FINAL

ENVIRONMENTAL IMPACT REPORT

OTAY VALLEY ROAD WIDENING PROJECT

CHULA VISTA

Prepared for:

The City of Chula Vista
Environmental Review Coordinator
276 Fourth Avenue
Chula Vista, CA 91910

Prepared by:

Keller Environmental
Associates, Inc. (KEA)
1727 Fifth Avenue
San Diego, CA 92101

August 1991

CITY OF
CHULA VISTA
Environmental Impact Report

ADDENDUM
to
FINAL ENVIRONMENTAL IMPACT REPORT OTAY VALLEY ROAD WIDENING PROJECT

The environmental review procedures of the City of Chula Vista allow the Environmental Review Coordinator (ERC) to prepare an addendum to a Negative Declaration or Environmental Impact Report, if one of the following conditions is present:

1. The minor changes in the project design which have occurred since completion of the Final EIR or Negative Declaration have not created any new significant environmental impacts not previously addressed in the Final EIR or Negative Declaration;

2. Additional or refined environmental data available since completion of the Final EIR does not indicate any new significant environmental impacts not previously addressed in the Final EIR or Negative Declaration; and

3. Additional or refined information available since completion of the Final EIR or Negative Declaration regarding the potential environmental impact of the project, or regarding the measures of alternatives available to mitigate potential environmental effects of the project, does not show that the project will have one or more significant impacts which were not previously addressed in the Final EIR or Negative Declaration.

This addendum has been prepared in order to provide additional information and analysis concerning project impacts. As a result of this analysis, the basic conclusions of the Final EIR have not changed. With implementation of mitigation measures, impacts are deemed to be less than significant for the proposed project.

The minor change which has occurred in the project description is the clarification that it is an Assessment District which will fund the proposed roadway. The Final EIR had stated in two Responses to Comments [Responses 2C and 3A] that an Assessment District would probably be formed, and that more information regarding such would be available at the end of October 1990. The Assessment District is currently in the process of formation, with formation expected to be completed in May 1992. The construction of the roadway is expected to begin in July 1992. As stated above, the method of implementing the proposed project, in this case the formation of an Assessment District, does not in any way change or alter the conclusions regarding environmental impacts described in the FEIR for the road widening project.

INSTRUCTION SHEET

This report is the Final Environmental Impact Report for the proposed Otay Valley Road Widening Project in the City of Chula Vista. The Draft Environmental Impact Report was submitted by the City of Chula Vista for public review on August 29, 1989. Comments received as a result of that circulation are included in the beginning of this report, and responses to these comments follow each comment. Additionally, changes have been made to the text in response to these comments. The Draft Environmental Impact Report, the comments and responses, and text changes constitute the Final Environmental Impact Report.

COMMENTS AND RESPONSES

The public review period for the Otay Valley Road Widening Project Draft EIR was held between August 29, 1989 and January 24, 1990. This Final EIR contains comments received on the Draft EIR and responses to those comments. Comments addressed in this document include: written letters received by the City on the Draft EIR, public comments received at the Public HEaring on the Draft EIR on November 8, 1989, and other written and verbal comments received by the City at related informal City meetings.

The format for the Comments and Responses is the presentation of the comment in its original form, followed on the subsequent page with the response. Additionally, the text has been revised, where appropriate, in response to these comments. Where revisions occur in the text, the type style for the new language is in an italic print. Where text has been eliminated, lines are drawn through the narrative to indicate the specific language that has been eliminated.

The comments are presented in the following order:

	Comments Received on the Draft EIR	Page No.	Response Page No.
1.	California Department of Transportation, James T. Cheshire, Chief Environmental Planning Branch, (comment letter, 10/13/89)	1	2
2.	Mr. F. Borst and Mr. Alex Harper (comment letter, no date)	3	5
3.	Extract of Public Hearing on Draft EIR (11/8/89)	6	10
4.	Comments Received from the Otay Valley Road Project Area Committee Meeting (verbal comments, 9/25/89)	11	14
5.	Comments Received at City Meeting with H.G. Fenton Company (verbal comments, 9/21/89)	15	16

COMMENT 1 EXHIBIT B

State of California

Business, Transportation and Housing Agency

Memorandum

To : STATE CLEARINGHOUSE

Date : October 13, 1989

File No.: 11-SD-805
3.5-3.9

District 11

From : DEPARTMENT OF TRANSPORTATION

Subject : DEIR for the Otay Valley Road
Widening Project - SCH 89083004

The proposed widening of Otay Valley Road to 6-lanes will necessitate the widening of that road through the Interstate Route 805 interchange and the widening of the ramps. Also, a feasibility study will be needed for the provision of adequate left-turn storage at the interchange. Restriping the existing four-lane section to provide for two left turns does not meet Caltrans standards and will not provide enough storage.

Our contact person for Interstate 805 at Otay Valley Road is Mike McManus, Project Manager, Local Funded Projects, (619) 237-7491.

James T. Cheshire

JAMES T. CHESHIRE, Chief
Environmental Planning Branch

MO:yg

Comment 1

1. The proposed Otay Valley Road Widening Project does not include modifications to the I-805 interchange. The City has requested that Cal-Trans prepare a Project Study Report to determine the appropriate interchange improvements. The road widening project will not result in impacts to the interchange that require mitigation. It is future development, rather than physical roadway widening that may necessitate interchange improvements.

COMMENT 2

172 Landale Lane
El Cajon, CA 92019

Mr. Doug Reid
Environmental Review Coordinator
City of Chula Vista
276 Fourth Avenue
Chula Vista, CA 92010

Dear Doug:

We are gravely concerned about a number of issues on the effect that the proposed widening of Otay Valley Road will have for our Parcel No. 6440 40 00 in the City of Chula Vista.

These issues stem from the Draft Environmental Impact Report Otay Valley Road Widening Project, which includes the location median island and intersections along proposed Otay Valley Road.

2A First and foremost, our primary concern is the expense of creating a six lane arterial with medians when a four lane road without medians is sufficient for the needs of the redevelopment project area.

2B Secondly, the above mentioned report states on Pages 3-38 & 39 that our property (Walker Scott) is not impacted. In fact, our 52 acres of industrially zoned land is so severely impacted that much of the property will not be able to be developed as a result of this proposed widening.

2C Finally, if this proposal somehow becomes reality, the planned access to our property is unacceptable. There must be at least one fully signalized intersection into our proposed development west of the present location of the animal shelter.

2D We have expressed concern regarding the issue of expense for many months. We were shocked by the statement of no impact to our property, and we cannot and will not accept a plan that does not properly access our land.

Comment 2

2A. Otay Valley Road is designated in the City's General Plan Update as a 6-lane major facility. At build-out the roadway will serve properties other than those within the Redevelopment Area.

2B. As a result of more precise engineering design of the proposed roadway, the amount of right-of-way required in fee from the concerned property owner is approximately 6.08 acres.

2C. A four-way intersection is planned at Otay Valley Road and Roma Court. This intersection will be signalized when traffic volumes warrant signal installation. The City's Traffic Engineering Department is responsible for installing traffic signals as needed. The issue of who will finance the road widening project is currently being studied by City. A feasibility study is being prepared, and ultimately an Assessment District will probably be formed. More information, including cost estimates for each proposed assessment, are expected to be available at the end of October 1990.

2D. Access to the property in question is provided from both Maxwell Road and Roma Court. In addition, when a subdivision map is proposed on the property driveway cuts will be reviewed and considered by the City's Traffic Engineering Department.

COMMENT 3

2. PUBLIC HEARING: DRAFT ENVIRONMENTAL IMPACT REPORT EIR-89-1, OTAY VALLEY ROAD WIDENING (continued from 10-11-89)

Principal Community Development Specialist Robin Putnam asked that this item be trailed because of the late arrival of the consultant making the presentation.

Commissioner Cannon stated that since he had just gotten the EIR, he couldn't put any input into a draft EIR not having reviewed it. Commissioner Carson agreed that they had all just received it except for Commissioner Tugenberg.

Ms. Putnam replied that they had just been informed prior to the meeting; however, they would like to open the public hearing and take comments from the people present following the consultant's presentation, and then continue it further so the Commissioners would have an opportunity to read the Environmental Impact Report.

Ms. Putnam stated that the consultant had now arrived and proceeded with her presentation. She explained that currently Otay Valley Road is a four-lane road with turn pockets from I-805 east to Oleander. From Oleander to Brandywine, the road becomes a three-lane roadway with two lanes in the westbound direction and one lane in the eastbound direction. From Maxwell east of the City limits, it becomes a two-lane country road that was built by San Diego County. The proposed project entails widening Otay Valley Road to the south to provide a six-lane roadway with a 128' right-of-way. Ms. Putnam used the overhead projector to show the proposed cross section. The typical cross section for Otay Valley Road includes a 16' wide median, six 12' driving lanes, two 8' emergency parking lanes, and 12' behind each shoulder curb for sidewalks, landscaping, and utilities. The proposed cross section is consistent with the specifications in the recently updated General Plan Circulation Element. She then introduced Christine Keller from Keller Environmental.

Ms. Keller stated that the Draft Environmental Statement basically identified impacts that were mitigatable for the geology and soils, biology, land use, traffic, and noise issues. She then summarized the results of the studies for those issues as follows:

1. Geology and Soils - the removal of unstable geologic and soil materials will be mitigated through the basic design of the roadway. There will be about 27,000 cubic yards of cut and 190,000 cubic yards of fill required for the project. The slopes will be 2:1 maximum with 4:1 in the western area.

2. Biology - the project will remove approximately 3 acres of wetlands. The mitigation for this impact will be the creation of a new wetlands within the river, and currently the wetlands mitigation plan is underway as well as the 404 permit. Other types of biological issues which could be potentially significant but can be mitigated have to do with the construction activities and disturbances of natural vegetation and

additional wetlands within the 20' construction zone. The mitigation for those impacts would be the temporary construction of a construction fence as well as some net meshing at the bottom of the fence to control any kind of erosion and runoff into the wetlands. After completion of the roadway, they are proposing planting native vegetation along the roadway to provide a transition from the wetlands to the roadway and also to create a barrier, possibly using a thorny vegetation or a temporary guard fence, to minimize future encroachment into the wetlands. The area is also the nesting area for various sensitive endangered species, including the Least Bell's Vireo. No ongoing conflicts with those species were identified during the studies, but for mitigation during construction, if construction takes place between April 1 and September 15, a biologist will survey and ascertain whether there are any current nesting pairs in the area within 300'.

3. Land Use - The only direct physical conflict is with the Animal Shelter and basically the parking lot, work area, and administration building are being redesigned to the southern part of the property to alleviate this conflict.

4. Noise - At the western end of the roadway where the residences are currently north of the road, the current noise levels are in excess of 64 decibels and, with this project, the City standard of 65 would be exceeded. A noise wall at the top of the hill is included in the mitigation for the project.

Ms. Keller then turned the presentation over to Herman Basmajiun of the transportation traffic engineering consulting firm of Basmajiun Darnell, Inc., to summarize the traffic issue.

He stated that the traffic considerations for Otay Valley Road are based on the City's General Plan Scenario IV traffic estimates and the roadway, as proposed, is commensurate with the Circulation Element and the General Plan of the City. After taking a detailed look at all the intersections along Otay Valley Road, they have developed the appropriate lane configurations at each of the major intersections. Traffic signalization needs have also been addressed and have been identified in the traffic study. The time of intersection signalization will be dependent upon the build-up of traffic and would be implemented at such time as the City Traffic Engineer deems necessary. The widening of the road itself will accommodate the land uses in the area adjacent to the roadway as well as playing the regional role that the facility is intended to serve.

Chairman Tugenberg said it was probably premature for the Planning Commission to ask any questions since they hadn't had the opportunity of reading the Draft EIR; however, they could open and close the public hearing, assuming the item will be continued.

This being the time and the place as advertised, the public hearing was opened.

Mr. Fred Borst, 172 Landale Lane, El Cajon 92019, stated he felt it was entirely inappropriate for this matter to be before the Commission at this time. He indicated his surprise that the Otay Valley Road Project Area Committee members were not present, since they specifically work in this project area and have been working with staff. He said the Otay Valley Project Area Committee is frustrated by the cost of this project. It was reported at the last Committee meeting that this project is anticipated to cost some $6 million. There is a projected assessment district that is going to be formed and that has not been thoroughly analyzed. He and the Project Area Committee are very concerned about the cost and who is to absorb it. Mr. Borst is one of the property owners, and a significant amount of their property faces along Otay Valley Road and surrounds the Animal Shelter.

3A Referring to pages 3-38 and 3-39 of the report, Mr. Borst pointed out that their property is referred to as the Walker-Scott property which is not impacted. He disagreed with that conclusion and stated that 52 acres of industrially zoned land is so severely impacted that much of the property will not be able to be developed as a result of this proposed widening. There are somewhere between 300 and 400 acres of usable land in the industrial project area; and it is inconceivable to him that a six-lane road with medians can be justified. He believes there are significant property owners to the east and up on Otay Mesa who will benefit significantly from this and it certainly should be looked at and a full report should be made as to how they are going to benefit. The matter should be reviewed from a regional standpoint.

3B He stated that the property owners take very serious issue with the access that is shown into their property. In fact, all along the entire frontage of their property there is only one full signalized intersection to the east of their property at Maxwell Road. The other intersection that is planned enters into the Omar Rendering property. There are other traffic issues concerning the closeness of the area between Nirvana and Maxwell Road. He believes this matter should be thoroughly reviewed by the Otay Valley Road Project Area Committee.

Chairman Tugenberg told Mr. Borst the public hearing would not be closed; it would be continued and he suggested that Mr. Borst and his group might attend the Planning Commission meeting when this item would be heard again.

No one else wishing to speak, Chairman Tugenberg asked staff for the appropriate date to which the matter would be continued.

After discussion between staff and Chairman Tugenberg, it was decided the hearing would be held the second Wednesday in December (December 13).

MSUC (Cannon/Shipe) to continue the public hearing to the second Wednesday in December.

VERBATIM TRANSCRIPT OF MR. BORST - Item No. 2 of Planning Commission meeting of 11/8/89

Mr. Chairman, my name is Fred Borst. I reside at 172 Landale Lane, El Cajon, CA and also other members of the Commission and staff. I would like to more or less repeat what you have already stated as a commission in your observation. I think this is a classic example of the cart way before the horse. And, as a matter of fact, I think it is entirely inappropriate for this matter to be before you at this time. I'm very surprised that members of the Otay Regional, that the Otay Regional Committee--I'm sorry, it's the Otay Valley Road Project Area Committee--are not here and, as you know, this is a body of people that have been set aside specifically to work in this project area, and these are the people that staff have been working with. I do not feel that this Environmental Impact Report is an appropriate document for you to be reviewing at this time, because the Otay Valley Project Area Committee is frustrated themselves by what has been an incredibly large issue concerning this entire project, and that is something that has not been brought before them except in the vaguest and broadest of terms and that is the cost of this project. Let me explain to you that I am one of the property owners with the property outlined in red and a significant portion of our property faces along Otay Valley Road and surrounds the Animal Shelter, and so you understand that not only have I been a property owner there since 1983; I have also been a member of the Otay Valley Road Project Area Committee, and as since no longer being a member have attended many of the meetings. It has been reported at the last meeting that this project is anticipated, again in the vaguest of terms, of costing some $6 million. There is a projected assessment district that is going to be formed and that has not been thoroughly analyzed and I just have to tell you that I am concerned and I think all certainly has been reflected in the minutes of the Project Area Committee that they are very, very concerned about the cost of this, because costs have not been analyzed and this is something that should be an integral part of this report to determine just who is going to absorb all of this. I have sent a letter, and the letter may be included in the materials that are in front of you, that review my concerns not only are the costs but I take issue with one major point concerning our ownership, and this is on page 3-38 and 39 where the report states that our property which is referred to in the report as the Walker-Scott property is not impacted. I take very serious issue with that comment, and I don't understand how anybody who was drafting this report could have ever made that conclusion. In fact, our 52 acres of industrially zoned land is so severely impacted that much of the property will not be able to be developed as a result of this proposed widening. There are somewhere between three and four hundred acres of usable land in the project area--the industrial project area--and it is inconceivable to me that a six-lane road with medians can be justified and, in fact, I believe that there are property owners--significant property owners--to the east and up on Otay Mesa who will benefit significantly from this, and I think it certainly should be looked at and a full report should be made as to how they are going to be benefiting and that a matter of this nature should be reviewed from a regional standpoint. Finally, we as property owners take very serious issue with the access that has been illustrated and shown into our property when, in fact, all along you see the entire frontage along the red line there on our property, there is only one full signalized intersection and that is way to the east of our property line at Maxwell Road. The other full intersection --or the other intersection--that is planned does not enter into our property at all; it enters into the Omar Rendering property, and there are other traffic issues concerning the closeness between Nirvana and Maxwell Road. I'm sorry for taking so much time, but I believe that this matter should be thoroughly reviewed by the Otay Project Area Committee meeting, should be thoroughly endorsed by them before it is even brought to your attention, and I do not think it's an appropriate matter for a public hearing.

Comment 3

3A. See response to comment 2B. In addition, properties outside of the Redevelopment area are being considered for inclusion in the Assessment District to finance the road widening project.

3B. See response to comment 2C. This matter may be considered at a later date at the request of the Otay Valley Road Project Area Committee.

COMMENT 4

MINUTES OF A REGULAR MEETING OF
THE OTAY VALLEY ROAD REDEVELOPMENT PROJECT AREA COMMITTEE

Monday, September 25, 1989 — Conference Rooms 2&3
9:00 a.m. — Public Services Building

ROLL CALL

MEMBERS PRESENT: Chairman Heye, Members Colombo, Lichty, and Olguin

MEMBERS ABSENT: Member Casillas

ALSO PRESENT: Redevelopment Coordinator Fred Kassman; Principal Planner Dan Pass; and Fred Borst, Property Owner in the Project Area

1. APPROVAL OF MINUTES OF AUGUST 28, 1989

MSUC (Heye/Lichty) to approve the minutes as mailed.

2. REVIEW OF THE EIR FOR OTAY VALLEY ROAD

Chairman Heye requested any comments from Committee members concerning the Environmental Impact Report which was submitted to the Committee for comment.

Member Olguin questioned the proposed traffic signals at Oleander and Brandywine Avenue. These signals seem to be very close together. Redevelopment Coordinator Kassman responded that, although the signals are close together, they are supposed to be electronically timed and should not hinder traffic flow.

Member Olguin questioned the height of the masonry sound barrier walls which are going to be constructed adjacent to the residential properties. Principal Planner Pass responded that that has not been determined as yet. Member Lichty further questioned where the walls would be constructed. Mr. Kassman responded that they would be constructed adjacent to the residential properties along Otay Valley Road near the
4A crest of the embankment. It would be necessary to obtain permission from the property owners to build the wall. Member Lichty further questioned what protection the residents at the top of the hill had. Further discussion followed concerning the placement and effectiveness of the wall. Member Polombo stated that it might be a waste to put the wall at the bottom of the hill in terms of buffering noise to the residential properties further to the north.

Mr. Fred Borst indicated that the EIR brings forth total issues to be considered for construction of the road. He questioned the necessity of

having traffic signals close together at Maxwell Road and Nirvana Avenue as well as Oleander and Brandywine. There are important safety issues for consideration here, particularly for Oleander and Maxwell Road. Traffic
4B rounds a dangerous curve and will be confronted by two traffic signals which may prove to be dangerous. Mr. Borst continued that there should only be one traffic signal at Maxwell Road. Nirvana should be connected to Maxwell by a new connector road.

Mr. Borst continued that he felt the entire concept of the six-lane major arterial roadway was too financially ambitious for the project area. If the ultimate development to the east and south requires a six-lane major arterial road, then those people benefiting from that road should absorb
4C some of the cost. Four lanes are enough to provide service to the project area. Mitigation for 2 acres of wetland alone has been estimated at approximately $800,000 per acre. There is no justification for this grandiose a road project in consideration of the few property owners that will have to pay for it.

Chairman Heye agreed with Mr. Borst indicating that the whole road project has gotten out of hand. It is imperative that a budget be prepared and submitted now and that the cost needs to be considered since it may very
4D well be too great for the land owners in the project area. Member Lichty questioned whether LAFCO can dictate how the financing of a road can be apportioned out. Mr. Pass responded that there are some subventions which are available and are handled through SANDAG. This body should have been involved early in the planning process.

Chairman Heye continued that he feels deceived. When he first developed in the project area years ago, there was nothing said about a 128-foot
4E wide major thoroughfare. If that large a facility is constructed in the project area, it will encourage more traffic usage by people outside the project area.

Mr. Borst continued that this subject was brought up a long time ago, and City staff indicated that engineering studies required a six-lane major arterial with a median strip. Member Polombo added that it may be better to wait until there are more people in the project area to share the costs.

Chairman Heye summarized that there are three major issues which are
4F becoming apparent. The first is the size of the road and related cost, the second are the location of the stop lights, and the third involved the noise attenuation wall.

Member Lichty suggested that Principal Community Development Specialist Robin Putnam and the consultant engineers come back for more discussions concerning the road before a final decision is made. Fred Borst indicated that Leedshill Herkenhoff, the consulting engineering firm for the project, should be preparing cost estimates at this time.

Redevelopment Coordinator Kassman indicated that review and approval of the EIR was not tantamount to project approval. If the EIR is approved, a four-lane road project could still be considered as well as a six-lane project. Chairman Heye suggested it would be advisable to make comments for the EIR which will be reviewed by the Planning Commission on October 11. Chairman Heye further proposed that the Project Area Committee make the following findings:

4G 1) The road project is disproportionate in size to the development in the project area and may be cost prohibitive.

2) Should traffic levels in the area increase to higher-than-anticipated levels, noise barriers should be considered for the residential areas to the north of Otay Valley Road including Bon Vivant and Brandywine Townhomes.

3) Consideration should be given for the combining of traffic signals at Maxwell and Nirvana and providing a pass-through roadway connecting the two streets.

MSUC (Heye/Licty) to adopt these recommendations and direct staff to pass them on to the Planning Commission for review and consideration of adopting the EIR.

3. PROPOSAL TO DEVELOP A 13,000 SQ. FT. INDUSTRIAL BUILDING BY JOSEF SEDIVEC

Principal Planner Pass indicated that the environmental clearance has not been received as yet for this project. The Committee cannot review it until the environmental documentation is complete. The project will be placed on a subsequent agenda for review by the Committee.

Member Polombo indicated that he may have a conflict of interest in reviewing this project since his property is contiguous to the subject development site.

4. ORAL COMMUNICATIONS

There were no oral communications.

5. CHAIRMAN'S REPORT

Chairman Heye handed out copies of a recent editorial from the Star-News on the proposed auto park on East "H" Street which also mentioned Otay Valley Road as a previously considered location.

Chairman Heye indicated that he had recently driven up Nirvana and Energy Way and noticed that several of the auto recyclers had constructed stucco walls with concertina wire on their sites. Mr. Kassman indicated that staff had taken note of these and that they were not approved by the Planning Department. Notices were sent to the property owners indicating that any proposed construction on sites should be submitted to the Planning Department for review and approval before construction or the improvements may be required to be demolished.

6. MEMBERS' COMMENTS

There were no members' comments.

7. STAFF COMMENTS

There were no staff comments.

8. ADJOURNMENT

The meeting adjourned at 10:19 a.m. to the next regularly scheduled meeting of October 9, 1989, at 10:00 a.m.

Fred Kassman, Recorder

WPC 4235H

Comment 4

4A. The planned noise wall will be located at the top of the slope of the twelve residential parcels (that are located from I-805 east to Oleander Avenue) that back up to Otay Valley Road. The wall was located to minimize adverse impacts to residents from noise generated by traffic on Otay Valley Road.

No noise mitigation is proposed for residential uses on the hill, because the noise from Otay Valley Road traffic will not result in noise levels exceeding community standards in those areas.

