.40	78.45	
1.04	38.84	127.63	
1.05	59.24	189.14	
1.06	103.74	318.96	
1.07	127.84	385.87	
1.08	132.74	388.59	
1.11	9.60	31.18	
1.12	26.30	74.24	
1.13	64.00	164.16	
1.13	93.10	238.80	
1.14	113.10	286.42	
1.09	113.10	352.72	
1.09	273.70	705.31	
1.20	5.10	16.71	
1.21	25.80	77.17	
1.22	48.60	138.80	
1.23	74.60	206.41	
1.24	114.30	304.20	#1
1.25	162.20	417.47	
1.26	197.60	482.86	
1.27	208.30	499.18	
1.28	234.70	555.75	
1.29	276.20	644.83	#2

BASE TOPOGRAPHY DATE
OCTOBER 1, 2003

MARK	DATE	DESCRIPTION

REVISIONS

PREPARED UNDER THE RESPONSIBLE CHARGE OF:

BRYAN A. STIRRAT
No. 22631
Exp. 12-31-05
CIVIL

DATE

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RELOOC

OLINDA ALPHA LANDFILL

100-YEAR DEVELOPED CONDITION HYDROLOGY MAP

DESIGNED C.H.M.
DRAWN J.P.J.
CHECKED A.C.R.

SCALE	DATE	DRAWING NO.	SHEET
AS-SHOWN	5-2004	24171DB.DWG	1 OF 1

Worksheet
Worksheet for Trapezoidal Channel

Project Description

Worksheet	5% Lower
Flow Element	Trapezoidal Cha
Method	Manning's Form
Solve For	Discharge

Input Data

Mannings Coeffic	0.026	
Slope	050000	ft/ft
Depth	3.00	ft
Left Side Slope	2.00	H : V
Right Side Slope	2.00	H : V
Bottom Width	6.00	ft

Results

Discharge	694.33	cfs
Flow Area	36.0	ft²
Wetted Perim	19.42	ft
Top Width	18.00	ft
Critical Depth	4.68	ft
Critical Slope	0.007737	ft/ft
Velocity	19.29	ft/s
Velocity Head	5.78	ft
Specific Ener	8.78	ft
Froude Numb	2.40	
Flow Type	upercritical	

Worksheet

Worksheet for Trapezoidal Channel

Project Description	
Worksheet	4.74% Lower
Flow Element	Trapezoidal Cha
Method	Manning's Formı
Solve For	Discharge

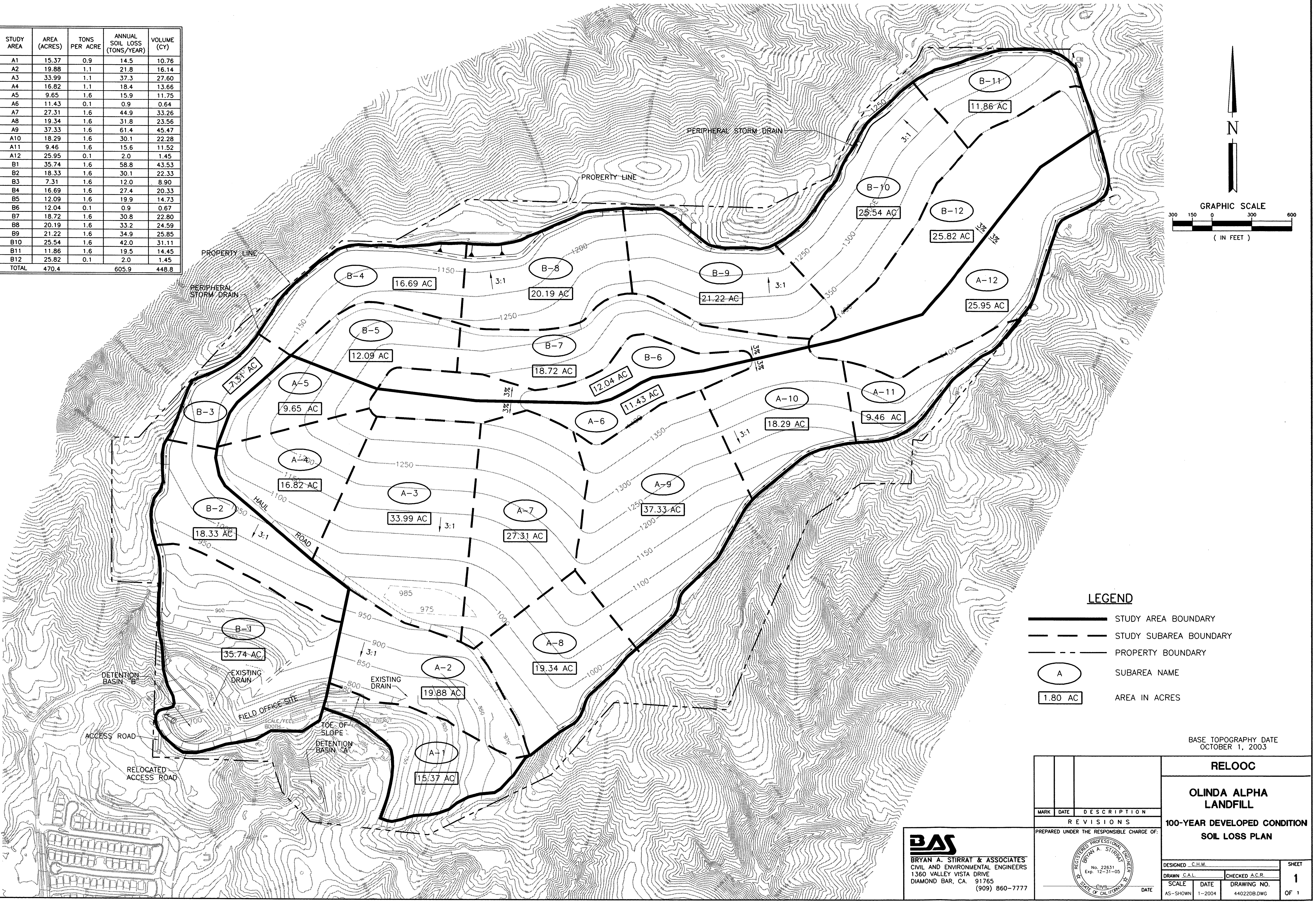
Input Data		
Mannings Coeffic	0.022	
Slope	047400	ft/ft
Depth	3.08	ft
Left Side Slope	2.00	H : V
Right Side Slope	2.00	H : V
Bottom Width	4.42	ft

Results		
Discharge	708.17	cfs
Flow Area	32.6	ft²
Wetted Perim‹	18.21	ft
Top Width	16.75	ft
Critical Depth	5.02	ft
Critical Slope	0.005554	ft/ft
Velocity	21.70	ft/s
Velocity Head	7.32	ft
Specific Enerç	10.40	ft
Froude Numb‹	2.74	
Flow Type	;upercritical	

APPENDIX B

SOIL LOSS STUDY

STUDY AREA	AREA (ACRES)	TONS PER ACRE	ANNUAL SOIL LOSS (TONS/YEAR)	VOLUME (CY)
A1	15.37	0.9	14.5	10.76
A2	19.88	1.1	21.8	16.14
A3	33.99	1.1	37.3	27.60
A4	16.82	1.1	18.4	13.66
A5	9.65	1.6	15.9	11.75
A6	11.43	0.1	0.9	0.64
A7	27.31	1.6	44.9	33.26
A8	19.34	1.6	31.8	23.56
A9	37.33	1.6	61.4	45.47
A10	18.29	1.6	30.1	22.28
A11	9.46	1.6	15.6	11.52
A12	25.95	0.1	2.0	1.45
B1	35.74	1.6	58.8	43.53
B2	18.33	1.6	30.1	22.33
B3	7.31	1.6	12.0	8.90
B4	16.69	1.6	27.4	20.33
B5	12.09	1.6	19.9	14.73
B6	12.04	0.1	0.9	0.67
B7	18.72	1.6	30.8	22.80
B8	20.19	1.6	33.2	24.59
B9	21.22	1.6	34.9	25.85
B10	25.54	1.6	42.0	31.11
B11	11.86	1.6	19.5	14.45
B12	25.82	0.1	2.0	1.45
TOTAL	470.4		605.9	448.8