4B. The connection of Maxwell Road and Nirvana Avenue is not proposed as a part of this project. Because of site distance limitations, resulting from the curve east of Nirvana on Otay Valley Road, the signal at the Nirvana Avenue intersection with Otay Valley Road will be installed as a part of the Phase I construction project.

4C. See response to Comment 3A.

4D. See response to Comment 2C.

4E. Comment noted, no response necessary.

4F. Comment noted, no response necessary.

4G. See response to Comments 2C and 3A.

COMMENT 5

TO: Christine Keller, Keller Environmental

FROM: Robin Putnam, Principal Community Development Specialist

SUBJECT: Comments from Ted Hale of H.G. Fenton Materials Co. on the Otay Valley Road Widening Draft EIR

The following issues were raised by Mr. Hale at a meeting with Doug Reid and I on Thursday September 21, 1989.

5A Mr. Hale expressed a concern with the last provision on page 3-28 under Mitigation. He objected to the construction corridor on the property under Fenton ownership being recontoured to lower than existing levels following construction. To respond to his concern, I suggest the mitigation measure be modified to change the reference from "...recontoured to natural or lower levels..." to simply "...recontoured to natural levels...".

5B Mr. Hale was concerned about access to the property south of the proposed Otay Valley Road. Leedshill-Herkenhoff will be preparing a design for a driveway access which will be completed for consideration in the Final EIR.

5C On page 3-48 and 3-50, there is an indication that the rock plant is operated by Fenton Materials Co. Mr. Hale clarified that the rock plant is operated by Nelson & Sloan.

5D On page 3-84 under Impacts, Mr. Hale requested clarification on the width of the area to be landscaped east of Maxwell Road. In the area east of Maxwell Road, the landscaping will only cover the slopes down to the wetland boundary and may not include the full 20-foot landscaped area.

OVRCCM

Comment 5

5A. This comment is noted and changed in the EIR text.

5B. A driveway to access the Fenton property is proposed as part of the road widening project.

5C. This comment is noted and changed in the EIR text.

5D. This comment is noted and clarified in the EIR text.

DRAFT
ENVIRONMENTAL IMPACT REPORT
OTAY VALLEY ROAD WIDENING PROJECT

Prepared for:

The City of Chula Vista
276 Fourth Avenue
Chula Vista, CA 92010

Prepared by:

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August 10, 1989

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1.0 INTRODUCTION

1.1 PURPOSE

The City of Chula Vista is proposing to widen Otay Valley Road from Interstate 805 to the eastern City boundary. The purpose of this Environmental Impact Report (EIR) is to analyze the environmental and social consequences of widening the existing two lane Otay Valley Road to a six lane prime arterial. This EIR has been prepared in accordance with the criteria, standards and procedures included in:

- The California Environmental Quality Act of 1970 (CEQA), as amended (Public Resources Code, Sections 21000 et seq.);
- The State CEQA Guidelines (California Administrative Code, Sections 15000 et seq.);
- The Environmental Review Procedures of the City of Chula Vista; and
- The regulations, requirements and procedures of the California Department of Fish and Game. In case of conflict, the City of Chula Vista's requirements will prevail.

In accordance with Section 15367 of CEQA Guidelines, the City of Chula Vista has been designated the Lead Agency and, as such has the principal responsibility for processing the project in compliance with CEQA requirements. The California Department of Fish and Game is a Responsible Agency, and will process a Streambed Alteration Agreement with the City. The proposed project will also require a Section 404 permit from the Army Corps of Engineers (ACOE) since the project will entail dredging and filling of the Otay River. The U.S. Fish and Wildlife Service will advise the Corps on matters related to biological resources. The ACOE will be responsible for preparing an Environmental Assessment (EA) for the project in compliance with the National Environmental Policy Act (NEPA).

No Initial Study was prepared for the project. Section 15060 (c) of the California Administrative Code, within the State CEQA Guidelines, specifies that, if the Lead Agency can determine that an EIR will clearly be required for a project, an Initial Study is not required. The necessity for an EIR production and the scope of the required analyses were determined by the City of Chula Vista's Environmental Review Coordinator after consultation with other members of the Community Development Department and after responses were received following the Notice of Preparation. Preparers of, and contributors to, this report are listed in Section 9. Key contact persons are:

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An effort was made during the preparation of this EIR to contact all agencies, organizations, and persons who would either be affected or have an interest in this project. Information, data, and observations resulting from these contacts are included where relevant. All interested agencies and persons will have the opportunity to comment on the EIR during the public review period. Comments received by the City of Chula Vista as well as responses to these comments will be included in the Final EIR.

1.2 NEED FOR THE PROJECT

The proposed project is in accordance with the goals and objectives of the adopted Otay Valley Road Redevelopment Area Redevelopment Plan (1983) that specifically calls for the "elimination of environmental deficiencies including inadequate street improvements, . . . utility systems and . . . public services" (Section 4.00.10.4). The Redevelopment Plan further calls for the "development of a more efficient and effective circulation corridor system free from hazardous vehicular, pedestrian, and bicycle interfaces" (Section 400.10.5). The proposed project consequently represents a major City of Chula Vista action towards the implementation of the Otay Valley Road Redevelopment Area Plan.

In addition, the widening of Otay Valley Road is consistent with the City of Chula Vista's draft General Plan Update (January 1989) which designates Otay Valley Road as a six lane prime arterial and major street.

1.3 SUBSEQUENT EIR PROCESSING AND REVIEW

The roadway design for the Otay Valley Road Widening Project has been established from I-805 to approximately 400 feet west of the City's incorporated city limits. The final roadway design for the western 400 foot roadway section within the City of Chula Vista will be completed in coordination with the County of San Diego's planning of the proposed Paseo Ranchero Road. This planned county road will intersect Otay Valley Road in the vicinity of the City's incorporated limits.

For the purposes of this EIR, environmental resources and potential impacts are evaluated for an entire roadway right-of-way within the City's limits. In accordance with Section 15182 of the CEQA guidelines, if a subsequent phase facility is found to be consistent with the preliminary roadway right-of-way assessment at the City's eastern limits, then additional environmental documentation may not be required. Conversely, it may be determined that there are some minor changes requiring documentation, but which do not result in any significant impact. In this case, a Negative Declaration would be prepared and reviewed. If potentially significant impacts are identified in subsequent review of the Paseo Ranchero Road and Otay Valley Road intersection requirements, the County of San Diego's EIR for Paseo

Ranchero Road will address the impacts associated with this easternmost section of the Otay Valley Road Widening Project.

1.4 EXECUTIVE SUMMARY

The remainder of this section summarizes the significant and adverse impacts cited to occur as a result of approval, construction and operation of the Otay Valley Road Widening Project. This summary is contained in Table 1-1, and lists by each resource issue the environmental impacts and mitigation measures that are recommended to reduce impacts to insignificant levels.

TABLE 1-1
EXECUTIVE SUMMARY

Issues/Impacts	Mitigation Measures	Analysis of Significance
Geology/Soils - Geologic and soils impacts could occur from development of the roadway on the unstable river wash, stream sediments and clay loams found in the area.	Unstable geology/soils materials will be removed or stabilized before roadway construction begins. Surficial layers of organic soils, debris and soft or loose deposits will be stripped from areas where fill will be placed. Compressive soils will be removed and replaced with properly compacted fill. Expansive soils will be buried deep in fills and not within the roadway section. All slopes will be constructed at a minimum slope of 2.0 horizontal feet to 1.0 vertical feet. Temporary chain link debris fences, with meshes of 1 to 1 1/2 inch square, will be installed, along with heavy gauged reinforced plastic sheet material at fence bottoms, to control erosion runoff and silting in sensitive wetland areas.	With mitigation, no significant impacts are expected.
Minerals - The proposed right-of-way lies entirely within the MRZ-2 zone, which has been classified by the State of California Department of Conservation as an area where significant mineral deposits are likely to be present. Based upon the results of test borings of geotechnical investigations, the resources in the project area do not meet the AASHTO specifications for fine aggregate. Consequently, potential impacts to mineral resources are not considered significant.	No mitigation is necessary.	No Significant Impacts.

TABLE 1-1 (Continued)

Issues/Impacts	Mitigation Measures	Analysis of Significance
Drainage and Surface Water - At project completion, the proposed project will increase the graded and paved area of the roadway by approximately 34 acres, including the widened road section and sidewalks. The runoff from the roadway will be contained within the roadway by curbs and gutters and directed to catch basins and storm drains that will empty into the Otay River floodplain. The increase in peak runoff due to the project is an incremental increase in the Otay River watershed and not considered significant. The proposed fill slopes at the east end of the road infringe upon the 100 year floodplain, however, the roadway section is above the 100 year floodplain.	Final drainage plans will be reviewed by the City's Engineering Division.	Not Significant.
Groundwater - The loss to the basin is approximately 45 acres and is considered an incremental amount.	No mitigation is necessary.	Not Significant.
Water Quality - Surface runoff contaminants from automotive sources, such as oil, grease and heavy metals will increase. Incremental increases in these contaminants is not considered significant.	No mitigation is necessary.	Not Significant.

TABLE 1-1 (Continued)

Issues/Impacts	Mitigation Measures	Analysis of Significance
Biology - Direct Impacts. The proposed roadway expansion will lead to the ultimate loss of 1.2 acres of Diegan Sage Scrub, 2.6 acres of Tamarisk/Mulefat Shrubland, 0.2 acre of Willow Riparian Woodland and 0.2 acre of Freshwater Marsh. Construction activities within the 20 foot construction zone would additionally impact 1.1 acres of Tamarisk/ Mulefat Shrubland and 0.2 acre of Diegan Sage Scrub. Impacts to Tamarisk/Mulefat Shrubland, Willow Riparian Woodland and Freshwater Marsh are considered significant due to importance of wetlands habitats to wildlife.	Losses of wetland habitats including Tamarisk/Mulefat Scrubland, Willow Riparian Woodland, and Freshwater Marsh totalling 3.0 acres would be mitigated by the creation of new wetland areas within the river valley. Any such mitigation should include the extensive revegetation with willow woodland and the use of San Diego marsh-elder to maximize value to wildlife and mitigate for the loss to this sensitive plant species. Appropriate mitigation would be a 2:1 acreage replacement ratio for wetlands lost. The roadsides adjacent to native vegetation comunities east of Nirvana Road should be designed in a manner that would inhibit the potential for vehicle access or illegal dumping into the river bottom or onto the slopes. Incorporation of guard rails or fences would be appropriate. Use of thorny vegetation may also be used in conjunction with temporary fences. The roadway slopes should be revegetated with native plant materials indigenous to the area or which complement the existing native communities, such as sage scrub or sycamore woodland species. Where construction activities are to occur in or adjacent to native vegetational communities, work will be restricted to the delineated project footprint by the placement of temporary construction fences or flagging along both sides of the street. This measure is incorporated in the project description. If work site brushing occurs between April 1 and September 15, the project site should be carefully examined by a qualified biologist prior to clearing. Should the site be found to support nesting birds including Least Bell's Vireo, Willow Flycatcher, or Yellow-breasted Chat, work within 300 feet of the nest site should be delayed until nesting has been competed.	With mitigation, impacts will not be significant.

TABLE 1-1 (Continued)

Issues/Impacts	Mitigation Measures	Analysis of Significance
	Following construction, the 20-foot wide construction corridor should be recontoured to natural or lower levels and revegetated with native vegetation favoring Willow and Mulefat Riparian Scrub with minor elements of Diegan Sage Scrub.	
Biology - Indirect Impacts. The expansion of the roadway is expected to lead to a higher incidence of road-kills, particularly among nocturnal mammals traveling between the uplands to the north and the river bottom.	No mitigation measures are necessary.	Not Significant.
Landform Alteration - Minor changes in landform will result.	No mitigation measures are necessary.	Not Significant.
Land Use - The proposed project will have a beneficial effect on planned land uses, as it will allow for the future planned development and upgrading of utilities and transportation in accordance with the goals and objectives of the Otay Valley Road Redevelopment Plan. Similarly, the project implements the Draft General Plan Update, which designates Otay Valley Road as a six lane prime arterial and major street.	No mitigation measures are necessary.	Not Significant.
The project will physically conflict with the administration, workroom and parking facilities of the City of Chula Vista Animal Shelter.	The Animal Shelter Property will be redesigned to relocate the parking lot, workroom and administration building to the southern part of the property.	With mitigation, impacts will not be significant.

TABLE 1-1 (Continued)

Issues/Impacts	Mitigation Measures	Analysis of Significance
The project will reduce the frontage property of the South Bay Storage Area and Border Truck Sales and Pacific Bell Service Center.	No mitigation measures are necessary since the project will not impact the existing land use structures or planned operations associated with the Shell Gas Station and Pacific Bell Service Station. No mitigation measures are necessary for the South Bay Storage Area and Border Truck Sales, since existing uses are interim and temporary.	Not Significant.
Agriculture - The proposed project will permanently eliminate 3.9 acres of active agriculture, as well as the availability of Prime Agricultural soils, which represents an incremental loss of a diminishing County resource.	No mitigation measures are necessary since agricultural uses in the redevelopment area are considered in the General Plan to be interim uses.	Not Significant.
Parks - The proposed project will not adversely affect any existing or planned park or recreation areas or areas designated for open space. The proposed project will have beneficial impacts on park, recreation and open space through the construction of bike paths and landscaped buffer areas adjacent to areas that are planned for the Otay River Valley Regional Park.	No mitigation measures are necessary.	Not Significant.

TABLE 1-1 (Continued)

Issues/Impacts	Mitigation Measures	Analysis of Significance
Traffic - Although the proposed project will not in itself affect traffic volumes, increased traffic is expected to occur along Otay Valley Road due to long-term development and population growth in the region. These impacts are expected to take the form of traffic congestion at intersections along Otay Valley Road due to slowed vehicle turning rates. Signals will be warranted by the time of project buildout at the Oleander Avenue, Brandywine Avenue, Nirvana Avenue and Maxwell Road intersections with Otay Valley Road as well as at both the north and southbound on-ramps to I-805.	Signals will be installed as the City Engineer determines is appropriate in order to meet the City's Traffic Threshold Standard. The City of Chula Vista will request that Caltrans further evaluate signalization needs and timing at the intersections of I-805 and Otay Valley Road. Maxwell Road will be restriped to provide a southbound left turn-lane at its intersection with Otay Valley Road.	With mitigation, no significant impacts will result.
Traffic study estimates suggest that improvments will be required to the two-lane road section east of Nirvana in approximately five years due to projected daily traffic volumes of 10,600 VPD..	Traffic conditions should be monitored by the City's Traffic Engineer to implement improvements at the appropriate time.	Not Significant.
Traffic congestion and hazards could result at the intersection of Otay Valley Road and the Fenton Materials Rock Plant until the full widening of Otay Valley Road occurs and the road's intersection with Paseo Ranchero is constructed.	As an interim measure, roadway improvements at this intersection should be made as part of Phase I.	

TABLE 1-1 (Continued)

Issues/Impacts	Mitigation Measures	Analysis of Significance
Archaeology/Paleontology - Archaeology. The project would physically impact three sites. The sites no longer retain research potential, subsurface deposits or major features within the right-of-way. Consequently, impacts are not considered to be significantly adverse.	No mitigation measures are necessary; no further studies, surveys or excavations are recommended prior to construction.	Not Significant.
Paleontology. Potential impacts could result to significant resources; impacts can be determined when grading activities occur.	A qualified paleontologist should be at the pre-grade meeting to consult with the grading and excavation contractors. A paleontology monitor should be on site at all times during the cutting of previously undisturbed sediments through and immediately adjacent to the Mission Valley formation to inspect cuts for contained fossils. In the event that well-preserved fossils are discovered, the paleontological monitor should be allowed to temporarily direct, divert or halt grading to allow recovery of fossil remains in a timely fashion. Any fossil remains collected should be cataloged and deposited (with landowner's permission) at the San Diego Natural History Museum.	With mitigation, no significant impacts will result.
Air Quality - Construction-related dust impacts and combustive emissions from on-site construction equipment and off-site vehicles hauling concrete and other materials will be insignificant.	No mitigation measures are necessary. Nominal impact mitigation from temporary construction nuisance may be possible and should be integrated into construction planning. These include:	Not Significant.

Issues/Impacts	Mitigation Measures	Analysis of Significance
	1. Using effective fugitive dust control measures as required by APCD rules which prohibit the formation of a dust nuisance at the fenceline of any project. During Santa Ana wind conditions, these measures may need to be accelerated when strong winds loft dust more easily. 2. Maintaining a regular street sweeping and washing program where project construction activities interact with existing traveled roadways to remove dirt spillage or materials deposited from dirty equipment tires. 3. Routing construction traffic to minimize interference with existing traffic patterns and to minimize idling truck queueing near any occupied receptor locations. 4. Regulating construction activity schedules to not begin until winds are strong enough to blow dust away from the nearby houses at the west end of the project between I-805 and Oleander Avenue (approximately seven o'clock AM) and stopping when winds die down (approximately four o'clock PM).	
The proposed project is consistent with the State Implementation Plan (SIP), as it is a Capital Improvement Project that is part of the regional TIP. Consequently, regional impacts are not considered to be significant. Project related air quality concerns are confined to the immediate project area. Based upon CALINE 4 dispersion model projections of CO concentrations, no significant impacts to the immediate project area air quality are expected to result.	No Mitigation Measures are necessary.	Not Significant.

TABLE 1-1 (Continued)

Issues/Impacts	Mitigation Measures	Analysis of Significance
Noise - The Otay Valley Road Improvement will change community noise exposure adjacent to the roadway. Increased noise levels will primarily result from increased traffic and traffic speeds along the roadway. Levels to sensitive residential receptors, located north of Otay Valley Road and east of I-805, are projected to exceed the City's guidelines of 65dB for recommended levels. As such, significant noise impacts could result to these sensitive receptors.	A perimeter masonry noise wall should be installed at the back lot line of those residences backing up to Otay Valley Road.	With mitigation, no significant impacts will result.
Aesthetics - The proposed project will have a beneficial impact on roadside aesthetics through the creation of landscape medians and parkway buffers on either side of the roadway. In addition, the enhancement of currently disturbed wetlands will improve the aesthetic quality of roadside viewing.	No mitigation measures are necessary.	Not Significant.
Community Social Factors - The proposed project may economically affect the Shell Oil Station and Chula Vista Animal Shelter during project construction due to access limitations. Changes in frontage and parking will also impact the Animal Shelter.	All legal access will be maintained through construction.	Not Significant.
The proposed project will facilitate the future development and redevelopment of industrial properties along Otay Valley Road. Consequently, higher employment levels and property values could be expected within the Redevelopment Area.	No mitigation measures are necessary.	Not Significant.

TABLE 1-1 (Continued)

Issues/Impacts	Mitigation Measures	Analysis of Significance
Community Tax Structure - The proposed project will remove approximately 15 acres from the taxrolls. In total, less than $2,000.00 per year of property tax revenue would be lost to the affected taxing agencies.	No mitigation measures are necessary.	Not Significant.
Utility Services - Energy Conservation. New water lines installed along Otay Valley Road will be beneficial as the system requires enlargement to meet anticipated needs in the Redevelopment Agency.	No mitigation measures are necessary.	Not Significant.

2.0 PROJECT DESCRIPTION

2.1 LOCATION

The proposed Otay Valley Road Widening Project is located within the City of Chula Vista, California, approximately eight miles north of the U.S./Mexican border and approximately the same distance south of downtown San Diego. The project site is located in the extreme southeast corner of the City approximately 3.5 miles north of the international border (see Figure 2.1-1).

Otay Valley Road is proposed to be widened from Interstate Highway 805 (I-805) to the eastern City boundary. This portion of Otay Valley Road is approximately 8,800 linear feet in length and crosses lands within the City of Chula Vista's Otay Valley Road Redevelopment Project Area. The County of San Diego is located adjacent to and east of the project, and City of San Diego incorporated city lands are approximately 750 to 3,900 feet south of the project (see Figure 2.1-2).