LEGEND

STUDY AREA BOUNDARY

STUDY SUBAREA BOUNDARY

PROPERTY BOUNDARY

A	SUBAREA NAME
1.80 AC	AREA IN ACRES

BASE TOPOGRAPHY DATE
OCTOBER 1, 2003

MARK	DATE	DESCRIPTION

REVISIONS

PREPARED UNDER THE RESPONSIBLE CHARGE OF:

REGISTERED PROFESSIONAL ENGINEER
BRYAN A. STIRRAT
No. 22631
Exp. 12-31-05
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STATE OF CALIFORNIA

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RELOOC

OLINDA ALPHA LANDFILL

100-YEAR DEVELOPED CONDITION SOIL LOSS PLAN

DESIGNED C.H.M.
DRAWN C.A.L.
CHECKED A.C.R.

SCALE	DATE	DRAWING NO.	SHEET
AS-SHOWN	1-2004	44022DB.DWG	1 OF 1

OLINDA ALPHA LANDFILL
SOIL LOSS ANALYSIS

AVERAGE DENSITY OF SOIL (PCF) = 100

STUDY AREA	AREA (ACRES)	R FACTOR	K FACTOR	SLOPE (%)	SLOPE LENGTH (FT)	LS FACTOR	C FACTOR	P FACTOR	TONS PER ACRE	ANNUAL SOIL LOSS (TONS/YEAR)	VOLUME (CY)
A1	15.37	50	0.28	0.25	160	7.5	0.03	0.30	0.9	14.5	10.76
A2	19.88	50	0.28	0.33	120	8.7	0.03	0.30	1.1	21.8	16.14
A3	33.99	50	0.28	0.33	120	8.7	0.03	0.30	1.1	37.3	27.60
A4	16.82	50	0.28	0.33	120	8.7	0.03	0.30	1.1	18.4	13.66
A5	9.65	50	0.28	0.33	120	8.7	0.03	0.45	1.6	15.9	11.75
A6	11.43	50	0.28	0.03	250	0.4	0.03	0.45	0.1	0.9	0.64
A7	27.31	50	0.28	0.33	120	8.7	0.03	0.45	1.6	44.9	33.26
A8	19.34	50	0.28	0.33	120	8.7	0.03	0.45	1.6	31.8	23.56
A9	37.33	50	0.28	0.33	120	8.7	0.03	0.45	1.6	61.4	45.47
A10	18.29	50	0.28	0.33	120	8.7	0.03	0.45	1.6	30.1	22.28
A11	9.46	50	0.28	0.33	120	8.7	0.03	0.45	1.6	15.6	11.52
A12	25.95	50	0.28	0.03	250	0.4	0.03	0.45	0.1	2.0	1.45
B1	35.74	50	0.28	0.25	160	8.7	0.03	0.45	1.6	58.8	43.53
B2	18.33	50	0.28	0.33	120	8.7	0.03	0.45	1.6	30.1	22.33
B3	7.31	50	0.28	0.33	120	8.7	0.03	0.45	1.6	12.0	8.90
B4	16.69	50	0.28	0.33	120	8.7	0.03	0.45	1.6	27.4	20.33
B5	12.09	50	0.28	0.33	120	8.7	0.03	0.45	1.6	19.9	14.73
B6	12.04	50	0.28	0.03	250	0.4	0.03	0.45	0.1	0.9	0.67
B7	18.72	50	0.28	0.33	120	8.7	0.03	0.45	1.6	30.8	22.80
B8	20.19	50	0.28	0.33	120	8.7	0.03	0.45	1.6	33.2	24.59
B9	21.22	50	0.28	0.33	120	8.7	0.03	0.45	1.6	34.9	25.85
B10	25.54	50	0.28	0.33	120	8.7	0.03	0.45	1.6	42.0	31.11
B11	11.86	50	0.28	0.33	120	8.7	0.03	0.45	1.6	19.5	14.45
B12	25.82	50	0.28	0.03	250	0.4	0.03	0.45	0.1	2.0	1.45
	470.4									***605.9***	***448.8***

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APPENDIX L
SLOPE STABILITY EVALUATION OF THE PROPOSED LATERAL/VERTICAL EXPANSION

GeoLogic Associates

Geologists, Hydrogeologists and Engineers

May 11, 2004
Job No. 2004-022

Bryan A. Stirrat Associates
1360 Valley Vista Drive
Diamond Bar, CA 91765

Attention: Christine Arbogast

SLOPE STABILITY EVALUATION OF PROPOSED LATERAL/VERTICAL EXPANSION OLINDA ALPHA LANDFILL ORANGE COUNTY, CALIFORNIA

INTRODUCTION

This letter report and attachments present the results of a stability evaluation performed by GeoLogic Associates (GLA) for the proposed lateral/vertical expansion of the Olinda Alpha Landfill. The proposed expansion would raise the landfill top deck from the currently permitted Elevation 1,300[1] to a proposed maximum of about Elevation 1,415; in addition, the landfill would be expanded up to about 400 feet laterally along parts of its north and northeast perimeter.

SCOPE OF WORK

The work that was completed for the project included the following:

- Review of prior static and seismic stability analyses conducted at the site;
- Review of recent construction activities as they relate to slope stability;
- Construction of cross sections for 3-D stability analyses at two landfill areas;
- Performance of 3-D static and pseudo-static stability analyses on proposed expansion slope configurations using the CLARA-W computer program;
- Performance of calculations to estimate potential seismic-induced permanent deformations of proposed slopes;
- Evaluation of the results of the analyses; and
- Preparation of this letter report.

---

[1] All elevations referenced in this report are in feet above mean sea level.

SITE GEOLOGY

The Olinda Alpha Landfill occupies two southwest draining canyons and the intervening ridge between them (see Figure 1). These canyons intersect a sequence of friable sandstones and interbedded silty shales or claystones of the Puente Formation, which are gently folded and locally cut by faults. As discussed in more detail below, claystone beds dipping out of slope play a significant role in slope stability at the site. Throughout the central area of the landfill property, beds typically dip between 15 and 25 degrees to the southwest. Near the southwest corner of the landfill property, three faults juxtapose different structural blocks. Two of the faults are branches of the Whittier Fault, and in the vicinity of these faults, bedding orientation changes abruptly, dipping 50 to 75 degrees to the north. Near the northeast end of Olinda Alpha Canyon, the sedimentary sequence is folded into a major antiform, which results in shallow (15-25 degree) northeasterly dips.

SLOPE STABILITY BACKGROUND

What follows is a brief summary of events and prior stability analyses which are relevant to this stability evaluation of the proposed lateral/vertical expansion.

In 1994, The Earth Technology Corporation, in cooperation with GLA, prepared a slope stability report titled "Stability Analysis Report, Master Grading Plans," which analyzed the conceptual design for the vertical expansion of the Olinda Alpha Landfill to Elevation 1,300. As a part of this expansion, the ridge (Center Ridge) between the Olinda and Olinda Alpha Landfills was to be excavated so that the two separate landfills could be merged into one.

The combined landfill was then to be raised to design grades up to approximately Elevation 1,300. As presented in the original design report, the excavated Center Ridge was originally proposed to be lined, and as a result, substantial interim stabilization buttressing was recommended. Prior to excavation of the Center Ridge, however, a liner waiver was granted by the Santa Ana Regional Water Quality Control Board (RWQCB) and, as a result, the nature and extent of the interim buttressing requirements were reduced. During construction of the Center Ridge, a number of relatively small and non-critical landslides occurred within the temporary back-cuts of the Center Ridge excavation. These failures typically occurred along claystone beds and were mitigated by flattening the excavation or constructing relatively small stabilizing buttresses. A trenching investigation for one such landslide just north of the site scales found the claystone bed dip angle to be about 13 to 14 degrees out of slope (Earth Tech, 2000a).

These interim construction failures allowed for additional back-calculations of the shear strength of claystone beds within the Puente Formation on the site. In the end, the more recently back-calculated strength parameters (Earth Tech, 2000a) were in strong agreement with the shear strength values used by Earth Tech/GLA in the 1994 Slope Stability Report (i.e., friction angle, $\varphi = 11$ degrees, and cohesion, $c = 50$ psf), providing an additional level of confidence in the nature of these critical materials.