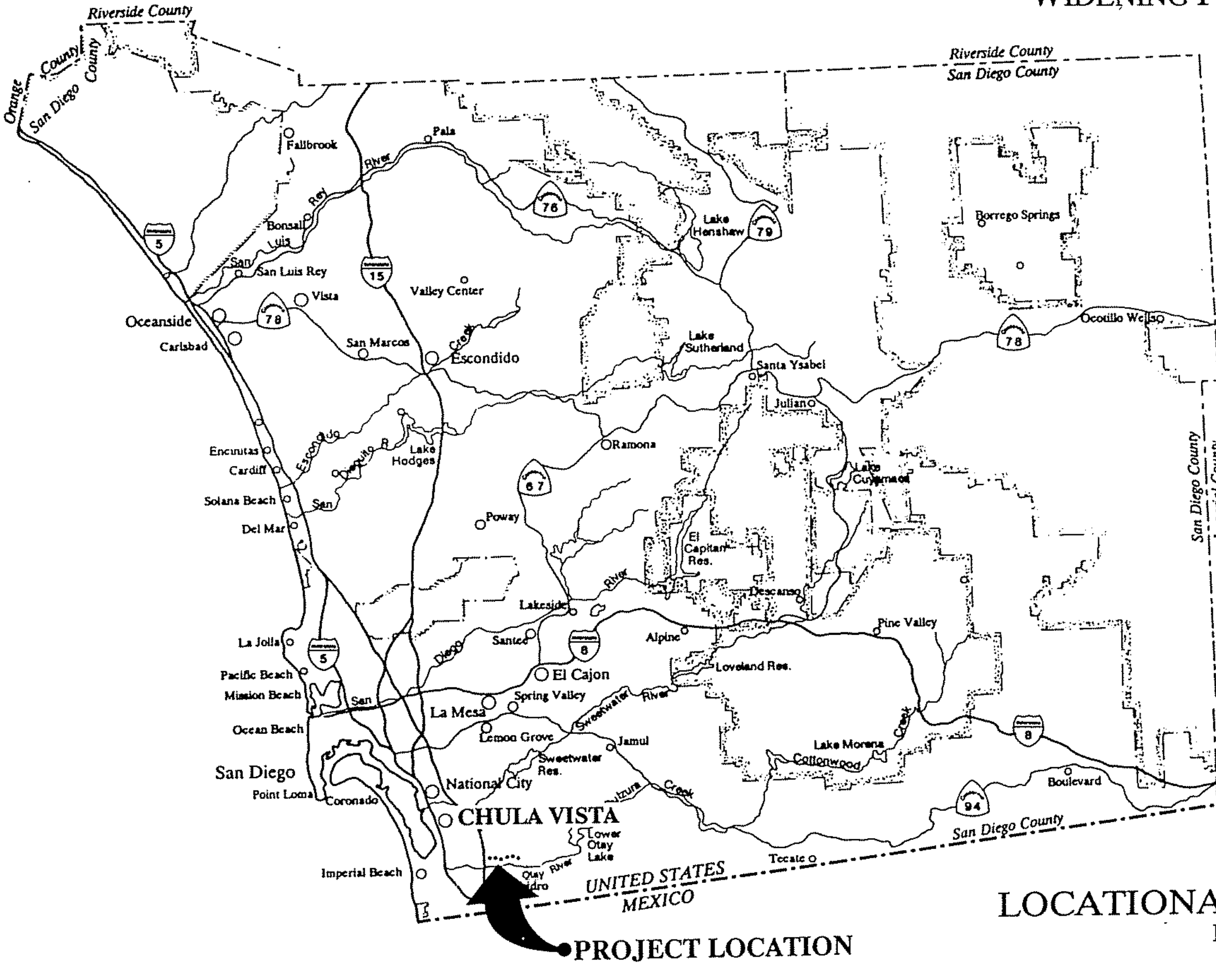
2.2 PROJECT CHARACTERISTICS

2.2.1 Existing Road Characteristics

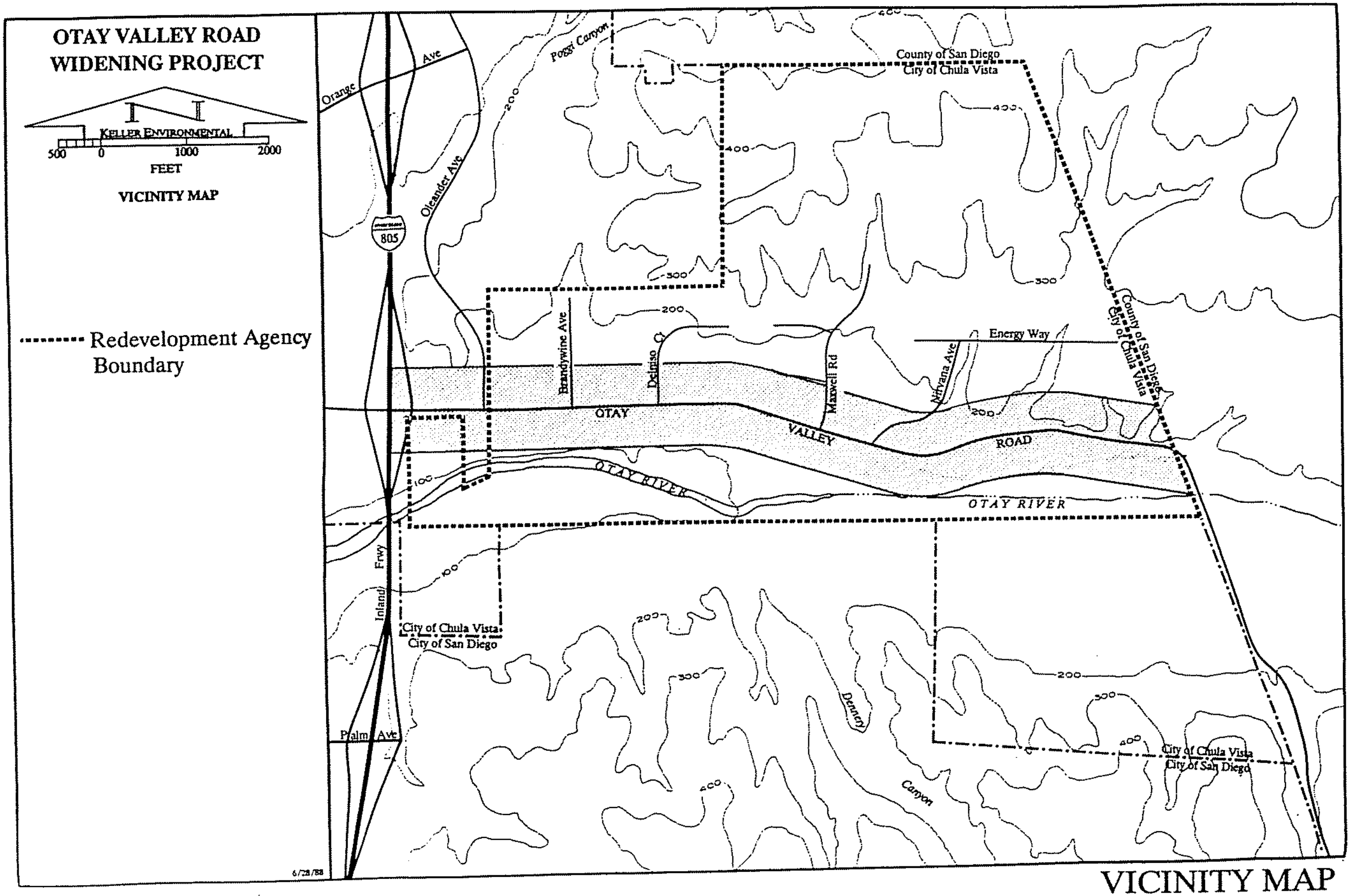
Within the City of Chula Vista, Otay Valley Road extends from I-805 to the Rancho Otay (Estudillo) boundary. The Otay River lies from approximately 250 to 1,400 feet south of the road in this area. Otay Valley Road turns south at the Rancho Otay boundary, crossing both San Diego County and City of San Diego lands before its connection with Heritage Road.

Within the project area, Otay Valley Road is a two lane road that varies in right-of-way width. From I-805 to east of Nirvana Road (approximately 1500 linear feet), existing curb and gutter improvements have been made along most of the road's northern boundary. East of Nirvana Road, Otay Valley Road is a two-lane country road with no improvements on either the north or south side of the roadway. Existing "T" intersections are on the north side of the road at Oleander Avenue, Brandywine Avenue, Delniso Court, Maxwell Road and Nirvana Road. Existing traffic control measures include two-way stop signs at these intersections, as well as a center northbound turning lane at Brandywine Avenue and Maxwell Road and a

OTAY VALLEY ROAD WIDENING PROJECT



LOCATIONAL MAP
Figure 2.1-1



VICINITY MAP
Figure 2.1-2

left turn pocket at Nirvana Avenue. Plate 1 shows photographs of the existing roadway characteristics and Figure 2.2-1 is an aerial photograph of the project site.

2.2.2 Proposed Roadway Design

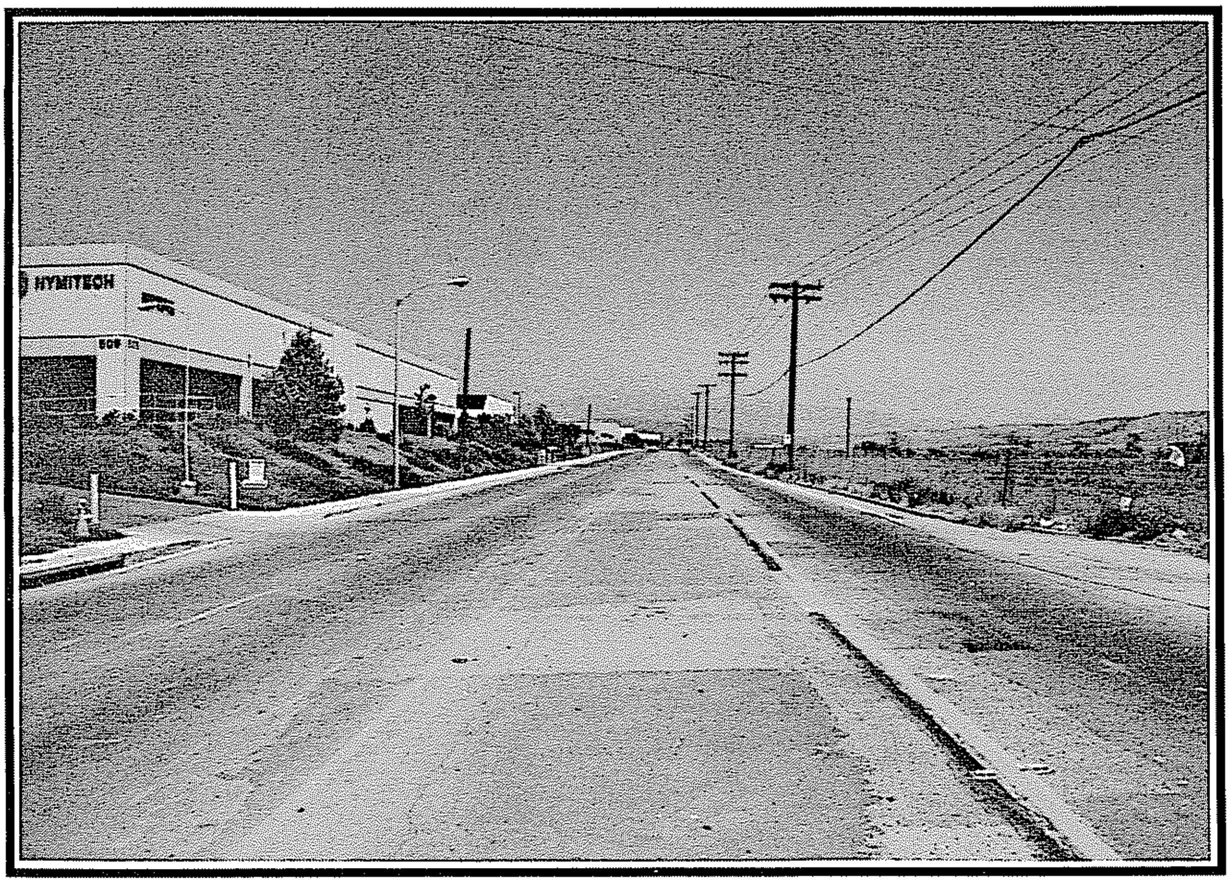
The proposed project is to widen Otay Valley Road to a six-lane prime arterial within a 128 foot right-of-way. The roadway will have a design speed of 55 miles per hour. Project elements include a 16 foot landscaped median, six 12 foot driving lanes, two 8 foot emergency parking lanes and 12 feet behind each shoulder curb for sidewalks, landscaping and utilities.

A precise design has been determined for the roadway from I-805 to within 400 feet of the City's eastern city boundary limits. The proposed project design includes the following transportation elements:

- The restriping of Otay Valley Road under the I-805 interchange to create duel left turn lanes onto I-805 north;
- Median breaks and left turn lanes on eastbound Otay Valley Road onto Oleander Avenue, Brandywine Avenue, Delinso Court, Maxwell Road and Nirvana Avenue;
- Left turn lanes on Oleander Avenue, Brandywine Avenue, Maxwell Road and Nirvana Avenue onto eastbound Otay Valley Road;
- Ultimate design for double left turn lanes on eastbound Otay Valley Road at Maxwell Road and Nirvana Avenue;
- A new intersection at Roma Court;
- A "U" turn lane on westbound Otay Valley Road at Maxwell Raod that will accommodate a roadway intersection to the south at a future date if development occurs; and
- Traffic control measures including stop signs or signals at the intersections of Oleander Avenue, Brandywine Avenue, Maxwell Road and Nirvana Avenue in accordance with traffic needs.

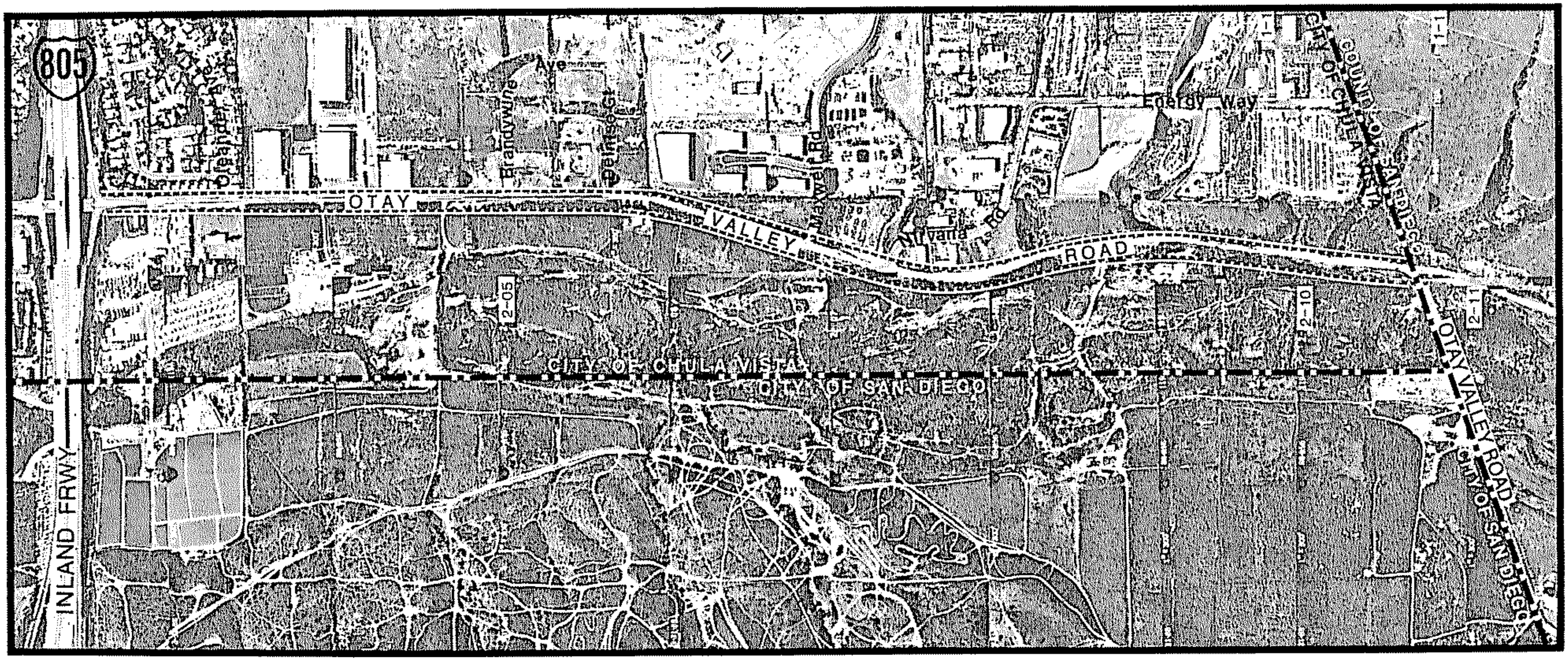
Paseo Ranchero Road will intersect with Otay Valley Road at a point near the incorporated city limits. The ultimate design in this part of Otay Valley Road will accommodate the future alignment of Paseo Ranchero. The project design at the City's eastern city limits will be finalized at a latter date in conjunction with the

Existing 2 Lane Section With No Roadway Improvements



Existing 2 Lane Section With Curb And Gutter Improvements And Center Turning Lane

PLATE 1 EXISTING ROADWAY CHARACTERISTICS



AERIAL PHOTOGRAPH

0 1000 2000 FEET

Figure 2.2-1

County of San Diego's design of Paseo Ranchero Road. The proposed location for the right-of-way is shown on Figure 2.2-2. The proposed roadway plan and a right-of-way cross section are shown on Figures 2.2-3 and 2.2-4.

2.2.3 Utilities

Existing utilities paralleling Otay Valley Road include electrical, telephone, gas, and cable TV lines. As part of this project, the above ground electrical lines on the south side of Otay Valley Road will be undergrounded. Similarly, gas, telephone and cable TV lines will be undergrounded within the 128 foot roadway right-of-way. Overhead electrical lines located on the north side of Otay Valley Road will remain above ground.

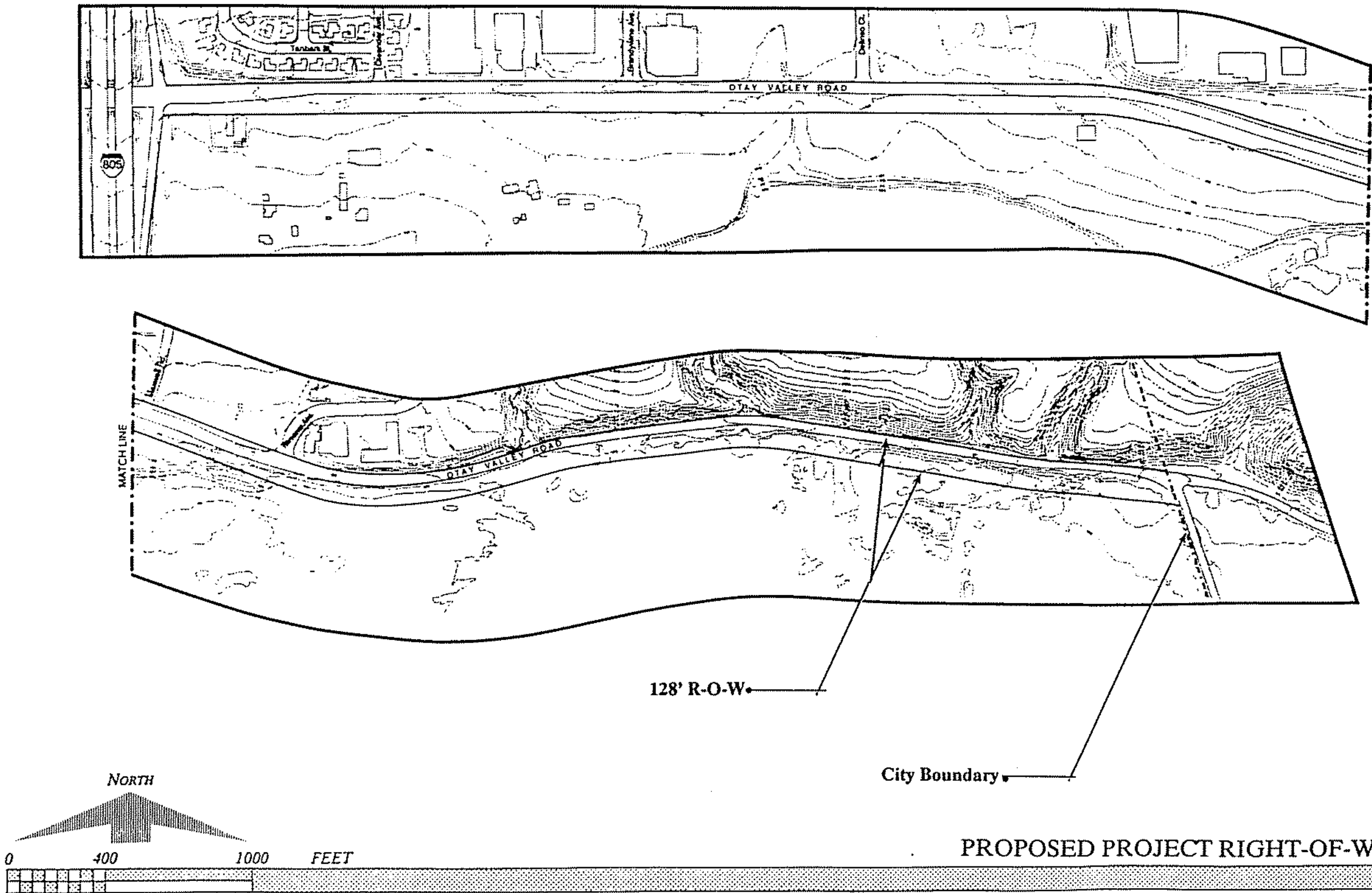
In addition to the existing utilities, a water line will be installed for the Otay Municipal Water District. From the project's western boundary near I-805 to Brandywine Avenue, a 12 inch water line will be installed to service future development on the south side of Otay Valley Road. From Nirvana Avenue to Maxwell Road, a 16 inch water line will be installed to service future development at the Otay Rio Business Park and east of City boundaries. No additional new utilities will be installed in conjunction with this project. The proposed water line will be undergrounded within the 128 foot roadway right-of-way.

2.3 PROJECT PHASING AND SCHEDULE

The proposed road widening will occur in two phases. Construction of Otay Valley Road from I-805 to Nirvana Avenue will begin in 1990 and will require approximately six month to complete. East of Nirvana Avenue the widening of Otay Valley Road will occur in conjunction with future development needs and available financing. It is anticipated that Phase II will be constructed within five years of Phase I completion.

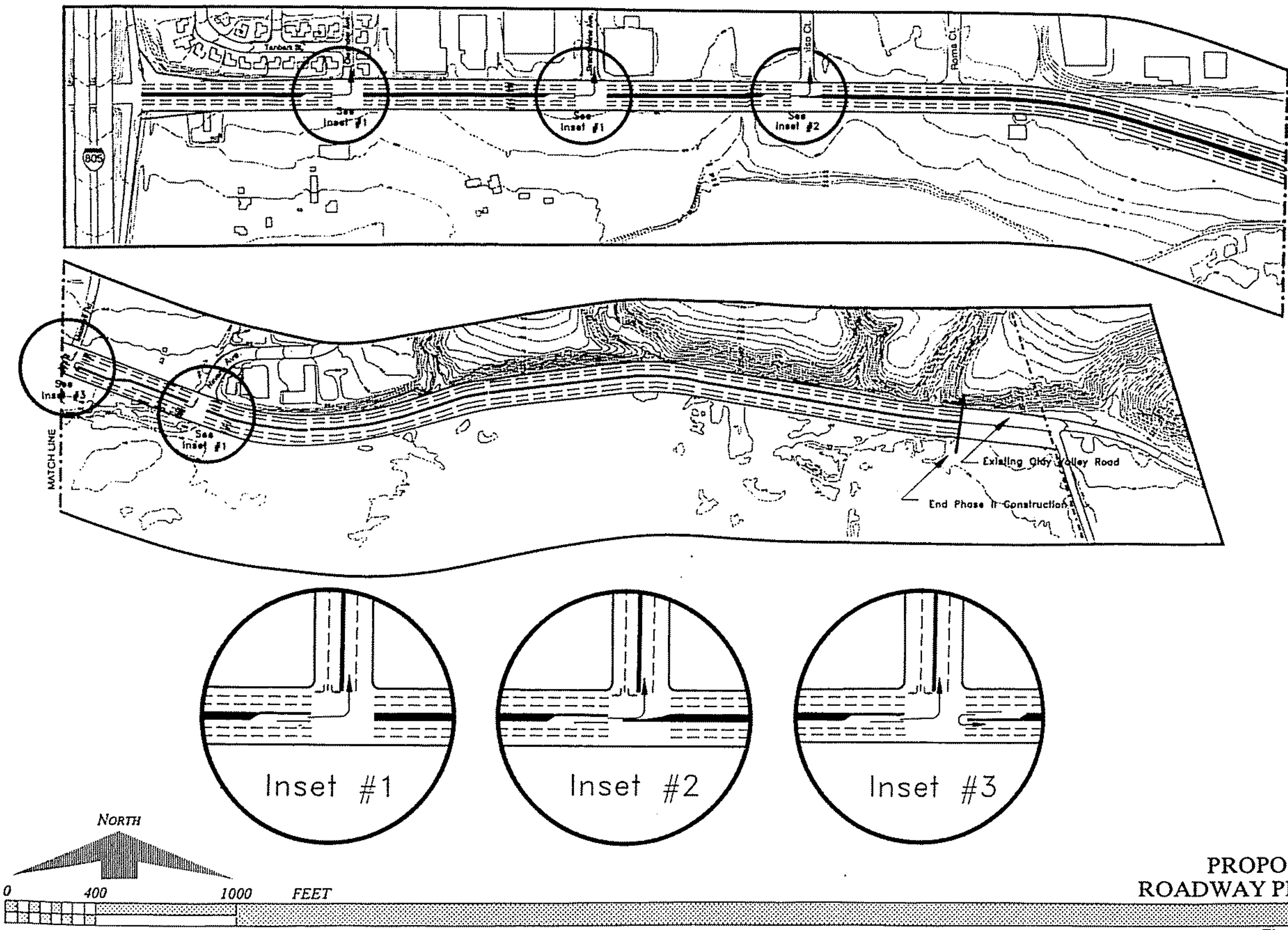
Phase I will include full roadway improvements from I-805 to approximately 700 feet east of Nirvana Avenue. Phase I will provide for three westbound lanes from Nirvana Avenue to I-805. Three eastbound lanes will be stripped from I-805 and will transition to two lanes, approximately 1,160 feet west of Maxwell. Two eastbound lanes will be stripped between Maxwell and Nirvana Avenue, during

OTAY VALLEY ROAD
WIDENING PROJECT



PROPOSED PROJECT RIGHT-OF-WAY

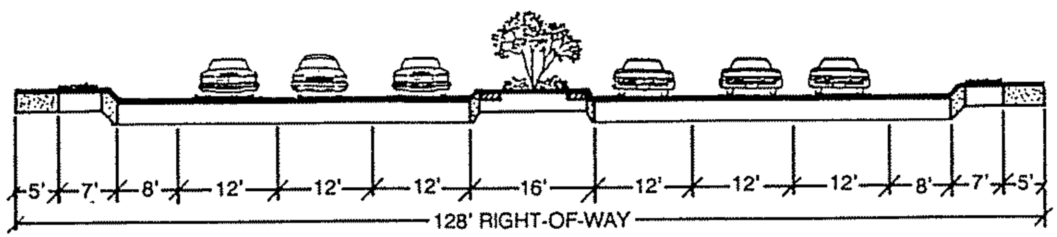
Figure 2.2-2



PROPOSED
ROADWAY PLAN

Figure 2.2-3

OTAY VALLEY ROAD WIDENING PROJECT



CROSS-SECTION OF ROADWAY DESIGN

NO SCALE

Figure 2.2-4

Phase I. East of Nirvana, both the eastbound and westbound lanes will transition from two lanes to one lane. Left turning lanes will also be provided for the intersections of Otay Valley Road with Maxwell and Nirvana. A signal will be installed at Nirvana Avenue as part of Phase I. The signal is being installed as a safety measure due to line of sight restrictions in this vicinity. Figure 2.2-5 shows the Phase I roadway plan. Phase I will be in operation in 1990.