The excavation of the Center Ridge Area was completed in late 2000, and refuse has subsequently been placed in this area.

MATERIAL PROPERTIES AND STRATIGRAPHY

Materials modeled in the slope stability evaluation included refuse fill, compacted buttress soil, and claystone and sandstone of the Puente Formation. Table 1 below presents material properties used in this stability evaluation. These parameters were based on laboratory analyses, back-calculations, and experience with similar materials. Material properties for the refuse fill were estimated based on a review of the pertinent literature.[2] Since the claystone beds at the site are critical to slope stability, the parameters used for this material were the same as were used by Earth Tech/GLA in the 1994 report titled, "Stability Analysis Report, Master Grading Plans" (i.e., slightly lower than were back-calculated from more recent construction slope failures).

Table 1
Material Properties

Material	**Unit Weight** (pcf)	**Friction Angle** (deg.)	**Cohesion** (psf)
Refuse Fill	72	33	100
Compacted Buttress Soil	120	28.5	500
Sandtone Puente Formation	130	34	400
Silty Shale/Claystone Puente Formation	125	11	50

The areal extent of refuse placement was determined during an investigation prior to the recent construction (Rust, 1997). Since neither refuse fill thickness data nor the site-specific pre-development surveys of canyon topography were available, refuse fill depth was estimated by comparing current topography with elevation contours generated from USGS Digital Elevation Model (DEM) for the Yorba Linda, California 7.5 Minute Quadrangle (USGS, 2001). This DEM was generated from the 7.5 Minute topographic map of the same name, which is dated 1964 and was photorevised in 1981 (USGS, 1964). The 1964/1981 pre-landfill topography thus generated is shown on Figure 2. The depth and extent of the soil buttress on the south-facing slope near the site scales was determined from as-built surveys completed in 1998, after the buttress back-cut excavation, and in 2000, after construction of the buttress.

Since the claystone is interbedded with sandstone at the site, accurately determining the stratigraphy for a given slope is not practical. As a result, numerous slope stability runs were performed assuming a range of worst-case claystone geometrics, including the assumption of claystone beds dipping from 10 to 14 degrees out of slope and situated over a range of elevations. Since claystone beds dipping steeper than 14 degrees would

---

[2] Kavazanjian, 1995; Singh and Murphy, 1990.

not generally be exposed in topographically lower slopes, they are expected to be more stable, and were not analyzed.

GROUNDWATER CONDITIONS

Groundwater equipotential contour lines developed for the site from monitoring well data consistently show flow from north to south towards the Whittier Fault, as shown on Figure 3. Locally, especially along the ridge tops surrounding the landfill property, the groundwater flow direction is away from the ridge tops towards the adjacent canyons. The groundwater elevation contours shown in Figure 3 were used in the development of the slope stability model cross-sections, as discussed below.

SEISMICITY AND SEISMIC PARAMETERS

In order to determine the maximum horizontal acceleration (MHA) at the site from the Maximum Credible Earthquake (MCE), a deterministic search was performed using EQFAULT (Blake, 2000) using the site latitude/longitude coordinates (see Attachment 2). The search was performed using several applicable attenuation relationships, and the most conservative result (i.e. maximum MHA's) is presented in Table 2 below for the seven most critical earthquake events.

Table 2
Seismic Parameters

Fault	**Approximate Distance From Site** (miles)	(km)	**Maximum Credible Earthquake Magnitude**[1] (M_w)	**Maximum Horizontal Acceleration**[2] (g)
Whittier	0.6	1.0	6.8	0.748
Chino-Central Ave. (Elsinore)	7.7	12.4	6.7	0.533
San Jose	7.5	12.1	6.5	0.355
Elysian Park Thrust	8.4	13.5	6.7	0.340
Sierra Madre	13.7	22.1	7.0	0.235
Cucamonga	14.7	23.7	7.0	0.220
Compton Thrust	13.7	22.0	6.8	0.219

[1] Moment Magnitude
[2] Based on rock attenuation relationship by Abrahamson & Silva (1995b/1997)

An MCE of 6.8 and corresponding MHA of 0.75 were used in the seismic displacement analysis (see below for further discussion).