Phase II will extend the widening of Otay Valley Road to six lane prime arterial standards from Nirvana Avenue to the eastern project boundary. Completion of Phase II construction will result in the ultimate roadway plan, as shown on Figure 2.2-3.

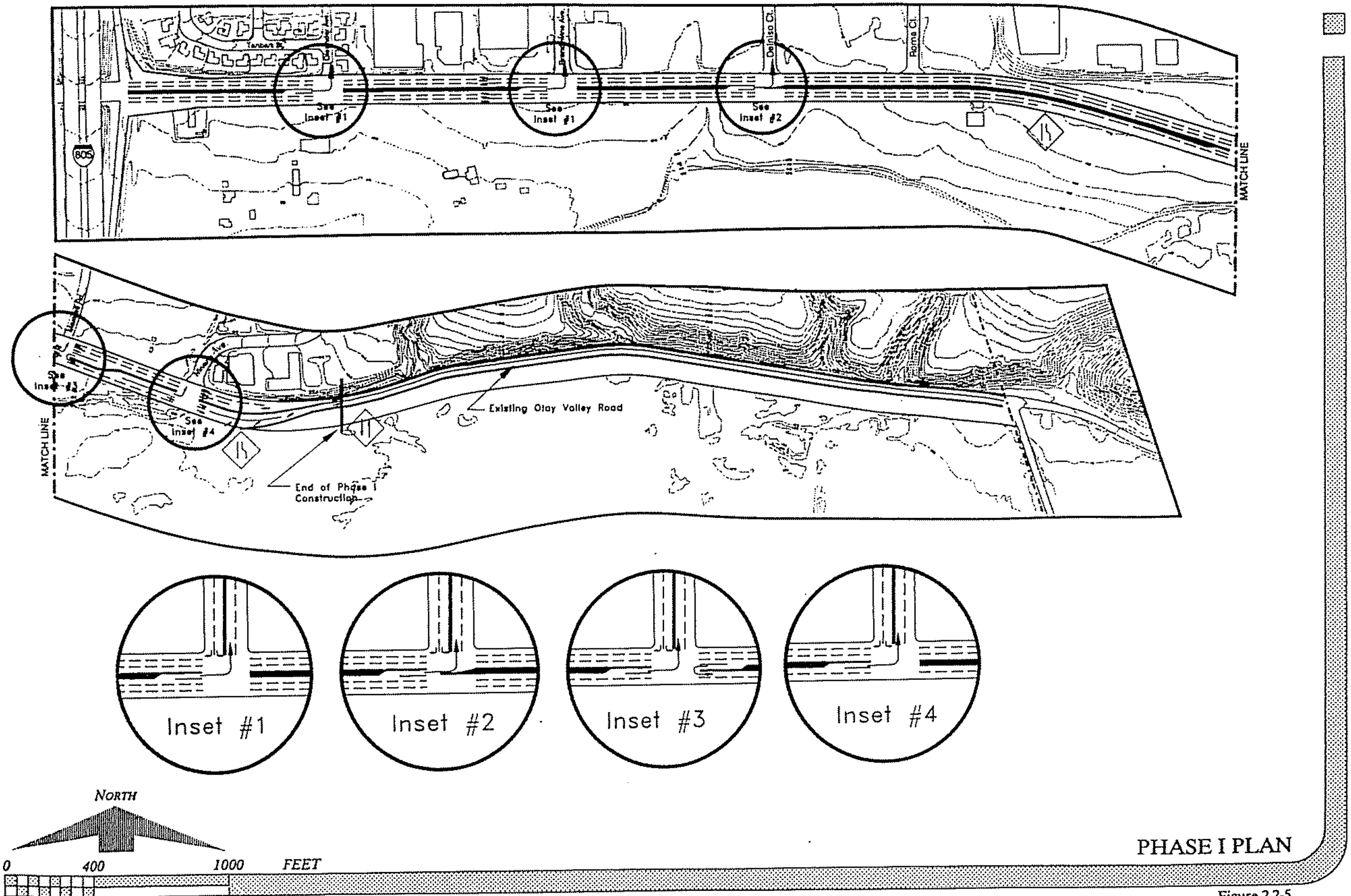
2.4 RELATED PROJECTS

Development Projects

The City of Chula Vista, City of San Diego and County of San Diego Planning Departments were contacted to obtain data on development projects and road improvement projects which are under construction, approved, or proposed in the general study region. The growth inducement and cumulative impact analyses were carried out based in part on these projects. Figure 2.4-1 identifies the development projects and areas covered in these analyses, and Table 2.4-1 includes a brief project description and current status of each.

Transportation Projects

Two related roadway improvement projects are planned in the eastern part of the project area. The County of San Diego is planning the construction of Paseo Ranchero Road from north of east "H" Street in the County of San Diego to I-905. An intersection of Paseo Ranchero Road and Otay Valley Road will be provided at a point near the City's incorporated eastern city limit boundary. The specific schedule for this project has not been determined at this time. In addition, the widening of the current Otay Valley Road alignment south and east of the project area, across the Otay River, will occur in accordance with the terms and conditions of the City's Development Agreement with the Chillingsworth Corporation for the Otay Rio Business Park. The schedule for this project has not been determined and



PHASE I PLAN

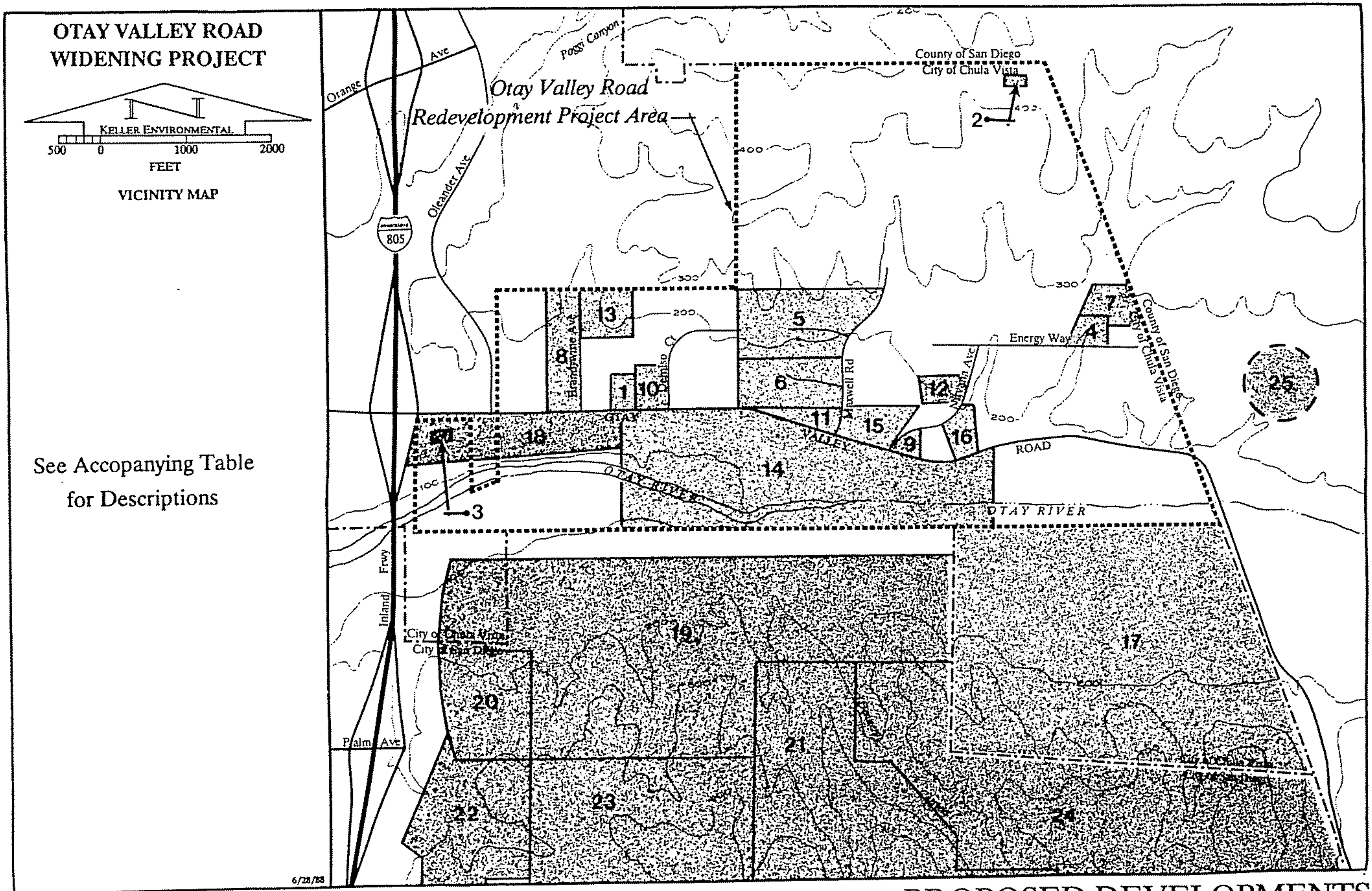
Figure 2.2-5

OTAY VALLEY ROAD WIDENING PROJECT

KELLER ENVIRONMENTAL

VICINITY MAP

See Accopanying Table for Descriptions



PROPOSED DEVELOPMENTS

Figure 2.4-1

TABLE 2.4-1
PROPOSED AND PLANNED PROJECTS IN THE AREA

No.	Jurisdiction	Project Name/Number	Project Description	Status
1	City of Chula Vista	Hyspan Precision Products CPE #2	5.19 AC, 54,000 SF expanded manufacturing facility	Development pending
2	City of Chula Vista	Pacific Lighting Energy Systems CPE #5	3,400 SF methane gas-to-electricity plant	Completed
3	City of Chula Vista	Shell Oil Company CPE #7	0.52 AC, 7,000 SF remodeled service station	Approved (11/88)
4	City of Chula Vista	Consolidated Freightways CPE #8	2.79 AC, 6,718 SF truck transfer station	Completed
5	City of Chula Vista	SDG&E CPE #9	20 AC, 47,100 SF service center & merger of lots/street vacation	Completed
6	City of Chula Vista	Greenwald/McDonald CPE #10	14.17 AC, 177,320 SF 7 speculative industrial buildings	Completed
7	City of Chula Vista	Chula Vista Sanitary CPE #12	4 AC, 10,810 SF operational center	Completed
8	City of Chula Vista	Werdin Development Company CPE #13	10 AC, 130,000 SF speculative industrial building & minor subdivision	Completed
9	City of Chula Vista	Gold Coast Engineering CPE #14	1.05 AC, 14,294 SF expanded manufacturing facility	Completed
10	City of Chula Vista	Asset Development CPE #22	2.69 AC, 25,000 SF light industrial	Application pending
11	City of Chula Vista	Girard Terminal Corp. CPE #16	3.28 AC, 42,000 SF 3 speculative industrial buildings	Approval (8/19/86)/ Development pending
12	City of Chula Vista	Peninsula Vegetable Exchange CPE #17	4.22 AC, 20,000 SF produce warehouse and transfer station	Completed
13	City of Chula Vista	Werdin/Darnell Companies CPE #20	7.1 AC, 64,000 SF light industrial/warehouse	Approved

No.	Jurisdiction	Project Name/Number	Project Description	Status
14	City of Chula Vista	Walker Scott Partnership CPE #24	106 AC, 250,000 SF light industrial complex	Application pending
15	City of Chula Vista	Girard Terminal Corp. CPE #25	7.8 AC light industrial	Application pending
16	City of Chula Vista	Carlin Construction CPE #41	2.24 AC, 39,000 SF hardwood lumber distribution	Application pending
17	City of Chula Vista	Otay Rio Business Park	49 single-family homes, 79 light industrial lots, park, open space	Development pending
18	City of Chula Vista	Auto Centre	31.677+ AC, 21,000 SF, streets, auto dealerships and parking lots	Plans pending, EIR in preparation
19	City of San Diego	Dennery Ranch	1,000 residential units proposed	Application pending
20	City of San Diego	Gateway Fair	45,000 SF grocery store, 31,000 SF drug store, 91,350 SF commercial/retail, 65,000 SF (150-room) motel, 2,400 SF service station	Approved PCD, GPA
21	City of San Diego	Hidden Trails (formerly Riverview) Precise Plan	900 residential units anticipated	Submitted Draft Precise Plan
22	City of San Diego	Palm Vistas Precise Plan	Mobile Home Park	Plans withdrawn
23	City of San Diego	California Terraces Precise Plan Otay Corporate Center	4,900 residential units proposed for western area; proposal to change 200 acres in General Plan and Community Plan designations east of Dennery Canyon	Precise plan and vesting tentative map submitted for western area, vesting tentative map denied
24	City of San Diego	Robinhood Ridge Precise Plan	848 residential units	Precise Plan and Development Permit application submitted
25	County of San Diego	Baldwin Master Plan	24,000 AC residential, commercial, college, industrial, open space uses	Conceptual Plan

Sources:

"Status Report on Otay Mesa Development Activity," April 20, 1988, City of San Diego.
"Fact Sheet, Otay Valley Road Project Area, 'Progress Report of January 1989," City of Chula Vista.
Robin Putnam, City of Chula Vista Community Development Department.
Dan Pass, City of Chula Vista Community Development Department.
Mike Stang, City of San Diego Planning Department.
Steve Conway, City of San Diego Planning Department.
Leila Fiske, County of San Diego Planning Department.

will be timed with the planning of Paseo Ranchero Road and increased traffic levels resulting from developemnt transportation requirements.

Finally, the California Department of Transportation is responsible for the Otay Valley Road and I-805 interchange. The City of Chula Vista has requested that Caltrans evaluate signalization requirements at Otay Valley Road and I-805.

3.0 ENVIRONMENTAL ANALYSIS

3.1 GEOLOGY/SOILS/MINERAL RESOURCES/SEISMIC SAFETY

A. Project Setting

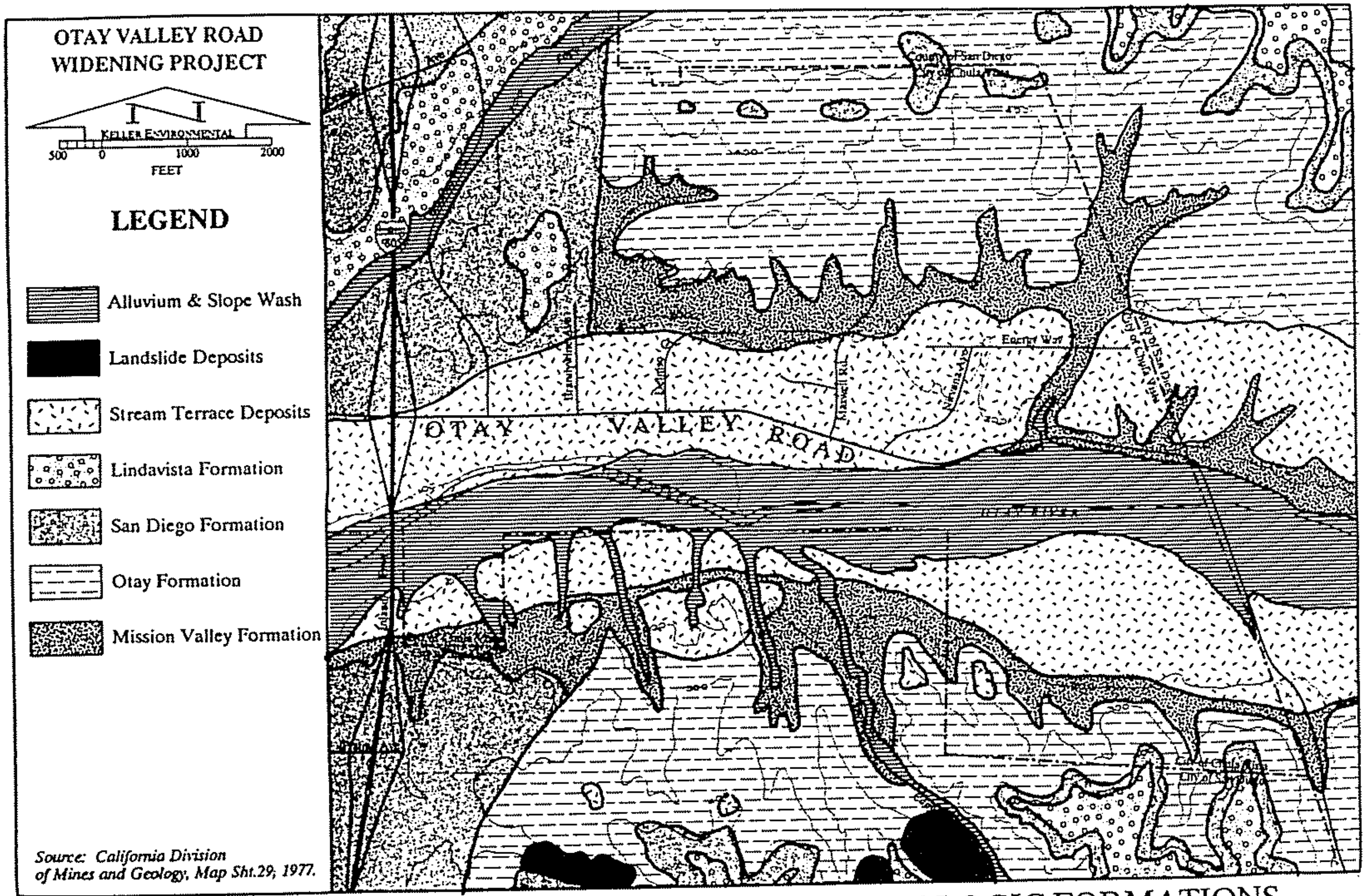
1. Geology and Soils

The Geotechnical Feasibility Investigations, Widening of Otay Valley Road, I-805 Freeway to 9500 Feet East, Chula Vista, California (San Diego Geotechnical Consultants, Inc., 1988) was prepared for this project, and serves as the major data source for this EIR section. In addition, numerous environmental documents prepared for projects in the general project vicinity have been reviewed for their applicability to the project area.

Geologic Limits

The project site lies within the Peninsular Ranges geomorphic province of California. Most of this province consists of rugged mountain ranges aligned along structurally controlled northwest-to-southwest trends, with a narrow coastal plain along the west edge. The project site is in this coastal plain section, where it is underlain by non-marine sediments of Cenozoic age. The geologic units in the project vicinity include the Otay Formation and Alluvium and are shown on Figure 3.1-1.

The Otay Formation underlies the entire project area at depth and is present in outcroppings on the eastern part of the project area. This Oligocenage formation consists primarily of light gray, silty, fine-to medium-grained sandstone with interbeddings of reddish brown, bentonitic siltstones and claystones. The unweathered rock is generally dense to very dense, and the bedding of claystones and bentonite siltstones is typically two to three feet in thickness. The suitability of these materials for use as road subbase ranges from fair for the sandstones to poor for the bentonitic clays. The presence of bentonite clay layers causes the Otay Formation to be susceptible to landslide (City of Chula Vista, 1974). Otay Formation materials are suitable for use in compacted fills and for support of fills or structural loads.



GEOLOGIC FORMATIONS
Figure 3.1-1

Two levels of stream terrace deposits of Quarternary age are present over the project area. The deposit on the eastern hilltops consist of light orange brown to brown, fine- to coarse-grained sand with abundant cobbles up to one foot in diameter. In the western part of the site, the deposit includes gravelly sands with some silt and clay in a generally fining-upwards sequence. Terrace deposits are usually medium dense to dense; friable zones may present erosion or stability problems with cut slopes. The suitability of these materials for road subbase is expected top be fair to good for the cobbly sands. Except for the upper 2 to 3 feet, which may be soft to loose, the terrace deposits are suitable for the support of fill or structural loads. They are also suitable for use in compacted fills, provided that oversized cobbles are removed or otherwise properly handled.

Alluvial deposits are found in the swales and small gullies in the project area, as well as in the bottom of the Otay Valley to the south. Alluvial soils are mostly derived from the geologic units described above and are discussed in the following section. Typically, up to 10 feet of alluvium may be present in the side gullies where they cross the road alignment. Alluvium is not considered suitable to support structural loads or compacted fill.

Topsoil/colluvium deposits form a mantle of variable thickness on the project site. Colluvial deposits are accumulated by slope wash of weathered bedrock materials and topsoil creep. Topsoil and colluvium deposits range in depth from three to six feet and are not considered to be suitable to support structural loads or compacted fill.

Soil Types

Within the project area, soils consist primarily of Salinas clay loam and stream sediments of recent and historical origins. Other soils present include riverwash, terrace escarpments, Linne clay loam and Olivenhain complexes. The stream sediments are located in the floodway and floodplain of the Otay River and the Salinas clay loam is found on 2 to 9% slopes above the floodplain. The Salinas clay loam has moderate shrink-swell potential, while the stream alluvium is mostly sand and gravel. Soils in the northeastern part of the project area consist primarily of terrace escarpments.

Figure 3.1-2 shows the distribution of soil types according to the Soil Conservation Service's (SCS) Soil Survey, 1973. Soil types identified in the project area include: (1) Salinas clay loam, 2-9% slopes, symbolized by SbC: (2) Olivenhain-Urban Land Complex, 2-9% slopes, symbolized by OkC; (3) Olivenhain-Urban Land Complex, 9-30% slopes, symbolized by OkE; (4) Terrace Escarpments, symbolized by TeF; (5) Riverwash, shown as Rm; (6) Olivenhain cobbly loam, 9-30% slopes, shown as OhE; (7) Linne clay loam, 9-30% slopes, symbolized as LsE; and (8) Gravel Pits, indicating the present or past course of the riverbed.