ANALYTICAL METHOD

Static and Pseudo Static 3-D Analyses

Because of the complex topography and the strong influence of the claystone beds on slope stability of the site, GLA used the three-dimensional (3-D) CLARA-W slope stability computer program (O. Hungr Geotechnical Research, 2003) to evaluate the proposed lateral/vertical expansion. CLARA-W is based on an extension of Bishop's Simplified Method of Slices to three dimensions using columns in lieu of slices. The program uses a series of parallel, 2-D cross sections to model complex 3-D geometry of slopes with several material layers and piezometric surfaces and then evaluates potential rotational and non-rotational failure surfaces. For the analyses reported here, rotational and composite rotational-wedge type failure surfaces were considered the most likely failure modes and were thus analyzed. Both static and pseudo-static 3-D analyses were performed. In the latter, a horizontal earthquake acceleration was applied at the base of each column.

Seismic Displacement Analysis

California Title 27 requires that further analysis should be done to demonstrate that the proposed design will be functional during the Maximum Probable Earthquake (MPE) if the pseudo-static analysis indicates a factor-of-safety less than 1.5. The Santa Ana RWQCB has adopted the more stringent Maximum Credible Earthquake (MCE) standard for design. Accordingly, the procedure developed by Bray and Rathje (1998) was used to estimate seismic-induced permanent displacement during the MCE. This procedure is based on the one described by Newmark (1965) for determining displacement of a rigid block resting on a sliding plane subjected to earthquake-type accelerations. This procedure is based on the premise that the sliding block will undergo displacement only during periods when the maximum ground acceleration (k_{max}) exceeds the yield acceleration (k_y) for the sliding block. As a result, no displacements occur when k_y is greater than k_{max} (i.e., $k_y/k_{max} >1$). Bray and Rathje refined the procedure for solid waste landfills to incorporate the dynamic response characteristics of the waste fill, and the intensity, frequency content, and duration of ground motion. The Bray and Rathje procedure yields results that are consistent with the observed performance of landfills during recent earthquakes. For the Olinda Alpha Landfill site, the MCE was considered to be a M 6.8 earthquake event on the nearby (~ 0.6 miles) Whittier Fault, with a corresponding peak horizontal acceleration of 0.75 g.

ANALYTICAL RESULTS

3-D Slope Stability Analyses

Based on slope orientation and site stratigraphy, 3-D slope stability analyses were performed at two critical areas: the highest, southern-facing landfill slope for the vertical expansion and the northeastern-facing natural slope abutting the proposed lateral expansion at the northeastern portion of the site (see Figures 4 through 6). In order to find the minimum factor-of-safety for a given case, potential failure surfaces were generally constrained so as not to pass through the sandstone beneath a potential claystone bed.

Since the proposed expansion would raise the landfill from the currently permitted Elevation 1,300 to a proposed maximum at about Elevation 1,415, 3-D stability analyses were performed to search for critical potential failure surfaces at the southern-facing slope that daylight at either the toe of the proposed vertical expansion (i.e., the existing Elevation 1,300-foot permitted grade) or at the top of the proposed grade (i.e., about Elevation 1,415). The critical factors-of-safety for the southern-facing slope varied from approximately 1.66 to 2.63; plan and section views of 3-D failure surfaces for this area are presented in Figures 4 and 5. A complete summary of most critical analysis cases is presented in Table 3 below.

The lateral expansion slope at the northeastern portion of the site was only analyzed for the proposed grade since the lower permitted grades do not overly the critical failure surface. The critical factor-of-safety for this slope was approximately 1.67; plan and section views of the 3-D failure surface for this area are presented in Figure 6.