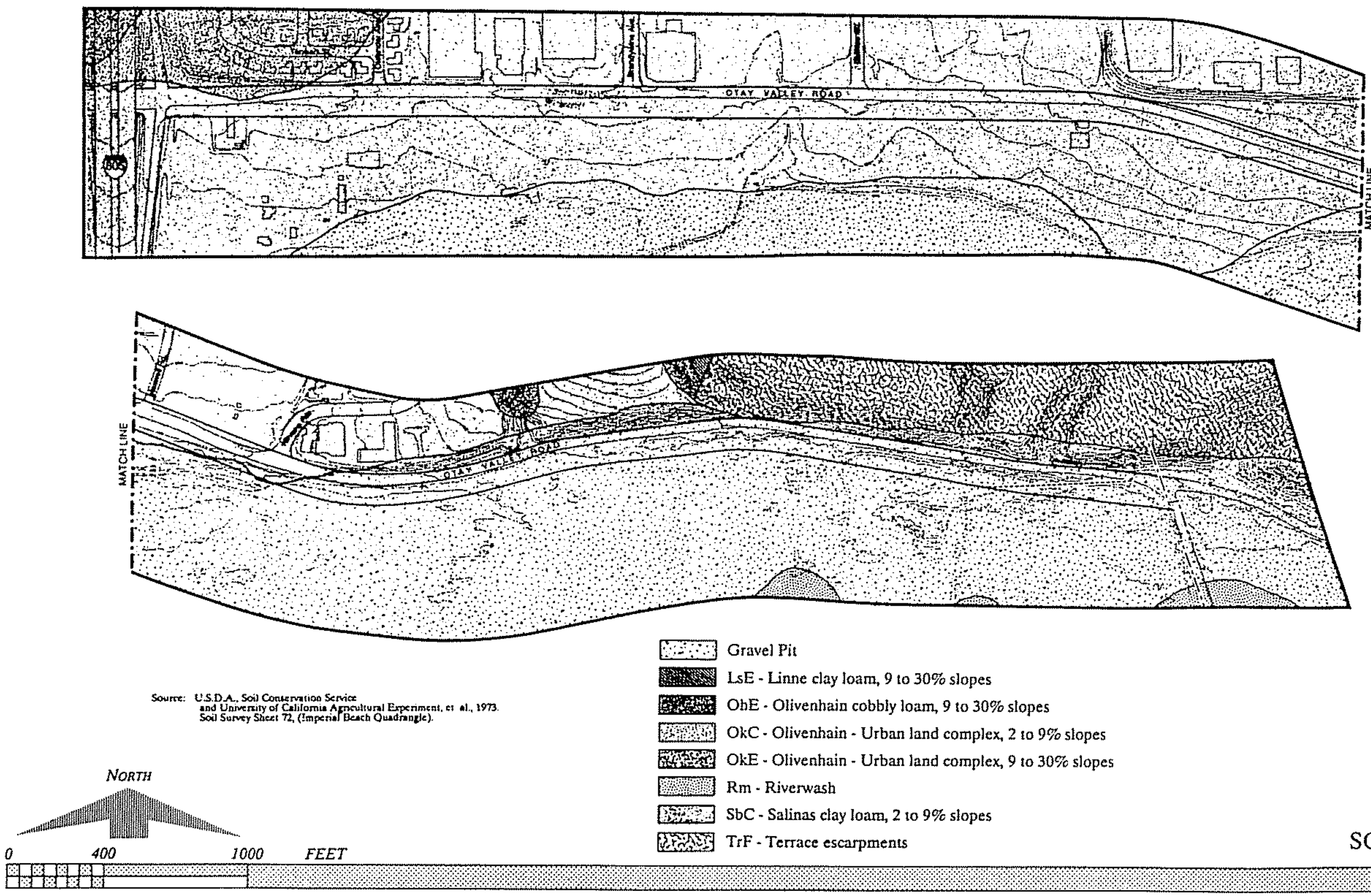
The Salinas clay loam, (SbC soil type) is located along both the north and south sides of Otay Valley Road in roughly the western two-thirds of the project vicinity. The SbC soils occur on land that is gently to moderately sloping and where runoff is slow to moderate. The erosion hazard of SbC soils is slight to moderate. This soil type has good potential for agricultural use, however, much of the area covered by these soils has already been developed for light industrial uses. The only remaining agriculture along Otay Valley Road is on SbC soils and is discussed further in Section 3.6. The road also crosses the Gravel Pit and Olivenhain OkC soil types. The Gravel Pit soil type is crossed by Otay Valley Road in the eastern third of the project area, while the OkC is crossed in the northwestern part of the study area. The OkC soils in the northwestern portion of the project area have been developed primarily with single-family homes.

The TeF soils are located adjacent and north of Otay Valley Road on the steep hillsides in the eastern third of the project vicinity. These soils typically occur on steep to very steep escarpments and escarpment-like landscapes. In most places, there are 4 to 10 inches of loamy or gravelly soil over soft marine sandstone, shale, or gravelly sediments.

The remaining soil types, including the Riverwash (Rm), Linne clay loam (LsE), Olivenhain urban land complex, 9-30% slopes (OkE) and Olivenhain cobbly loam (OhE), are found in lesser amounts along the outer edges of the project area.

2. Seismic Safety

The project area is in a seismically active region, as is all of southern California. The nearest faults capable of causing major earthquakes are the Elsinore Fault,



Source: U.S.D.A., Soil Conservation Service and University of California Agricultural Experiment, et al., 1973. Soil Survey Sheet 72, (Imperial Beach Quadrangle).

SOILS

Figure 3.1-2

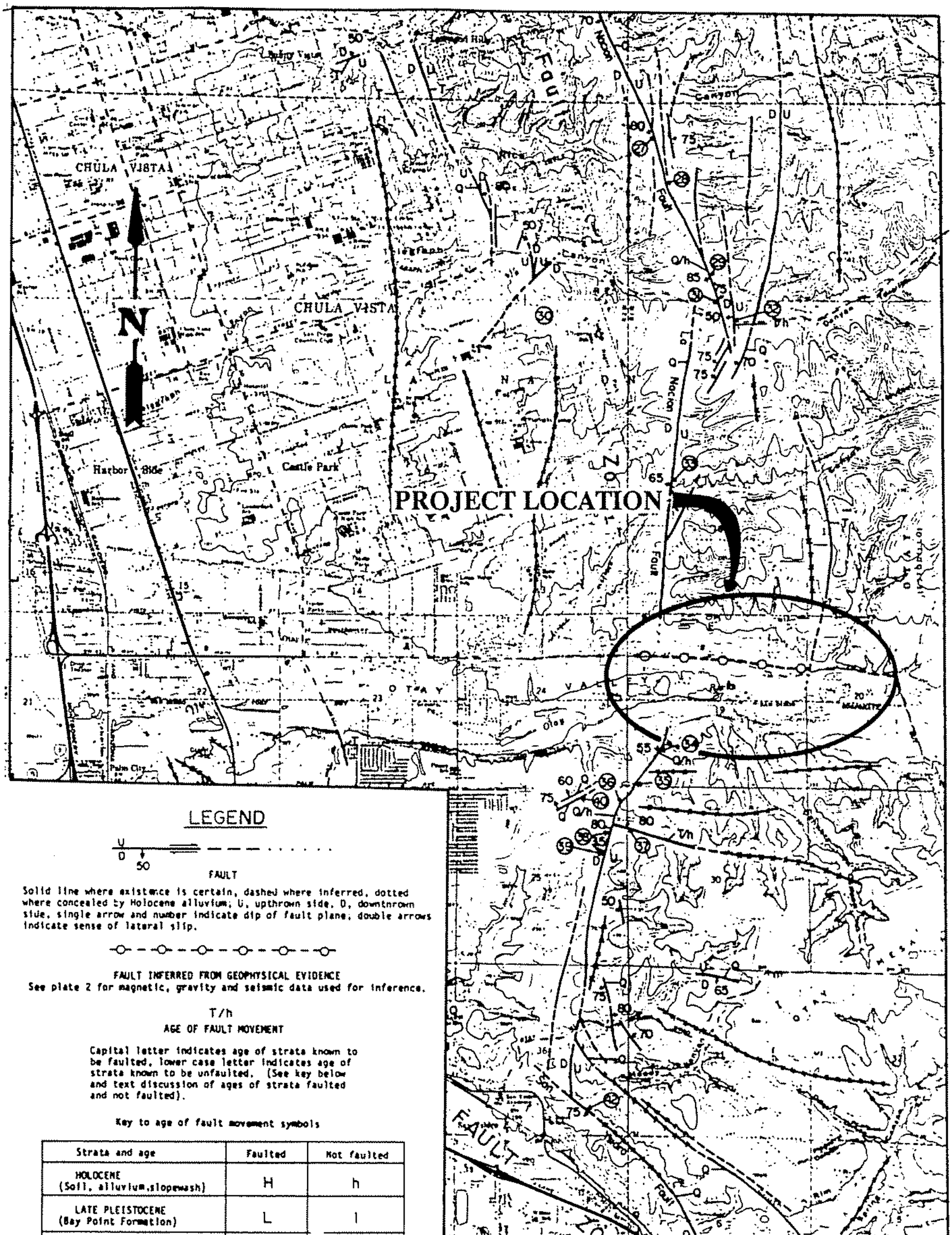
approximately 40 miles to the northeast, and the Coronado Banks Fault, approximately 14 miles to the west (see Figure 3.1-3). The Elsinore Fault is thought to be capable of producing an earthquake of magnitude 6 to 7.5. A magnitude 6.5 quake on this fault might be expected to produce a ground acceleration of about 0.08g at the project site (Seed and Idriss, 1982). The offshore Coronado Banks fault could result in a peak bedrock acceleration of 0.12g (San Diego Geotechnical Consultants, Inc., 1988; Leedshill-Herkenhoff, 1988).

The La Nacion Fault Zone crosses the road alignment, probably as a wide band of numerous north/south trending fault splays. The La Nacion Fault Zone extends from near Mission Valley in the north to San Ysidro in the south. There is evidence of movement along the fault in Quarternary time (past two million years). This fault zone is classified as potentially active, since no displacement of sediments younger than 11,000 years has been observed. Based on work by McEven and Pinckney (1972) the Seismic Safety Element of the Chula Vista General Plan (1974) indicates that the fault is capable of generating a magnitude 6.8 earthquake with an associated peak bedrock acceleration of 0.4 of one gravity force (g). In the project area, the fault trace is obscured by alluvium and terrace deposits but has been mapped in the central portion of the study area (San Diego Geotechnical Consultants, Inc., 1988).

The only effect expected in the project area from an earthquake on the Elsinore or Coronado Banks Faults is earth shaking. Liquefaction of road foundation materials is highly unlikely. If an earthquake occurs on the La Nacion Fault, it is possible that fault rupture and shallow ground failure could occur. The probability of ground rupture on the La Nacion Fault is considered to be very remote, however.

3. Minerals

The State of California Department of Conservation, under the direction of the State Mining and Geology Board, has designated certain areas as "regionally significant construction aggregate resource areas." In order to meet the high demand in San Diego County for construction quality aggregate, areas with known or likely significant deposits of these mineral resources have been identified and mapped. A substantial amount of this resource is present in the County, but urban expansion has been a major cause of a decline in the availability of the resource.



LEGEND

FAULT

Solid line where existence is certain, dashed where inferred, dotted where concealed by Holocene alluvium; U, upthrown side, D, downthrown side, single arrow and number indicate dip of fault plane; double arrows indicate sense of lateral slip.

FAULT INFERRED FROM GEOPHYSICAL EVIDENCE
See plate 2 for magnetic, gravity and seismic data used for inference.

T/h
AGE OF FAULT MOVEMENT

Capital letter indicates age of strata known to be faulted, lower case letter indicates age of strata known to be unfaulted. (See key below and text discussion of ages of strata faulted and not faulted).

Key to age of fault movement symbols

Strata and age	Faulted	Not faulted
HOLOCENE (Soil, alluvium, slopewash)	H	h
LATE PLEISTOCENE (Bay Point Formation)	L	l
EARLY PLEISTOCENE (Lindavista Formation)	Q	q
TERTIARY OR OLDER STRATA (San Diego Formation, Otay Formation, Poway Group, La Jolla Group, Rosario Group)	T	t

LEEDSHILL-HERKENHOFF, INC.

FAULT LOCATION AND MOVEMENT IN PROJECT VICINITY
Figure 3.1-3

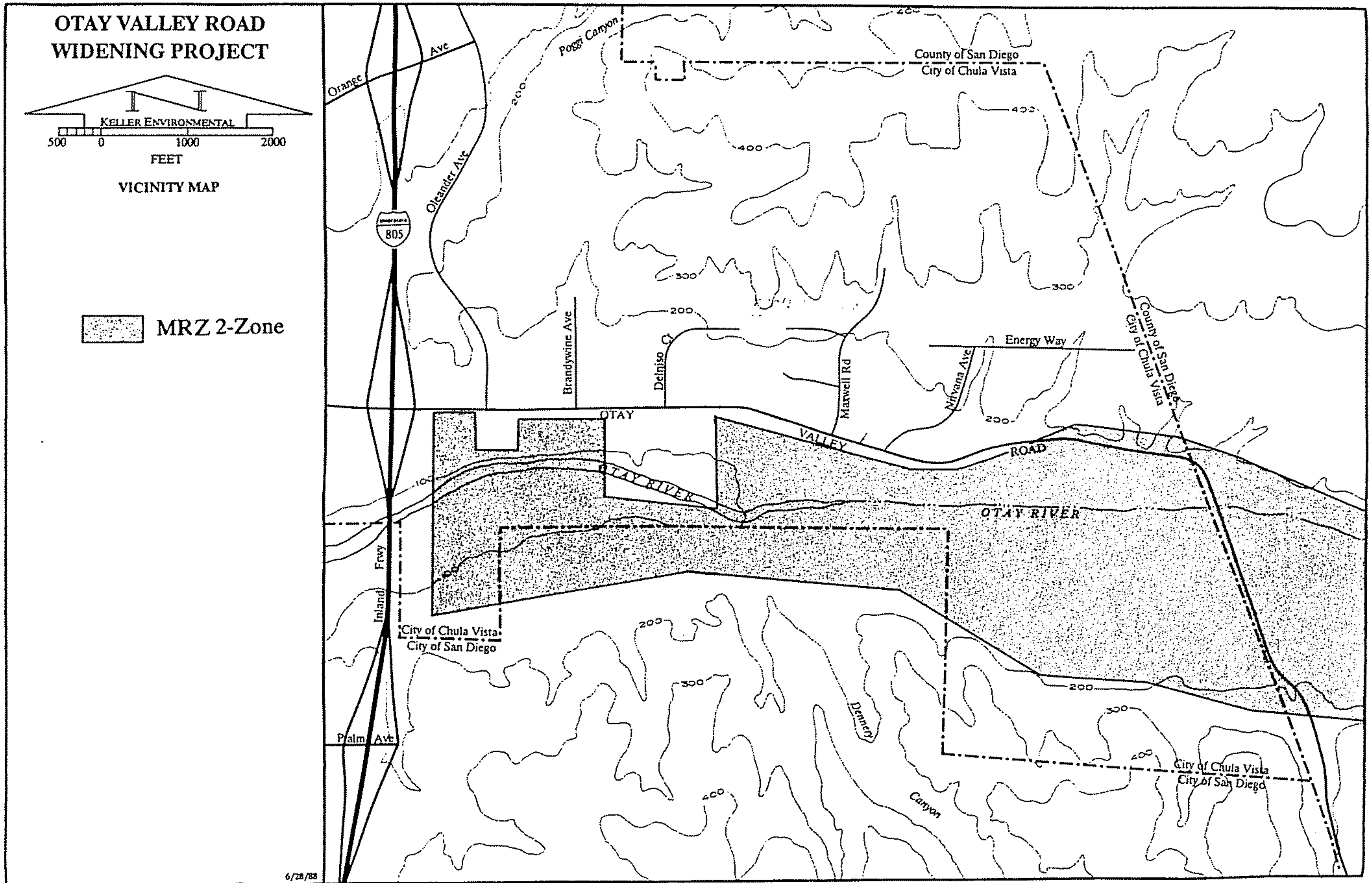
The State Mining and Geology Board has designated the Otay River Valley and adjacent mesa areas as Mineral Resource Zone 2 (MRZ-2), indicating that significant mineral deposits are likely to be present, based on geologic principles and adequate data. The Otay Valley MRZ-2 zone encompasses the eastern section of the project area. Overall, the zone extends from near I-805 upstream to the head of Otay Valley (see Figure 3.1-4). It covers 2,780 acres and is estimated to contain 10 million short tons of sand and gravel, including reserves (California Department of Conservation, 1985). Chula Vista has two types of sand and gravel deposits: river and marine terrace. The river deposits are the most usable of the two because they are well-sorted, have a high degree of uniformity, and are generally free of residual debris. This type of deposit is found in the gravel pits area in the eastern portion of the project area.

The Surface Mining and Reclamation Act (SMARA) requires that a lead agency's land use decisions involving designated areas be in accordance with its mineral resource management policies. Also, in determining land use in aggregate-designated areas, the lead agency "must balance mineral value against alternative land uses and consider the importance of the designated mineral resources to their market region as a whole, and not just their importance to the lead agency's area of jurisdiction" (Department of Conservation, 1985).

The State Mining and Geology Board has adopted mineral resource goals and policies to guide local governments in the use of the SMARA process. One such goal that is relevant to the proposed project states that "Mineral lands classified as MRZ-2 or designated as areas of regional significance should be protected from preclusive and incompatible land uses so that the mineral resources within these lands and areas are available when needed." Incompatible land uses are defined as:

> Land uses inherently incompatible with mining and/or that require a high public or private investment in structures, land improvements, and landscaping and that would prevent mining because of the higher economic value of the land and its improvements.

The Conservation Element of the Chula Vista General Plan states that "extensive sand and gravel deposits represent Chula Vista's most important mineral resource,



MINERAL RESOURCES
Figure 3.1-4

both in terms of quantity and economic value." The City recognizes that deposits are of sufficient size to be economically recoverable, but that continuation of "current development practices could result in their being rendered inaccessible or unusable." One of the stated objectives of the Conservation Element is "to protect and manage sand and gravel resources for the benefit of the general public." One of the policies is that "suitably located sand and gravel deposits should be preserved and land use practices which will insure that these resources remain accessible for utilization now and in the future should be fostered" (City of Chula Vista, 1973a).

An analysis of particles was made by San Diego Geotechnical Consultants at seven test borings in the project area. Based upon the particle size analysis of typical borings throughout the project, gradations do not meet the AASHTO specification for Fine Aggregate for Portland Cement Concrete since the material contains too many fines.

AASHTO M6-81 SPECIFICATION

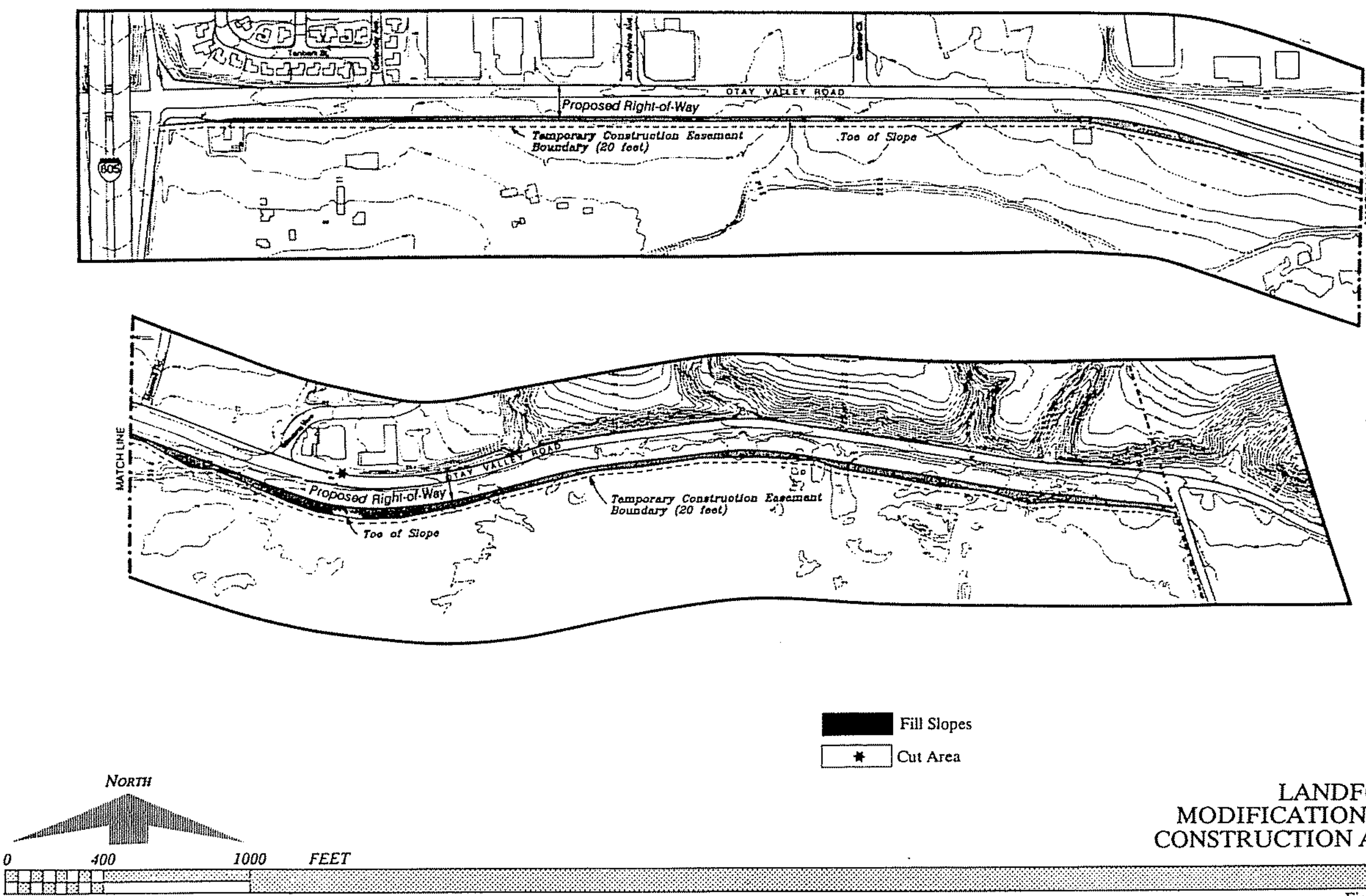
Gradation Sieve	M6-81 % Passing	Test Borings B-1	B-2	B-3	B-4	B-7
3/8"	100	100	96	100	100	100
No. 4	95-100	100	96	100	100	99
No. 16	45-80	95	92	92	97	97
No. 50	10-30	80	79	72	86	95
No. 100	2-10	64	64	59	72	86

B. Impacts

1. Geology and Soils

The proposed project would entail grading of the site in preparation of roadway construction. The maximum slopes proposed are a ratio of 2.0 horizontal to 1.0 vertical. Two to one (2:1) slopes are proposed from Maxwell Road to the eastern project boundary. From I-805 to Maxwell Road, four to one (4:1) slopes will be constructed.

The Phase I and II roadway construction would require approximately 190,000 cubic yards of borrow and approximately 27,000 cubic yards of excavation. Figure 3.1-5 shows areas where cut and fill will be required. It should be noted that the project



LANDFORM
MODIFICATION AND
CONSTRUCTION AREA

Figure 3.1-5

will include the placement of fill within the 128 foot right-of-way from I-805 to the eastern City boundary. As shown on Figure 3.1-5, only one relatively minor cut will be necessary east of Nirvana Avenue for a length of approximately 30 feet. This cut will be made north of the existing roadway to provide adequate line of sight at the Otay Valley Road and Nirvana Avenue intersection.

During project construction, increased soil erosion, runoff and silting could occur in the Otay River. Increased erosion is most likely to occur in the winter season, when precipitation is likely. After the roadway is constructed, impacts could occur from the unstable, compressible and expansive deposits found in the project area. The problem deposits are the river wash and stream sediments and clay loams found in the area. These materials within the roadway bed will be removed or stabilized before construction can begin.

2. Seismicity

No impacts are expected due to construction of the roadway. No earth stabilization in the soils which the road will be constructed on is required. Liquefaction of road foundation materials is believed to be unlikely. A major earthquake could cause significant damage to the roadway, but threat to life is considered minimal. Since the road is not defined as a critical structure under Section 2312-k of the Uniform Building Code, and since the chance of rupture is very remote, special preventative measures are not justified.

3. Minerals

Portions of the road widening project lie within the MRZ-2 classified lands. There is presently a large sand and gravel operation in the area east of the project. This is not within the 400 foot project area.

The Surface Mining and Reclamation Act (SMARA) of 1975 provides that the State Geologist classifies mineral lands on the basis of geological factors. Existing land use, such as Otay Valley Road, is not considered. Mineral lands classified MRZ-2 with regional significance are to be protected from preclusive and incompatible land uses so that the mineral resources are available when needed. Widening of Otay Valley Road could be considered a preclusive land use, as it would prevent mining of aggregate lying under it. The State Mining and Geology Board (Department of Conservation) would normally identify development of incompatible land use as a significant unmitigable impact (O'Bryant, 1986). Their recommendation would be to extract the resource before development. As a practical matter, the road widening would have little or no effect on the availability of the mineral resource since the existing road must be protected from encroachment by mining operations. No specific studies have been made of the adequacy of the material as aggregate, but on the basis of particle analyses made by San Diego Geotechnical Consultants, Inc., the material contains large amounts of fines which render the material unsuitable for use as aggregate. Assuming these soils do not possess qualities desirable for mining, no significant or adverse impacts to this resource would result from project development.