Table 3
Summary of 3-D Slope Stability Analyses

File	Factor-of-Safety (FS)	Seismic Yield Coefficient	Cross-Section at Center of Potential Failure Surface	Case
South-Facing Landfill Slope				
Olinda_AX1-1670b.CLW	2.17	0.24	A1X15	Daylight at Permit Grade; composite circular-wedge failure constrained to not pass below plane containing claystone bed
Olinda_AX1-1674s03.CLW	2.34	0.30	A1X15	Daylight at Permit Grade; circular failure
Olinda_AX1-1673eP01.CLW	**1.66**	**0.15**	A1X19	Daylight at Permit Grade; composite circular-wedge failure constrained to not pass below plane containing claystone bed
Olinda_AX1-1674jx3e.CLW	2.33	0.29	A1X19	Daylight at Permit Grade; circular failure
Olinda_AX1-1674sx1.CLW	2.48	0.35	A1X15	Daylight at Proposed Grade; circular failure
Olinda_AX1-1670a.CLW	2.37	0.28	A1X15	Daylight at Proposed Grade; composite circular-wedge failure constrained to not pass below plane containing claystone bed
Olinda_AX1-1674jx3.CLW	2.59	0.35	A1X19	Daylight at Proposed Grade; circular failure
Olinda_AX1-1674jx6.CLW	2.63	0.37	A1X19	Daylight at Proposed Grade; circular failure constrained to pass through toe of Refuse Fill
Olinda_AX1-1673e.CLW	1.70	0.16	A1X19	Daylight at Proposed Grade; constrained to not pass below plane containing claystone bed
Northeastern-Facing Natural Slope				
Olinda_A5X-1205.CLW	1.67	0.15	A5X5	Composite circular-wedge failure

Complete graphical results of the CLARA-W 3-D slope stability analyses showing model cross sections, piezometric surfaces, factor-of-safety, and failure surfaces are presented in Attachment 1.

Seismic Displacement Analysis

An estimate of potential seismic-induced permanent displacements was calculated, as described above, for the most critical analysis section and case: a composite circular-wedge potential failure surface centered on CLARA-W model cross section A1X19 and daylighting at the Permit Grade for the southern-facing landfill slope (*static FS = 1.66;* $k_y = 0.15$). As a result of these analyses, seismic displacements of this refuse slope during the MCE are anticipated to be less than ½ inch (see Attachment 2).

CONCLUSIONS AND RECOMMENDATIONS

The slope stability of the proposed lateral/vertical expansion of the Olinda Alpha Landfill has been analyzed by GLA and found to be acceptable; that is, all factors-of-safety were greater than 1.5 and seismic displacements were found to be within acceptable limits.

As discussed above, the location and orientation of claystone beds strongly influence the stability of slopes at the site. Fortunately, recent construction activities which exposed these beds on the southern-facing landfill slopes increased our knowledge of both the strength and location of the claystone beds in this area. While the strength properties of this critical material at other areas of the site are likely to be similar to that already encountered, data on the location and orientation of claystone beds along parts of the north and northeast perimeter of the site is limited. Prior to construction of the lateral expansion, we recommend that a supplementary subsurface investigation be performed in this area and subsequent slope stability analyses be conducted to verify the conclusions of this stability evaluation.

CLOSURE

This report is based on the limited study described herein. If the proposed grading plan for stockpiled soil varies in concept significantly from those shown in this evaluation, GLA may need to reassess stability conditions. In addition, GeoLogic Associates should be notified if conditions are found to differ from those described in this report since this situation may require a re-evaluation of the conclusions and recommendations included herein.

This report was prepared in accordance with generally accepted geologic, geotechnical and hydrogeologic practices and makes no warranties, either express or implied, as to the professional advice or data included in it.

This report has not been prepared for use by parties and projects other than those named or described herein. It may not contain sufficient information for other parties or other purposes.

GeoLogic Associates

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Attachments:
Figure 1 – Site Geology
Figure 2 – Site Plan with Pre-Landfill Topography
Figure 3 – August 2003 Groundwater Contours
Figure 4 – South-Facing Slope: Potential Failures Daylighting at Permit Grade
Figure 5 – South-Facing Slope: Potential Failures Daylighting at Proposed Grade
Figure 6 – Potential Failures in Northeast-Facing Slope

Attachment 1 – CLARA-W 3-D Stability Analysis
Attachment 2 – Seismic Displacement Analysis

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