C. Mitigation

1. Geology and Soils

Based upon the soil and engineering geology investigation, foundation and construction recommendations have been made. No soil or geologic conditions were found that would preclude construction. Recommendations for project development include:

- Excavation and Grading: Terrace deposits may be unstable and subject to caving unless slopes are laid back to 2.0 horizontal to 1.0 vertical. The surficial layer of organic soil, debris, and soft or loose deposits should be stripped from the areas where fill will be placed.

- Settlement and Expansion: Compressive soils would be removed and replaced with properly compacted fill. Expansive soils should be buried deep in fills and not within the roadway section.

- Slope Stability and Erosion Control: Slopes should be constructed at a minimum slope of 2.0 horizontal feet to 1.0 vertical feet. Revegetation benches or chain link debris fences with meshes of approximately 1" to 1 1/2" square may be used to mitigate this problem.

- Temporary chain link fences with heavy gauged reinforced plastic sheet material at the fence bottoms will be installed in sensitive areas to mitigate soil erosion, runoff and silting into the Otay River. Fences will be installed near wetland areas and other areas identified by the applicant prior to construction.

2. Seismicity

Recommendations of the geotechnical investigation would ensure appropriate ground stabilization and construction techniques to protect against seismic occurrences.

3. Minerals

No mitigation measures are necessary as there are no significant or adverse impacts to mineral resource extraction.

D. Analysis of Significance

A subsurface geotechnical investigation has been performed to determine specific geological and seismic constraints. Significant impacts may be avoided by following the recommendations of this investigation.

The subsurface soils investigation has determined that the project area soils do not meet criteria for fine aggregate and that no significant or adverse impacts to mineral resources would occur from project construction.

3.2 HYDROLOGY/WATER QUALITY

A. Project Setting

1. Surface Water and Drainage

The San Diego Coastal Province covers approximately 3,900 square miles and includes all hydrographic basins which drain into the Pacific Ocean between the Mexican border and Laguna Beach, California. Due to the seasonal rainfall pattern, most San Diego streams are ephemeral. Elevations range from sea level to 6,000+ feet.

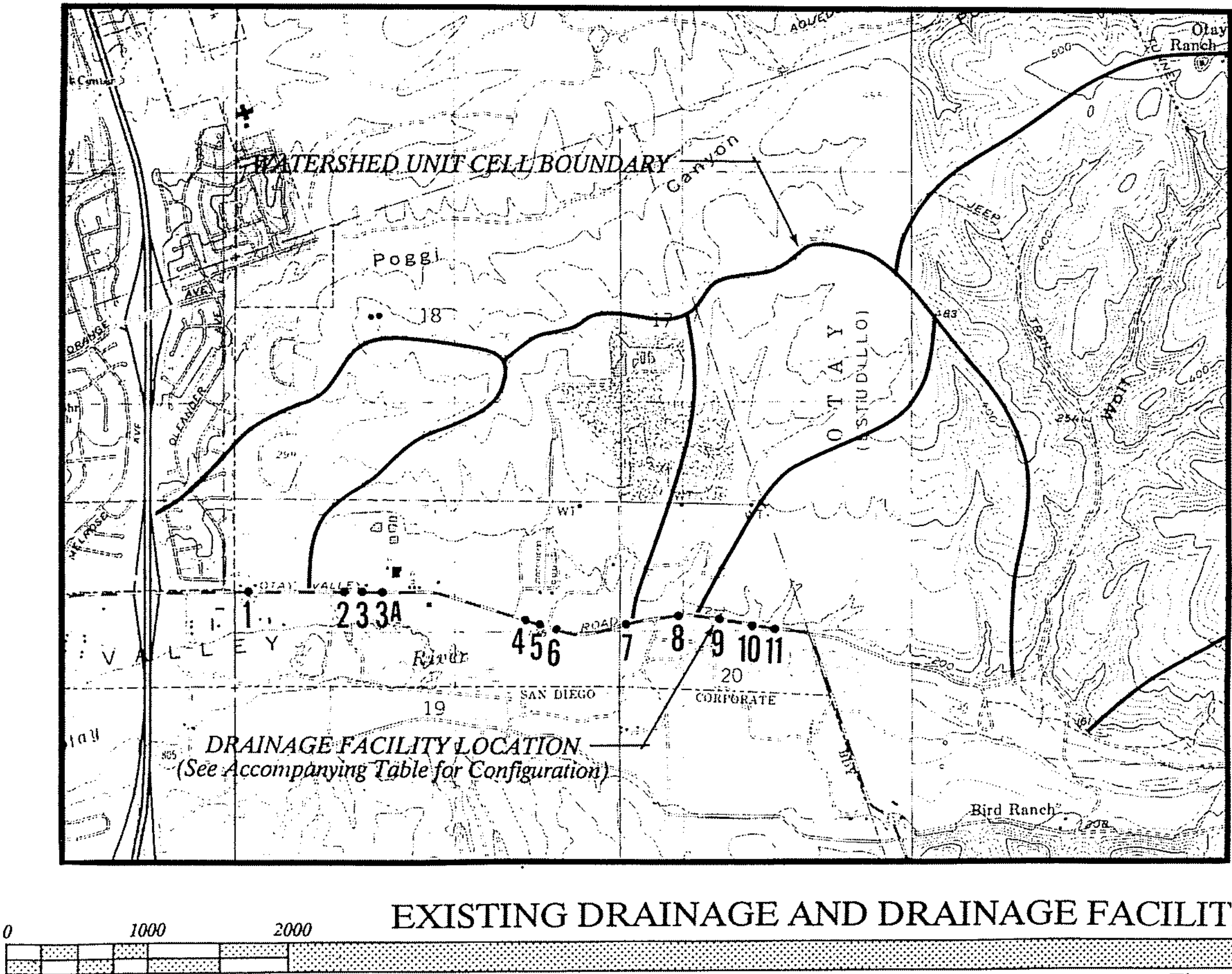
Eleven major hydrographic units, each consisting of the entire watershed of one or more streams, make up the Coastal Province. The project area is within the Otay Unit, which encompasses 160 square miles. These units are further divided into subunits, consisting of major tributaries or groundwater basins within the unit. The proposed project is located within the Otay Subunit, which encompasses 46 square miles.

The Otay Subunit is drained by the Otay River. The Otay River originates near the eastern end of the Dulzura unit, which is upstream of the Otay Subunit. All runoff from the Dulzura Subunit flows into the Lower Otay Reservoir. The purpose of this reservoir is to provide water supply. Any flood control protection provided to the Otay Subunit by the reservoir is incidental to the purpose of the reservoir. Minimal flows in the river occur near the project area for much of the year. The Otay River, evidenced more by its vegetative growth than water load, trends through the Otay Valley and discharges into the south end of San Diego Bay.

The Otay River floodplain is located to the south of the project area and varies from approximately 150 feet in width near the I-805 crossing to 870 feet near the intersection of Brandywine Avenue and Otay Valley Road. Much of the existing roadway east of the intersection of Nirvana Avenue and Otay Valley Road is located within 50 feet of the 100-year floodplain. The proposed project site infringes on the 100-year floodplain in areas east of the intersection of Nirvana Avenue and Otay Valley Road. The current roadway is not within the 500-year floodplain of the Otay River.

The project area drains southward toward the Otay River. There are currently twelve storm drainage culverts under the existing Otay Valley Road that drain water north to south into the Otay River. Existing drainage and drainage facilities are shown on Figure 3.2-1. Hydrologic analyses have been made for major drainage areas using the Army Corps of Engineers' HEC-1 rainfall-runoff computer program. Results of these analyses are included in Table 3.2-1 for the current development conditions. Flows at the major culverts are estimated as a percentage of the computed flow for the subarea in which the culvert is located.

Table 3.2-2 presents the estimated capacities of the existing culverts for a water level that would not overtop Otay Valley Road and the estimated peak discharges



EXISTING DRAINAGE AND DRAINAGE FACILITIES

Figure 3.2-1

TABLE 3.2-1
RUNOFF TO CULVERTS
(FLOWS CALCULATED AS PERCENTAGE OF HEC-1 FLOW)

Culvert		Culvert Size & Type		Drainage Area (sq. mi.)	100-Year Flow (cfs)
1	1,	2 x 3	RCB	0.069	43
2	1,	48-INCH	RCP	0.215	134
3	1,	36-INCH	CMP	0.100	62
3a	2,	30-INCH	RCP	0.132	82
4	1,	48-INCH	RCP	0.090	67
5	1,	24-INCH	CMP	0.007	5
6	2,	42-INCH	CMP	0.258	191
7	1,	24-INCH	CMP	0.008	6
8	2,	36" x 54"	CMPA	0.320	183
9	1,	18-INCH	CMP	0.010	6
10	1,	18-INCH	CMP	0.040	23
11	1,	30-INCH	CMP	0.090	52

TABLE 3.2-2
ESTIMATED CAPACITIES OF EXISTING CULVERTS

Culvert	Culvert Size and Type	Length (feet)	Inlet Invert Elev. (feet)	Outlet Invert Elev. (feet)	Elevation at North Edge of Road (feet)	Approx. Cover (feet)	Maximum Culvert Capacity (cfs)	Estimated 100-Year Flow (cfs)	100-Year Flow that Overtops the Road (cfs)
1	1, 2' x 3' RCB	82	122.87	122.44	126.1	0.8	42	43	Small
2	1, 48 INCH RCP	737	126.75	121.42	133.0	1.9	120	134	14
3	1, 48-INCH RCP	45	122.34	121.35	129.5	2.8	80	62	0
3a	2, 30-INCH RCP	60	122.37	121.36	129.8	4.6	120	82	0
4	1, 48-INCH RCP	870	125.44	121.00	140.5	10.7	165	67	0
5	1, 24-INCH CMP	50	137.10	136.00	140.0	0.6	19	5	0
6	2, 42-INCH CMP	497	133.00	126.50	137.9 1/	1.0	128	191	63
7	1, 24-INCH CMP	45	128.00	127.00	130.0	0.0	12	6	0
8	2, 36" x 54" CMPA	80	130.60	129.30	135.0	1.0	162	183	21
9	1, 18-INCH CMP	40	127.40	127.00	129.0	0.0	5	6	Small
10	1, 18-INCH CMP	45	136.70	135.00	139.0	0.5	10	23	13
11	1, 30-INCH CMP	60	142.40	140.00	147.0	1.8	41	52	11

1/ Road elevation is for Nirvana Avenue at the storm drain inlet.

that would occur during a 100-year return frequency storm. The 100-year return frequency flows shown on the table exceed the storm drain capacities at five of the culvert locations. The locations where flow will overtop the road during the 100-year storm are:

- The 48-inch culvert that is approximately 2,500 feet east of I-805;
- The double 42-inch Corrugated Metal Pipe (CMP) culverts at Nirvana Avenue;
- The double 36-inch by 54-inch Corrugated Metal Pipe Arches that are approximately 2,000 feet east of Nirvana;
- The 18-inch CMP culvert that is approximately 3,000 feet east of Nirvana Avenue; and
- The 30-inch CMP culvert that is approximately 3,400 feet east of Nirvana Avenue.

In addition, there are two locations where water will pond to the top of the road during the 100-year return frequency event and small amounts of overtopping may occur. These locations are:

- The 2-foot by 3-foot box culvert that is approximately 1,000 feet east of I-805; and
- The 18-inch CMP that is approximately 1,500 feet east of Nirvana Avenue.

2. Groundwater

The depth to groundwater in the Otay Subunit varies significantly from 9 feet near San Diego Bay to 110 feet on the higher terraces (DWR, 1986). The specific depth to groundwater at the project site is not known; and no water was encountered in a test bore hole drilled at the project site to a depth of 26.5 feet. In the general vicinity of the project, groundwater is typically deeper than 100 feet below the surface (DWR, 1967). The only groundwater recharge that occurs is from natural infiltration. In the past, groundwater was used for agriculture and as a potable water supply. Due to the poor water quality and the accessibility of imported water, however, current groundwater use is limited. No seawater intrusion problems are known to exist in the project vicinity.

The RWQCB recently relaxed groundwater quality standards for a portion of the Otay hydrographic subunit that includes the basin under Otay Valley Road (RWQCB Order 88-49, April 29, 1988). The list of the beneficial uses for the groundwater basin in the Otay Subunit was reduced from municipal supply, agricultural supply, industrial service supply, and potential groundwater storage to industrial processing water. The primary industrial use of groundwater is for washing sands and gravels. The only groundwater recharge that occurs is caused by natural conditions.

3. Water Quality

The RWQCB is responsible for regulating point sources of water pollutants. The Otay River watershed is largely unmonitored, and data on water quality and water level are sparse.

The San Diego Regional Water Quality Control Board (RWQCB) lists beneficial uses for surface water in the Otay Subunit. These uses include water for agricultural supply, non-contact water recreation, wildlife habitat, and preservation of rare and endangered species. At the project location, the Otay River is not presently used for agricultural or industrial service water supply.

The existing water quality in the river is variable, ranging from good to poor, depending on rainfall and runoff volumes. Groundwater in this area typically has high amounts of total dissolved solids (TDS) and is characterized by high sodium and chloride counts. This chemical character is directly related to the mineral composition of the granodiorites and gabbros that occur in the watershed. Because of the high amounts of chloride in the water, it is rated inferior for irrigation purposes (DWR, 1967).

Surface water quality measurements of the Otay River were made by the RWQCB in 1984, 1985 and 1986. Two locations were measured: (1) just east of I-805, within the general project vicinity, and (2) just east of the I-5 freeway, west of the project area. The amount of TDS in the Otay River at the I-805 location varied from 2,344 milligrams/liter (mg/l) to 4,888 mg/l. TDS at the downstream site varied from 1,293 mg/l to 1,624 mg/l. The measured TDS exceeded the RWQCB objectives for this area (San Diego Regional Water Quality Control Board; 1984, 1985).

The project area is currently used for agriculture and industrial purposes with limited residential and commercial uses. Runoff from the site drains to the river and is typical of agricultural runoff. No point source measurements of runoff from the project site have been made.

Groundwater quality measurements were made at various well locations in Otay Valley by the State of California Department of Water Resources in 1963 and 1985 (DWR, 1986). The tested well closest to the project area (about one mile to the west), was considered to have fair groundwater quality in 1963 and good quality in 1985. The increase in quality was attributed to reductions in upstream pumping and increased natural recharge of good quality imported waters. The quality of the wells in the Otay Subunit is generally fair, with two of the easternmost wells meeting the RWQCB objectives for TDS, chlorides and sodium.

In addition, groundwater measurements were made by the RWQCB in November, 1985 at a well in the vicinity of the Otay Landfill, approximately 2,000 feet north of the project area. Generally, groundwater quality was less than fair, with TDS and other constituents exceeding RWQCB objectives. The County's Solid Waste Division also conducts water quality testing at wells, both on the landfill and toward the river from the landfill. Their tests show that levels of TDS, chloride and other constituents generally exceed the RWQCB objectives.

B. Impacts

1. Drainage

At project completion, the proposed project would increase the graded and paved area of the roadway by approximately 34 acres including the widened road section and sidewalks. These areas are impervious to surface-to-groundwater drainage. The runoff from the roadway will be contained within the roadway by curb and gutter and directed to catch basins. Water will be conveyed via pipe to the existing outfalls. There will be no increase in runoff from the areas north of the project due to the project. These areas currently drain via culverts under the road. The increase in runoff from the roadway due to the change from pervious to impervious surface conditions would not be accompanied by increased sediment loads because the change in land use is from open space and paved area to primarily paved area.

Because the project represents a very small percentage of the Otay River watershed, the increase in peak runoff would only represent an incremental increase to the existing flood discharges from the rest of the watershed. As development continues in the watershed, however, the increase could be considered cumulatively significant because of existing downstream moderate flooding problems in the floodplain. The proposed fill slopes at the east end of the road may infringe upon the 100 year floodplain. There are no proposed uses for these areas, so no impacts occur. The actual roadway section is located above the 100 year water surface elevation.

The project proposes a roadway drainage system consisting of catch basins and piping. This system generally follows the natural course of drainage and will be sized to accommodate the roadway surface flows. Surface drainage will follow both along the street gutters and in storm drains. The storm drains will eventually empty into the Otay River floodplain. The drainage system will be examined for approval by the City of Chula Vista's Engineering Department. During construction, provisions will be made for erosion and sediment control, including measures such as sand bagging, temporary desiltation basins and mulching. The location of these control measures will not be known until final grading plans have been prepared.

2. Groundwater

Construction of the proposed project will eliminate surface-to-groundwater leaching over approximately 45 acres, thus decreasing the amount of water naturally added during storms to the groundwater basin. This loss is not considered significant for two reasons. First, the naturally occurring topsoils on the property are largely clay loams, which naturally drain very slowly. Thus, the amount of water available from the project site by leaching is an incremental amount of the basin, and therefore the site is not an important recharge watershed area. Secondly, groundwater in the general project area is high in its total dissolved solids levels and naturally high in sodium and chloride which has precluded its suitability for agricultural and potable uses. Thus, the amount of water potentially lost to the groundwater basin from project development is not considered to be sufficiently great to constitute an adverse impact to the basin.

3. Water Quality

Project construction would result in a change in the type of contaminants contained in surface runoff as contaminants from automotive sources, such as oil, grease, and heavy metals would increase. Sediment loads in surface runoff would decrease to a slight degree. Water quality in the Otay River, and eventually, San Diego Bay, would not be measurably degraded by runoff contaminants from the site, rather, these contaminants would represent only a slight incremental contribution of the total contaminant load carried by Otay River and into the Bay.

If any of the future industrial development will use water, and then discharge the wasted water into percolation or sedimentation ponds, then the RWQCB would require a Waste Discharge Requirements Permit from that industry. If any of the industrial developments discharge wasted water into the sewage system, then the development should fall under the City of San Diego's Industrial Pretreatment Program. These requirements will be determined when actual development plans are submitted.

C. Mitigation

1. Drainage

At this time, no mitigation is necessary. However, the City of Chula Vista Engineering Department will determine the adequacy of proposed project drainage once construction plans are submitted. Any conditions of approval required by the Engineering Department would be incorporated into the drainage plans.

2. Groundwater

No mitigation measures are necessary.

3. Water Quality

No mitigation measures are necessary.

D. Analysis of Significance

No significant impacts on drainage, groundwater or water quality are expected from this project. The City will review final roadway construction plans to assure that potential impact on water quality and drainage are mitigated to insignificant levels.

3.3 BIOLOGY

The biological report, included as Appendix A, and survey were performed by Pacific Southwest Biological Services, Inc. (PSBS). Both the botanical and zoological portions of the survey were performed on 28, 29 April, 3-5 May 1988, as well as on 14 September 1988. The property was surveyed on foot. A checklist of taxa observed is included in the Appendix, and sensitive plants observed and vegetation communities are shown on Figure 3.3-1.

The following section is a condensed version of the report.

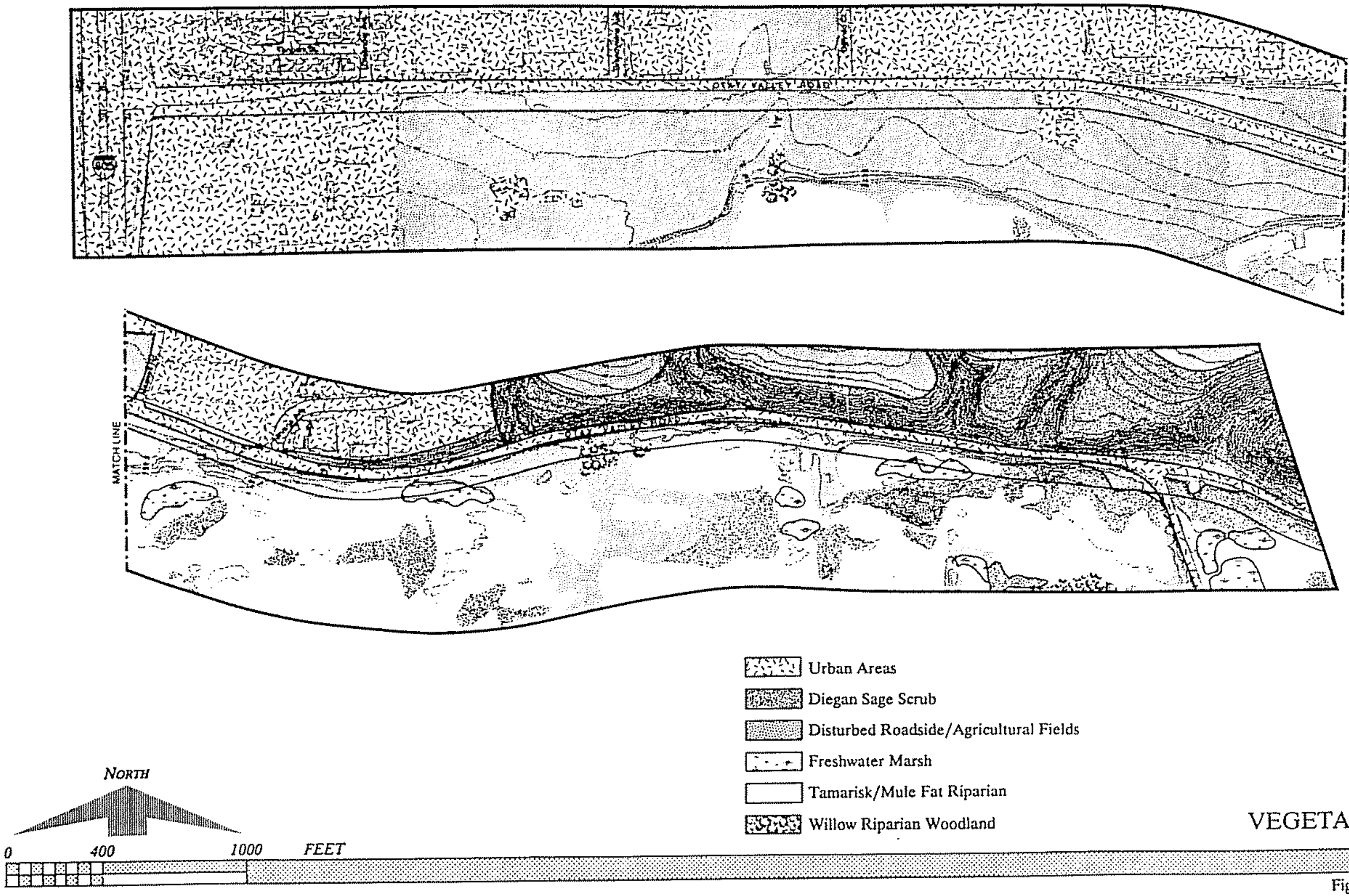
A. Project Setting

1. Botany

Vegetation

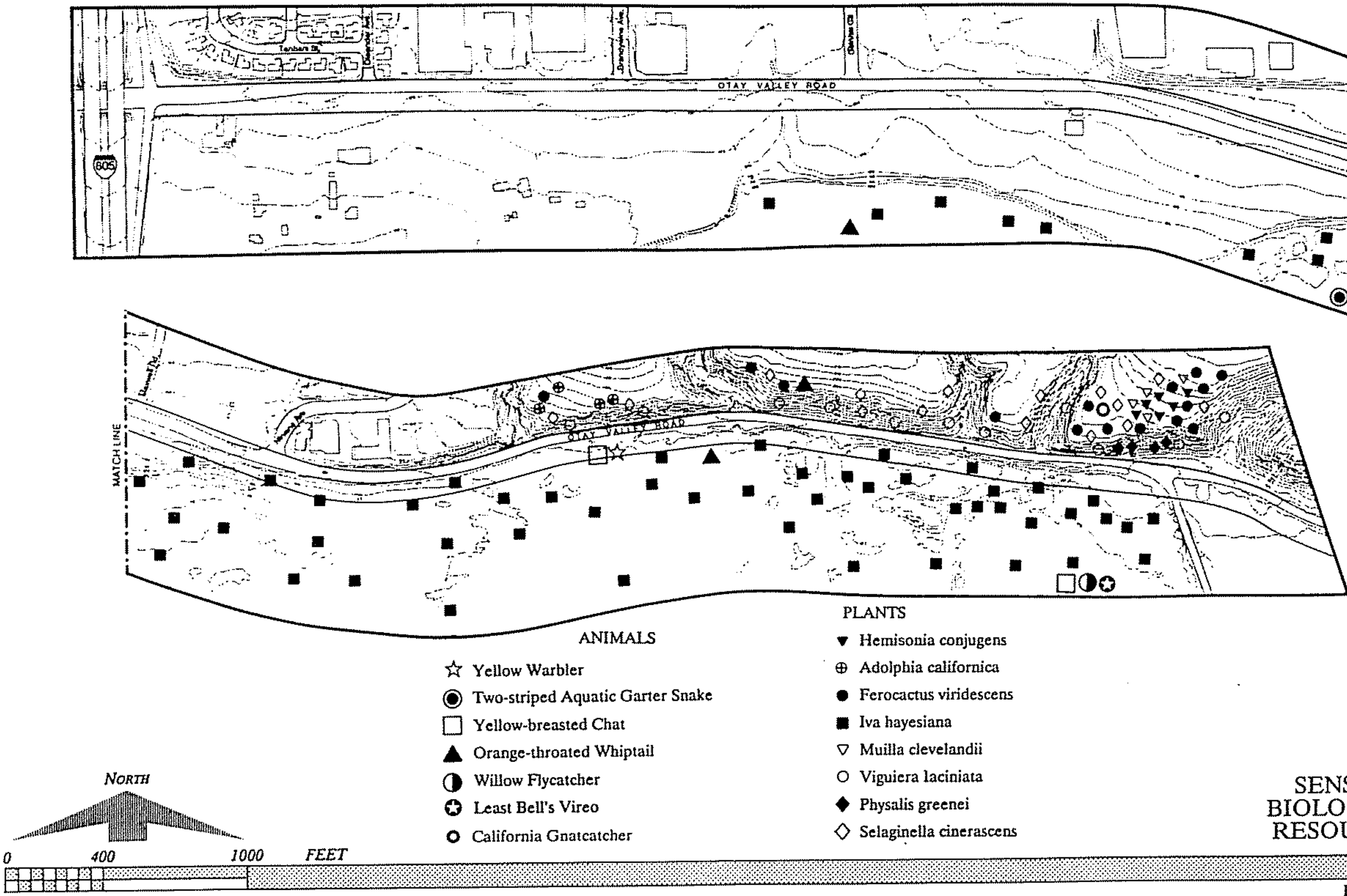
Five major vegetation communities are present along the proposed project alignment. These include Diegan Sage Scrub, Tamarisk/Mule Fat Riparian, Freshwater Marsh, Willow Riparian Woodland and Disturbed Roadside/ Agricultural Field (Figure 3.3-1).

Diegan Sage Scrub. Diegan Sage Scrub is found on the hillsides immediately north of Otay Valley Road along the undisturbed eastern section. Native plants indicative of this community include coastal sagebrush (*Artemisia californica*), lemonade-berry (*Rhus integrifolia*), coastal cholla (*Opuntia prolifera*), coast barrel cactus (*Ferocactus viridescens*), fish hook cactus (*Mammillaria dioica*), and California desert thorn (*Lycium californicum*). The high quality of sage scrub habitat present is amplified by the presence of significant populations of the following sensitive species: Greene's ground cherry (*Physalis greenei*), Cleveland's golden stars (*Muilla clevelandii*), and Otay tarweed (*Hemizonia conjugens*). The locations of sensitive plant species are show on Figure 3.3-2.



VEGETATION

Figure 3.3-1



SENSITIVE
BIOLOGICAL
RESOURCES

Figure 3.3-2

Tamarisk/Mule Fat Riparian. South of Otay Valley Road, the floodplain is heavily populated with non-native tamarisk and mule fat (*Baccharis salicifolia*). Scattered clusters of willow (*Salix lasiolepis, S. gooddingii*) grow throughout the river bottom which includes numerous winding sand and gravel bars. Also present at a few locales are sycamores (*Platanus racemosa*), desert fragrance (*Hymenoclea monogyra*), and an abundance of San Diego marsh elder (*Iva hayesiana*). Although this habitat is potentially excellent, the dominance of tamarisk is considered a significant degradation of this environment.

Willow Riparian Woodland. Scattered clusters of willow (*Salix lasiolepis, S. gooddingii*) grow throughout the river bottom which includes numerous winding sand and gravel bars. Within the study corridor, willow stands are restricted to areas of the low flow channel along the southern study corridor boundary, and small stands of trees located south of Otay Valley Road near drainage pipes and drainage flows from the road itself. These willows are generally fringed by mulefat and desert fragrance. Only those willow stands located near the low flow channel are well developed and support an intact native understory.

Freshwater Marsh. Low-lying areas in the river bed where water accumulates have dense colonies of California bulrush (*Scirpus californicus*) and soft flag cat-tail (*Typha latifolia*). Southwestern spiny rush (*Juncus acutus*) and spike sedge (*Eleocharis montevidensis*) are significant components of this good quality habitat.

Disturbed Roadside/Agricultural Field. Much of the western portion of Otay Valley Road is now fronted by light industrial use and includes horticultural plantings. Disced agricultural fields include a weedy non-native flora. Habitat is considered poor quality owing to extensive historical degradation.

Flora

One-hundred and fifteen plant species were observed on the property. Of these, 41 are non-native taxa representing invasive weeds and shrubs. Of some significance was the population of approximately 25 Pacific saltbush (*Atriplex pacifica*) growing on the crest of a Diegan Sage Scrub hillside.

2. Zoology

General Wildlife Habitat

Five major wildlife habitats occur within the study corridor. These include Sage Scrub, Tamarisk/Mule Fat Scrub, Willow Woodland, Freshwater Marsh, and Disturbed Roadside/Agricultural Field.

Diegan Sage Scrub. The wildlife use of sage scrub slopes is characterized by a common assemblage of species including desert cottontail (*Sylvilagus audubonii*), Western fence lizard (*Sceloporus occidentalis*), brown towhee (*pipilo fuscus*), and house finch (*Carpodacus mexicanus*). Also present are the less common California black-tailed gnatcatcher (*Polioptila californica*) and the orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*). Figure 3.3-2 shows the locations of sensitive wildlife species. The slopes and canyons present along the north side of the roadway are considered to have higher quality habitat than that found on the adjacent mesa tops due to the diversity of both vegetation structure and species. A large patch of coast cholla occurs within the study corridor and could provide habitat for the sensitive cactus wren (*Campylorhynchus brunneicapillus*). This species was not observed during the field survey.

Tamarisk/Mule Fat Scrub. Tamarisk and Mule Fat Scrub vegetation occurs on the south-side of the existing roadway and was previously described. This area is dominated by the invasive tamarisk (*Tamarix chinensis*) and supports an understory typified by weedy vegetation. These areas, unlike the Freshwater Marsh and Willow Riparian habitat, typically lack the highly mesic conditions necessary to support the perennial presence of amphibians. Reptiles observed in this habitat include the red diamond rattlesnake (*Crotalus ruber*), the Western fence lizard (*Sceloporus occidentalis*) and the orange-throated whiptail (*Cnemidophorus hyperthrus*). This vegetation supports a reduced abundance and diversity of riparian and scrubland associated birds. Included in the species observed in this habitat are the particularly abundant brown-headed cowbird (*Molothrus ater*), bushtits (*Psaltriparus minimus*) and song sparrow (*Melospiza melodia*). Also present were goldfinches (*Carduelis psaltria, C. tristis*), northern orioles (*Icterus galbula Bullockii*) and a pair of orange-crowned warblers (*Vermivora celata*). Mammals utilizing this habitat include the coyote (*Canis latrans*), grey fox (*Urocyon cinereoargenteus*),and Virginia opossum

(*Didelphis virginiana*). Several other species of small mammals are also expected to utilize this habitat.

Willow Woodland. Willow Woodland within the survey corridor habitat is restricted to a few areas of low lying topography and minor roadway drainage points. Much more extensive woodland occurs south of the survey corridor. While the federally listed endangered least Bell's Vireo (*Vireo bellii pusillus*) and the highly sensitive willow flycatcher (*Empidonax traillii*) were observed south of the study corridor, these species were not observed within the isolated clusters of willows found adjacent to the roadway. These small stands were observed to be utilized by such species as Wilson's warbler (*Wilsonia pusilla*) and yellow-breasted chat (*Icteria virens*). Also present in the mesic understory of these woodlands are such species as the Pacific treefrog (*Hyla regilla*), the sensitive two-striped garter snake (*Thamnophis couchi hammondi*) and numerous common rodents.

Freshwater Marsh. Freshwater Marsh occurs in a few deep depressions within the floodplain along the existing Otay Valley Road. This habitat is utilized by the Pacific treefrog and also, in more open areas, the Western toad (*Bufo boreas*). While not observed, the introduced bullfrog is also expected in ponds occurring within the corridor. The American coot (*Fulica americana*) and cinnamon teal (*Anas cyanoptera*) possibly nest in bulrush and cattails found along the fringes of shallow ponds. Other species observed utilizing these small marshes include red-winged blackbirds (*Agelaius phoeniceus*), great egret (*Casmerodius albus*) and mallards (*Anas platyrhynchos*).

Disturbed Roadside/Agricultural Fields. Highly disturbed in nature and generally lacking native plant species, the vegetation along the immediate roadside and within agricultural areas predominates over the western half of the proposed road alignment. These areas support only a few wildlife species but are utilized on frequent occasions by such birds as the common raven (*Corvus corax*), European starling (*Sturnus vulgaris*), brown-headed cowbird (*Molothrus ater*) and numerous gulls (*Larus* spp.). The abundance of these birds in this area is probably a result of the agricultural amenities as well as the nearby presence of the sanitary landfill.

Amphibians and Reptiles

The Western toad and Pacific treefrog (*Hyla regilla*) both utilize the numerous seasonal water holes and the occasional permanent ponds. The introduced bullfrog (*Rana catesbeiana*) is a likely inhabitant in this good quality amphibian habitat.

The red diamond rattlesnake is present on the site with three lizard species: Western whiptail(*Cnemidophorous tigris*), orange-throated whiptail, and Western fence lizard. Also likely to be present is the gopher snake (*Pituophis melanoleucus*), two-striped garter snake (*Thamnophis hammondii*), and coast horned lizard (*Phyrynosoma coronatum blainvillei*). Reptile habitat is considered fair within the sage scrub and wetland habitats.

Birds

Forty-four species of birds were seen during the three spring and one fall survey dates. Of particular note was the single male least Bell's vireo singing from a perch in willows near the Otay Valley Road bridge; a willow flycatcher (*Empidonax traillii*) was sighted in broom baccharis nearby. The possibility of 5 pairs of nesting least Bell's vireos on this portion of the Otay River is noteworthy. Also occupying this habitat is the yellow breasted chat (*Icteria virens*, two sighted), and yellow warbler (*Dendroica petechia*, a lone individual seen).

Raptor use of the Otay River drainage is unusually diverse with American kestrel (*Falco sparverius*), black-shouldered kite (*Elanus caeruleus*), northern harrier (*Circus cyaneus*), sharp-shinned hawk (*Accipiter striatus*), golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), red-tailed hawk (*Buteo jamaicensis*), and Cooper's hawk (*Accipiter cooperii*) all utilizing the wildlife corridor within the valley.

Mammals

Eight common species of mammals were present: raccoon (*Procyon lotor*) in more mesic locales; desert cottontail and black-tailed hare (*Lepus californicus*) throughout the site; coyote and grey fox; mice (*Peromyscus* spp.) and woodrat (*Neotoma* sp.); and the ubiquitous Botta's pocket gopher (*Thomomys bottae*). Owing to the varied industrial, ranching, and farming activities in the area, as well as historical degradation, large mammal habitat on-site is considered fair to poor.

3. Sensitive Biological Resources

Sensitive Vegetation

Diegan Sage Scrub. The historically extensive Diegan Sage Scrub (throughout coastal and inland San Diego County) has been heavily impacted by urbanization pressures. Large blocks of the habitat have been "fractured" into small isolated pockets. The area north of Otay Valley Road illustrates just such a trend. Extensive agricultural activities followed by fairly recent industrial development have eliminated vast areas of the environment creating fragmented, often minuscule areas of habitat. One isolated hillside of Diegan Sage Scrub is located south of Energy Way and north of Otay Valley Road. Although fragmented and only a vestige of an historically much larger habitat, this area has an important accumulation of sensitive plant species and, to a lesser degree, an important assemblage of wildlife.

Riparian Wetland. The extensive wetlands in the Otay River Valley represent a highly significant habitat which has sustained a century of impacts from farming, sand and gravel mining, and an upstream dam. From an ecological standpoint, the proliferation of non-native tamarisk and mule-fat, at the expense of native willows, has caused very significant degradation of habitat. The damage is still largely surficial however, and outstanding possibilities for wetland enhancement are available throughout the valley. A major factor in such enhancement would be the modification of existing hydrology to favor such native riparian and freshwater marsh habitats. The losses sustained by wetland habitats in southern California are well documented and further reductions of even small areas are considered significant.

Sensitive Flora

Otay Tarweed (*Hemizonia conjugens*). Only two sizable extant populations are known for the Otay tarweed; along Otay Lakes Road south of Bonita, and at several nearby sites in the Poggi Canyon area. Approximately 500 plants were found on a small bluff above Otay Valley Road, straddling a fence cordoning off the United Enterprises property to the east. It also occurs in similar habitat on the hill to the east. Listed as 3-3-2 by the California Native Plant Society (CNPS) and

Endangered by the Department of Fish and Game, this population must be considered highly significant (see Appendix A for number code definition).

Cleveland's Golden Stars (*Muilla clevelandii*). Approximately 30 specimens, an important population, were found growing sympatrically with *Hemizonia conjugens*. Cleveland's golden stars, although not inhabiting vernal pools, are often associated with mima mounds and the environs of vernal pools. The Otay Valley Road population grows in a vernally moist cracked clay soil along the periphery of an *Artemisia californica* dominated Diegan Sage Scrub. CNPS listed as 2-2-2, the plant is considered endangered within a portion of its range.

Greene's Ground Cherry (*Physalis greenei*). An estimated 200 *Physalis greenei* grow beneath shrubs on a south-facing hillside adjacent to the intersection of Otay Valley Road and the gravel road that extends east from Otay Valley Road. Listed by CNPS but unranked owing to taxonomic questions, Greene's ground cherry, as currently constituted, is an extremely rare coastal species related to *P. crassifolia* on the desert. The size of the colony makes it the largest known population of this species, and therefore, of major botanical significance. Loss of the on-site population of this species would be considered significant.

California Spinebush (*Adolphia californica*). California spinebush is CNPS listed as 1-2-1 and is considered moderately endangered. Twenty to thirty California spinebush grow on a mesa east of Nirvana Avenue and south of Energy Way. Habitat is degraded and the area appears to have been brushed within the last decade. This population, owning to its limited numbers and marginal habitat, is considered of minor biological significance.

Coast Barrel Cactus (*Ferocactus viridescens*). Coast barrel cactus occurs in small, scattered populations on the mesa and slopes north of the road. A very heavy occurrence of this cactus is found on the easternmost mesa extending onto County lands. This population essentially surrounds the *Hemizonia conjugens* and *Muilla maritima* habitat previously noted. Densities at this particular locale make the colony a significant biological resource. CNPS listed 1-3-1; endangered throughout its range; the species is also a Category 2 candidate for future federal listing. Impacts to this species would constitute a significant adverse biological impact.

San Diego Marsh Elder (*Iva hayesiana*). The Otay River Valley and its tributaries have the heaviest concentrations of San Diego marsh elder seen in the County. Within the floodplain, *Iva* is a dominant shrub along both cobbly and sandy channels paralleling Otay Valley Road. This species carries a listing of 2-2-1 and is considered to be of moderate rarity and endangerment. High population density makes the on-site occurrence of *Iva* significant but mitigable by replacement planting in other areas of the river valley.

San Diego Sunflower (*Viguiera laciniata*). The San Diego sunflower is a dominant member of many inland Diegan Sage Scrub communities in southern San Diego County. Such is the case on the hillsides north of Otay Valley Road. Its CNPS listing of 1-2-1 is based on limited range in San Diego County and Baja, California; as well as on extensive urbanization throughout much of its habitat which is dramatically reducing once extensive stands of Diegan Sage Scrub. The *Viguiera* itself is not significant but its association with a much rarer assemblage of plants occurring on the site is important.

Ashy-footed Clubmoss (*Selaginella cinerascens*). The ashy-footed clubmoss occurs by the thousands on the mesas north of Otay Valley Road. Listed by CNPS at 1-2-1 owing to its range limitations in San Diego County and northern Baja California, this clubmoss is extremely common in our coastal area. Its occurrence on-site is considered of minor biological significance.

Sensitive Wildlife

Two-striped Garter Snake (*Thamnophis couchi hammondi*). This aquatic garter snake is generally restricted to wetland areas of the western portions of the county. The species has suffered recent declines due to habitat loss and collection pressures. Currently the species is considered sensitive by the CDFG and has been listed as threatened by the San Diego Herpetological Society. This species is also protected by international trade treaties. Although this species is often difficult to detect, it appears that the habitat requirements for the snake are relatively broad. These snakes occur in areas of freshwater marsh, riparian woodland, and even brackish and marine waters. Within the survey area only one individual of this species was observed, however it is expected that these snakes are widely distributed throughout the wetlands of the valley especially in the vicinity of ponds and marshes. Impacts of the project on this species would be expected to be minor and insignificant.

Least Bell's Vireo (*Vireo bellii pusillus*). This subspecies is endemic to California and Baja California, Mexico; however, it has dramatically declined in recent years and is now absent from large areas of its former range. One of the strongholds of its distribution is in Willow Riparian Woodlands in San Diego County, although even here it has seriously declined (Unitt, 1984). As with many riparian birds, brown-headed cowbird brood parasitism, primarily, and destruction of riparian habitats, secondarily, appear to be the major reasons for the decline of least Bell's vireo. The least Bell's vireo is on the Federal Endangered Species list and is considered endangered by the State of California. A single singing male was found in a stand of willows 200 feet west of where the Otay Valley Road bridge crosses the Otay River and approximately 300 feet south of the existing roadway. Four other vireos were discovered in similar habitat approximately one-quarter mile to the west and several hundred yards south of the Otay Valley Road corridor under examination. The proposed roadway is considered to be sufficiently isolated spatially from the occupied habitats to avoid impacts to this species.

Yellow Warbler (*Dendroica petechia*). This species was once an abundant summer resident in Willow Riparian Woodlands throughout southern California. As with the least Bell's vireos, brown-headed cowbird brood parasitism and destruction of riparian ecosystems appear to be the main reasons for the decline of yellow warblers (Remsen, 1980; Everett, 1979). Yellow warblers are seen during migration in the Otay River Valley and have nested along the upper reaches of the Otay River drainage. A single bird was noted in Willow Riparian habitat along the corridor route. This bird does not appear to be a resident breeder on site and no direct impacts to this species are expected due to the proposed project.

Yellow-breasted Chat (*Icteria virens*). This large warbler is known to nest in the Otay River Valley (E. Lichtwardt, personal observation, 1987; Unitt, 1984) and is considered to be a bird of special concern in California (Remsen, 1980) and a declining species in San Diego County (Everett, 1979). Yellow-breasted chats were once common in Riparian Woodland in southern California, but have declined due to destruction of their habitat and brood parasitism by the brown-headed cowbird. Several yellow-breasted chats were observed or detected through vocalizations on site. While no nests were located within the survey corridor, vegetation clearance during the nesting season could possibly destroy nest sites of this species.

Willow Flycatcher (*Empidonax traillii*). The subspecies breeding in the southwestern United States (*E. t. extimus*) is considered endangered (Unitt, 1984). The bird observed on site could not be identified to subspecies and there is the possibility that this individual was a migrant of the northern subspecies (*E. t. brewsteri*). As the site was carefully investigated on five different occasions with the willow flycatcher only noted during the 14 September 1988 survey, it is considered probable that the bird is a migrant and not breeding on site. Breeding season for the species locally is from approximately 20 June to 15 July. No significant impacts to this species are expected to be associated with the proposed project.

California Gnatcatcher (*Polioptila californica*). The California gnatcatcher is a Federal Category II species and is considered sensitive by numerous other sources. This bird typically inhabits scrub vegetation dominated by California sagebrush; usually in gently to moderately sloping terrain. A patch of such habitat occurs on a mesa near the intersection of the unpaved Otay River Road and Otay Valley Road. A mated pair was seen occupying the area over a one week period and are apparently residents. Loss of this single pair of birds located on the slope habitat would not be considered significant in itself. The already high value of the habitat, based on botanical resources and other zoological resources however, makes this pair of birds a noteworthy concern.

Orange-throated Whiptail (*Cnemidophorus hyperthrus*). The orange-throated whiptail is currently threatened by development pressures. This lizard carries a Federal Category II listing and is considered sensitive by six other agencies or organizations. This species, like the San Diego horned lizard, is generally found in association with sage scrub communities, but is also known to occur in other community types where open roadways or unvegetated, sandy soils are found. Single whiptails have been sighted in fairly open terrain on a mesa just north of Otay Valley Road and in minor sandy channels in the river valley itself.

B. Impacts

The proposed roadway expansion would lead to the ultimate loss of 18.2 acres of non-urbanized habitats including disturbed roadsides and agricultural fields, Diegan Sage Scrub, Freshwater Marsh, Tamarisk/Mulefat Shrublands, and Willow Riparian Woodland.

By far the greatest acreage impacts would be to disturbed roadsides and agricultural fields with a loss of 14.0 acres. Biologically, this impact would lead to reduced use of the area by congregating birds including gulls, European starlings, ravens, blackbirds, and morning doves. The loss of these areas would not directly impact any sensitive plants or animals. Impacts to this area are not considered to be significant.

The project would lead to the loss of 1.2 acres of Diegan Sage Scrub. In general the habitat impacted occurs down-slope of the existing roadway and is of poor quality with a high incidence of debris and weedy species. This area does, however, support a minimal number of orange-throated whiptails and is likely to provide refuge to more typical wetland-associated species during high river flows. No sensitive plant species were observed within the sage scrub areas to be impacted. The small size of the area to be impacted, combined with the low density of the sensitive whiptail and the high abundance of refuge areas throughout the river valley, makes the expected impacts to this area insignificant.

The project would lead to the loss of 2.6 acres of Tamarisk/Mulefat Shrubland. This wetland vegetation type supports reduced numbers of individuals and species from both upland habitats and higher quality wetland habitats. Several sensitive riparian birds are known to occasionally occur within this habitat. Further, the sensitive orange-throated whiptail was observed in low abundance within this habitat and is expected to occur within the proposed alignment area. Impacts to this habitat would eliminate a large number of sensitive San Diego marsh-elder. While this area has been severely degraded by the invasion of non-native tamarisk and other weedy species, its wetland character and value to riparian species make its loss a significant biological impact of the project.

The project would eliminate 0.2 acre of Willow Riparian Woodland and 0.2 acre of Freshwater Marsh. These habitats are utilized by an abundance of sensitive birds, including yellow-breasted chats. Elsewhere in the river bottom, willow riparian habitat is occupied by the endangered least Bell's vireo and the willow flycatcher. The sensitive two-striped garter snake occurs within the marsh areas of the river valley and could potentially occur within the proposed alignment. The tremendous past reduction in these limited wetland habitats and the extreme biological value makes the loss of these areas significant.

In addition to these losses, the construction of the proposed roadway would utilize a 20 foot wide corridor along the base of the roadway slope. This area includes 1.1 acres of Tamarisk/Mulefat Shrubland, 0.2 acre of Diegan Sage Scrub, and 0.8 acre of disturbed roadside vegetation. Disturbance of the 1.1 acres of Tamarisk/Mulefat Shrubland in this area is considered to be significant.

No other direct impacts to biological resources are expected to occur as a result of the proposed project. The most significant plant resources occur on the slopes north at the existing roadway at the eastern end of the project. These are to be preserved. The sensitive least Bell's vireo and willow flycatcher occur in willow woodlands almost 300 feet from the nearest construction activity area and would not be impacted by the construction activities. The sensitive California gnatcatcher, like the most sensitive plants, occurs on the slopes above the roadway and would not be impacted.

Indirect impacts to biological resources include the likely future extension of the roadway upstream of the project site which would increase the impacts to native plant and animal resources. Further occupation of the eastern areas by residential development could lead to significant impacts to resources. The roadway expansion would eliminate a portion of the degraded buffer that currently exists between high quality habitats within the river bottom and the existing Otay Valley Road. Potentially, the roadsides of the new roadway could receive the same abuse which has historically plagued the area. The expansion of the roadway is expected to lead to a higher incidence of road-kills, particularly among nocturnal mammals travelling between the uplands to the north and the river bottom. Cumulatively, these indirect impacts are considered to be significant and adverse.

C. Mitigation

In order to minimize impacts of the project and mitigate impacts to a level of non-significance, the following measures are recommended:

- o Losses of wetland habitats including Tamarisk/Mulefat Shrubland, Willow Riparian Woodland, and Freshwater Marsh totalling 3.0 acres will be mitigated by the creation of new wetland areas within the river valley. Such mitigation will include the extensive revegetation with willow woodland and the use of San Diego marsh-elder to maximize value to wildlife and mitigate for the loss to this sensitive plant species. Appropriate mitigation would be a 2:1 acreage replacement ratio for wetlands lost.

- o The roadsides, adjacent to native vegetation communities east of Nirvana Road, should be designed in a manner that would inhibit the potential for vehicle access or illegal dumping into the river bottom or onto the slopes. Incorporation of guard rails or fences would be appropriate. Use of thorny vegetation may also be used in conjunction with temporary fences.

- o The roadway slopes will be revegetated with native plant materials indigenous to the area or which complement the existing native communities, such as sage scrub or sycamore woodland species.

- o Where construction activities are to occur in or adjacent to native vegetational communities, work should be restricted to the delineated project footprint by the placement of temporary construction fences or flagging along both sides of the street.

- o If work-site brushing occurs between April 1 and September 15, the project site should be carefully examined by a qualified biologist prior to clearing. Should the site be found to support nesting birds including least Bell's vireo, willow flycatcher, or yellow-breasted chat, work within 300 feet of the nest site should be delayed until nesting has been completed.

- o Following construction, the 20-foot wide construction corridor should be recontoured to natural ~~or lower~~ levels and revegetated with native vegetation including willow and mulefat, Riparian scrub with minor elements of Diegan Sage Scrub.

D. Analysis of Significance

Incorporation of these recommendations into the proposed project would substantially off-set adverse impacts and would mitigate these impacts to a level of non-significance.

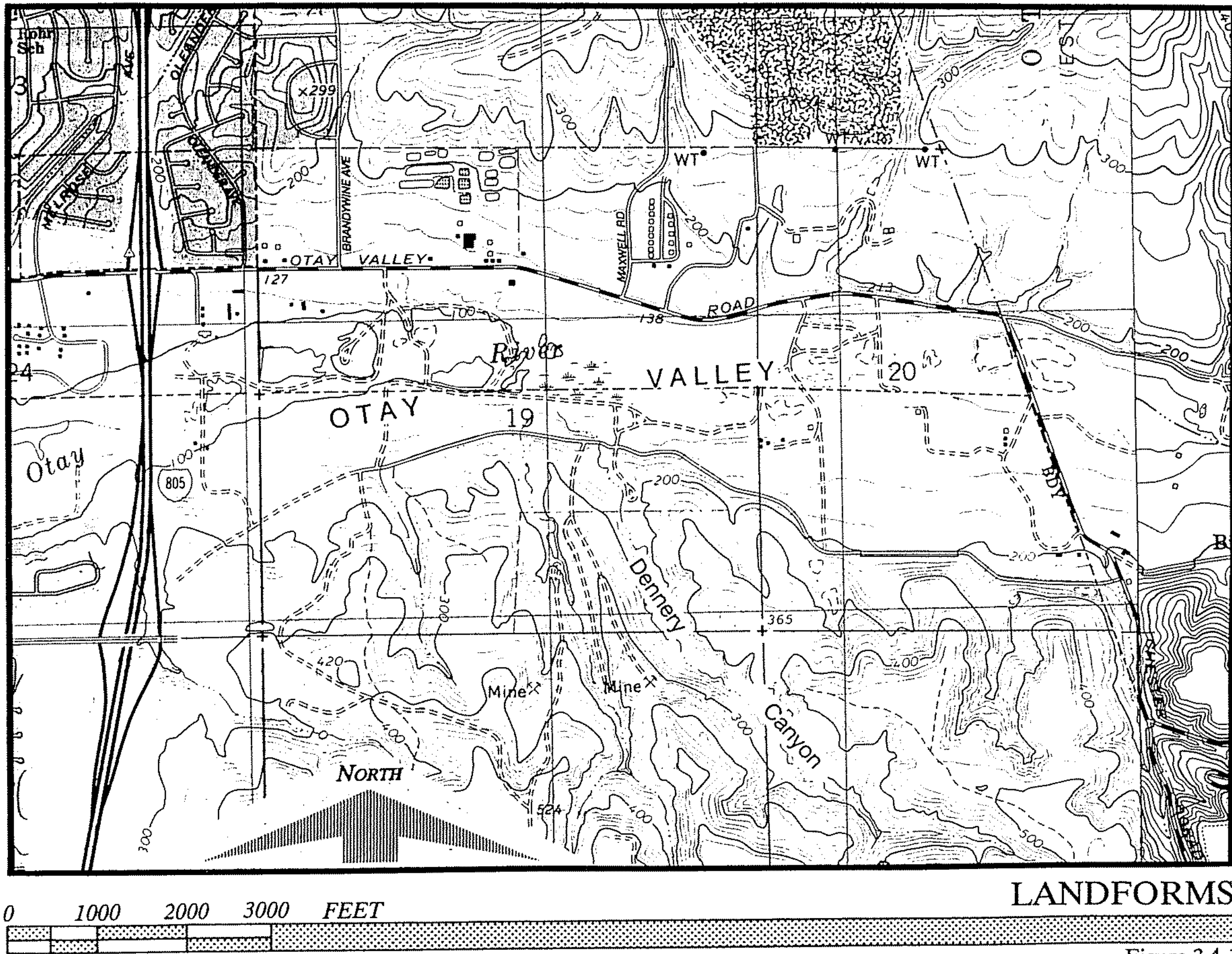
In addition to these items, it should be recognized that the project, as proposed, falls under the regulatory jurisdiction and permit authority of the U.S. Army Corps of Engineers pursuant to the Corps' Regulatory Program (33 CFR 320-330). The project is also within the regulatory authority of the California Department of Fish and Game (1601 of the Fish and Game Code). Both of these agencies are expected to require mitigation of wetland impacts through creation of new wetlands within the Otay River Valley.

3.4 LANDFORM ALTERATION

A. Project Setting

This project area lies within the central portion of Otay Valley as shown in Figure 3.4-1. The valley is traversed by the Otay River, and is surrounded by stretches of rolling hills and tribuary canyons extending from expansive mesa formations to the north and south. The most topographically distinctive feature within the vicinity is Dennery Canyon, carrying drainage into Otay Valley from Otay Mesa located approximately one mile south of the study corridor. The river extends from Lower Otay Reservoir to the southernmost area of San Diego Bay. Within the project vicinity, the river is largely below the surface but is evidenced by patches of dense vegetation in wetland areas, throughout the river's floodplain.

The existing Otay Valley Road is relatively flat and passes through Otay Valley in an east-west orientation parallel the northern side of Otay River. The immediate surroundings are gently to moderately sloped, except in the eastern third of the project area where northern hillside slopes abruptly adjoin to the roadway. Low lying wetlands border Otay Valley Road to the south along the entire length of Otay River. Topographical elevations within the study area range from 100 feet above mean sea level (MSL) in the wetlands to approximately 300 feet above MSL along



LANDFORMS

Figure 3.4-1

the crests of the northeastern hillsides. Current elevations along the roadway vary from 118 feet to 142 feet above mean sea level.

B. Impacts

By the end of project construction, approximately 27,000 cubic yards of cut and 190,000 cubic yards of fill will have altered the project site terrain to a minor extent. The widening of Otay Valley Road will create minor changes to existing landforms primarily by leveling and contouring the existing roadway according to engineering design specifications for roadways with 55 MPH speed limits. As shown on Figure 3.1-5 above, the project will not require any cuts to be made into the steep hillsides located in the northeastern part of the study area.

Fills will be required within the right-of-way, and fill slopes will be constructed to the south of Otay Valley Road. Fill slopes south of the road will create the greatest landform changes. Average slopes will be approximately five feet in height, similar to existing conditions west of Nirvana Avenue. The greatest degree of change will occur east of Nirvana Avenue, where the proposed roadway and slopes will extend approximately 120 horizontal feet south of the existing roadway, and maximum slopes will reach 26 feet in vertical height. Within the roadway itself, minor changes in elevation will occur. Elevations of the proposed roadway right-of-way vary in height from 126 feet to 144 feet above mean sea level.

C. Mitigation

No mitigation is required as there are no significant impacts anticipated.

D. Analysis of Significance

The project will grade the site for the roadway widening, in conformance with City standards. Landform alteration will not change the topography significantly from present site conditions.

3.5 LAND USE

A. Project Setting

The project area is located in a predominantly undeveloped part of the City of Chula Vista. Located in the southeast section of the City, the project area is directly west of and adjacent to the County of San Diego. The City of San Diego corporate limits lie approximately 750 to 3,000 feet south of the project.

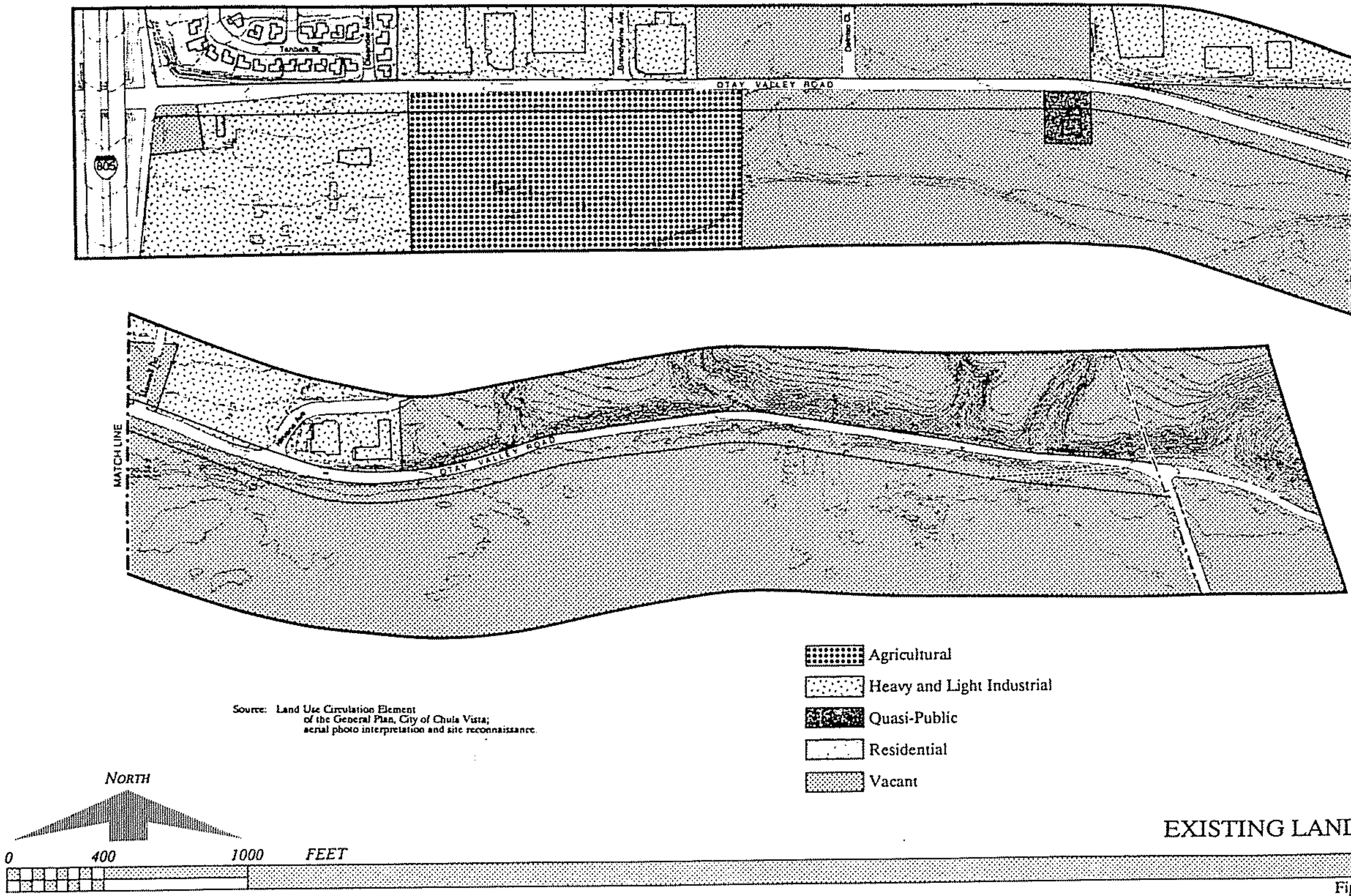
1. Existing Land Use

The project area is predominantly rural in nature, although a variety of land uses are found in the immediate vicinity of the road, including residential, commercial, industrial, public, open space and agricultural uses. Figure 3.5-1 illustrates existing land use patterns within 300 to 600 feet of the roadway. Figure 2.2-1, an aerial photograph of the project vicinity, shows structural land use patterns.

Land Uses North of Otay Valley Road: Within the City of Chula Vista, existing land uses north of the road include residential, industrial and vacant lands. Directly east of I-805, the Princess Manor Unit 5 residential subdivision is adjacent to and north of the road, with homes along Tanbark Street and Oleander Avenue being within 15 feet of the existing road at its closest point. East of Princess Manor Unit 5 is the Kendall telecommunications facility, followed by the Brandywine Industrial Park project located east of Brandywine Avenue. Tenants of the industrial park include the Werdin/Darnell and Hyspan Precision Products facilities. This industrial park project also includes land south of Otay Valley Road, which has not yet been developed. Continuing east of the Hyspan Precision Products facility is vacant land to Delniso Court. Land remains undeveloped east of Otay Valley Industrial Park. Between Maxwell Road and Nirvana Avenue is an auto wrecking yard; and east of Nirvana is the Otay Industrial Recycling Park. From the industrial recycling park to the eastern terminus of the project, the land is largely undisturbed except for the presence of a a few dirt roads (see Figure 3.5-1).

Land Uses South of Otay Valley Road: At present, most of the land south of the road consists of undeveloped open space, although light and heavy industrial uses, public uses, dispersed residential and agricultural lands are scattered along the

Otay Valley Road Widening Project



Source: Land Use Circulation Element of the General Plan, City of Chula Vista; aerial photo interpretation and site reconnaissance.

EXISTING LAND USE

Figure 3.5-1

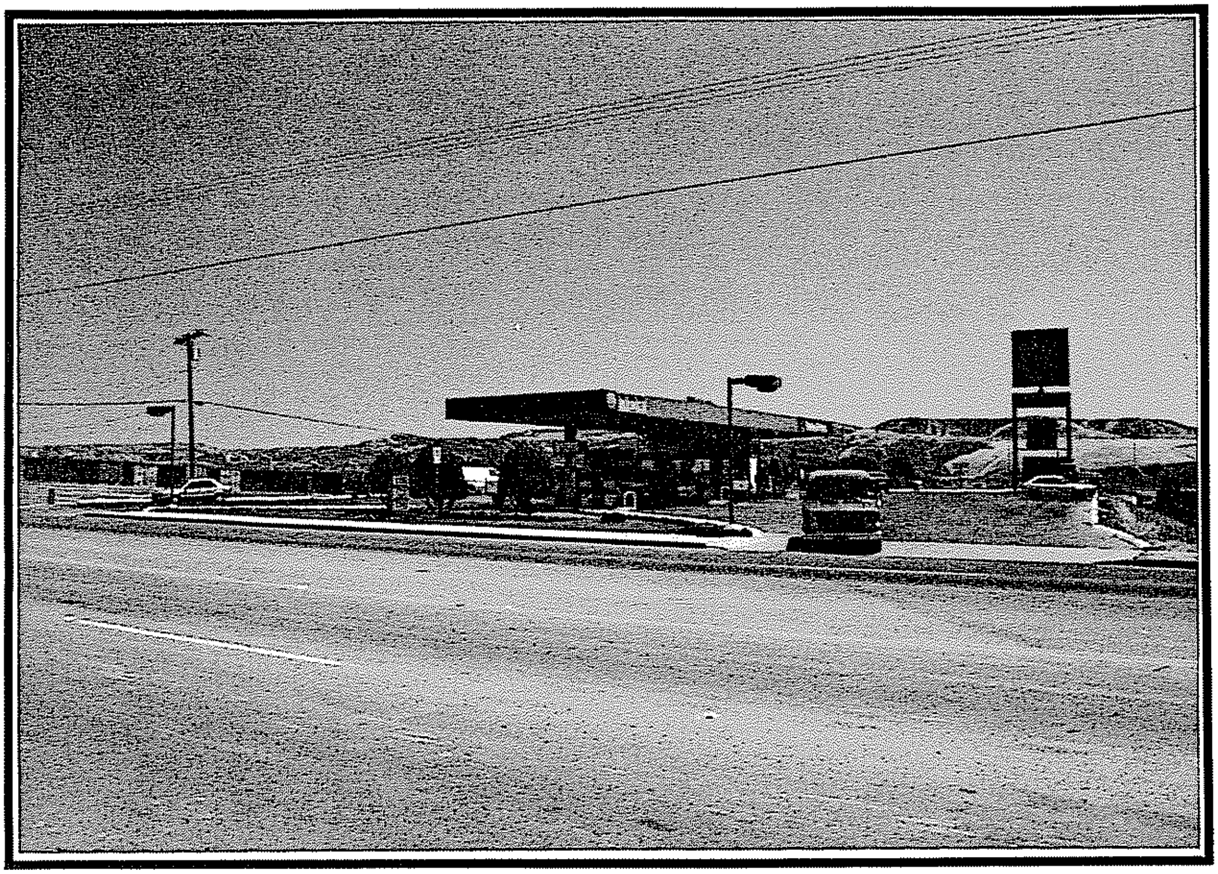
corridor. Immediately east of I-805 is a vacant lot followed by a Shell Oil gas station. The South Bay Storage Area and Border Truck Sales, MC Welding and two residences are present south and east of the gas station and west of a Pacific Bell service center. East of Pacific Bell, agricultural fields extend approximately 1,440 feet immediately adjacent to the road and one residence remains in this area (see Section 3.6). Vacant land and the City of Chula Vista Animal Shelter are found east of these uses, with the Animal Shelter being within 65 feet of the existing road. The remaining eastern half of the study area south of Otay Valley Road is largely natural but includes several small dirt roads and a dump area. Plate 2 shows representative land uses along Otay Valley Road.

2. General Plans and Zoning

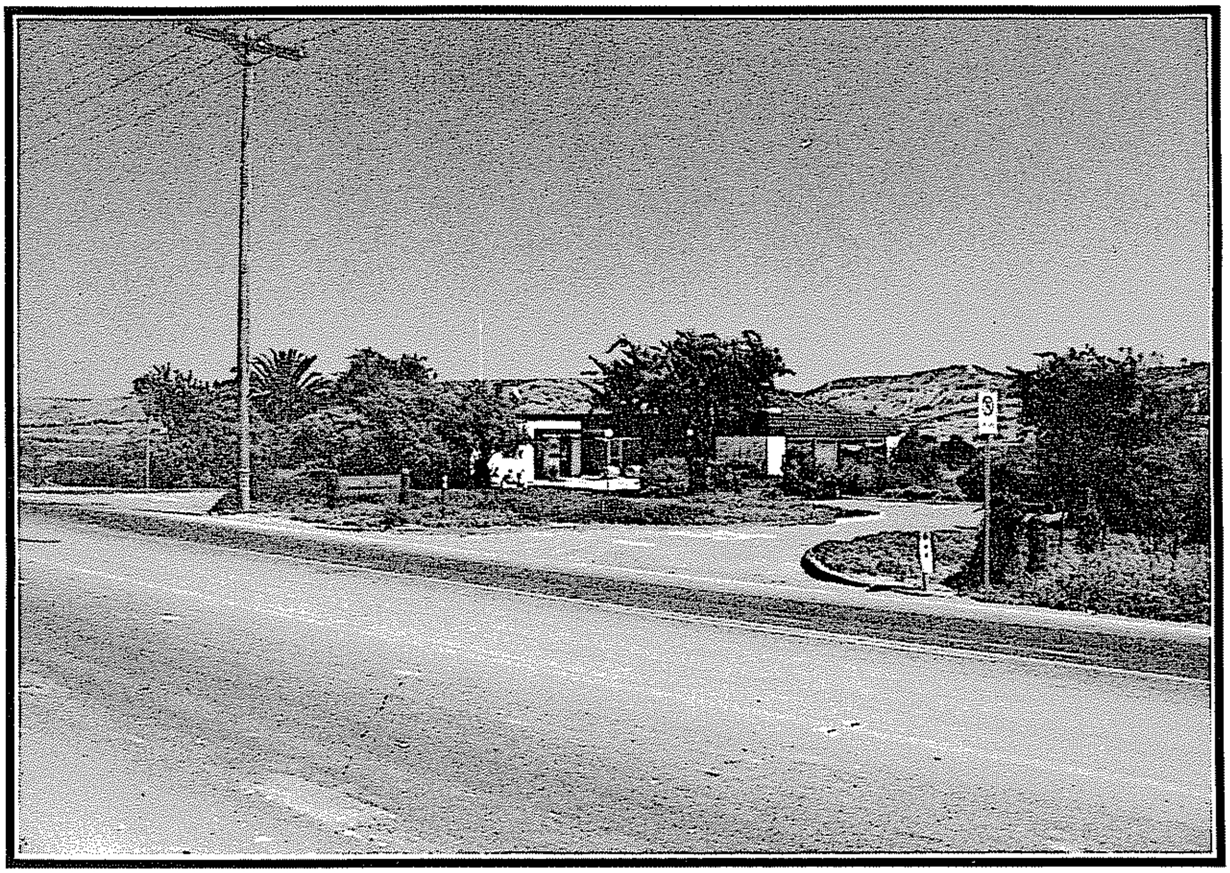
This section of the EIR describes the current plans, policies and zoning designations for the project area. General plans applicable to the project area during the preparation of this EIR included the *Chula Vista General Plan-1990* and the City of Chula Vista's *Draft General Plan Update* (January 1989). In July 1989, the *General Plan Update* was adopted and currently sets forth city-wide policies and guidelines. In addition, the City of Chula Vista adopted the *Otay Valley Road Redevelopment Plan* in 1983 which specifically addresses land use development objectives in the project area. With respect to other jurisdiction's general plans, the City of San Diego's *Otay Mesa Community Plan* addresses lands within one-half mile south of the project area; and the County of San Diego's *Otay Subregional Plan* addresses lands adjacent to and east of the project. Figure 3.5-2 illustrates the land use designations of the City of Chula Vista's recently adopted *General Plan Update* (July, 1989). The *General Plan Update* addresses lands within the City's sphere of influence, as well as lands within the incorporated City limits. Figure 3.5-3 illustrates current zoning, and Figure 3.5-4 shows the land use designations of the previous Chula Vista General Plan and the City of San Diego and County of San Diego plans.

<u>City of Chula Vista</u>

In the City of Chula Vista's *General Plan Update*, Otay Valley Road is classified as a six-lane major street from Interstate 805 to Nirvana Avenue and as a six-lane prime arterial from Nirvana Avenue to Paseo Ranchero Road. Adjacent land use

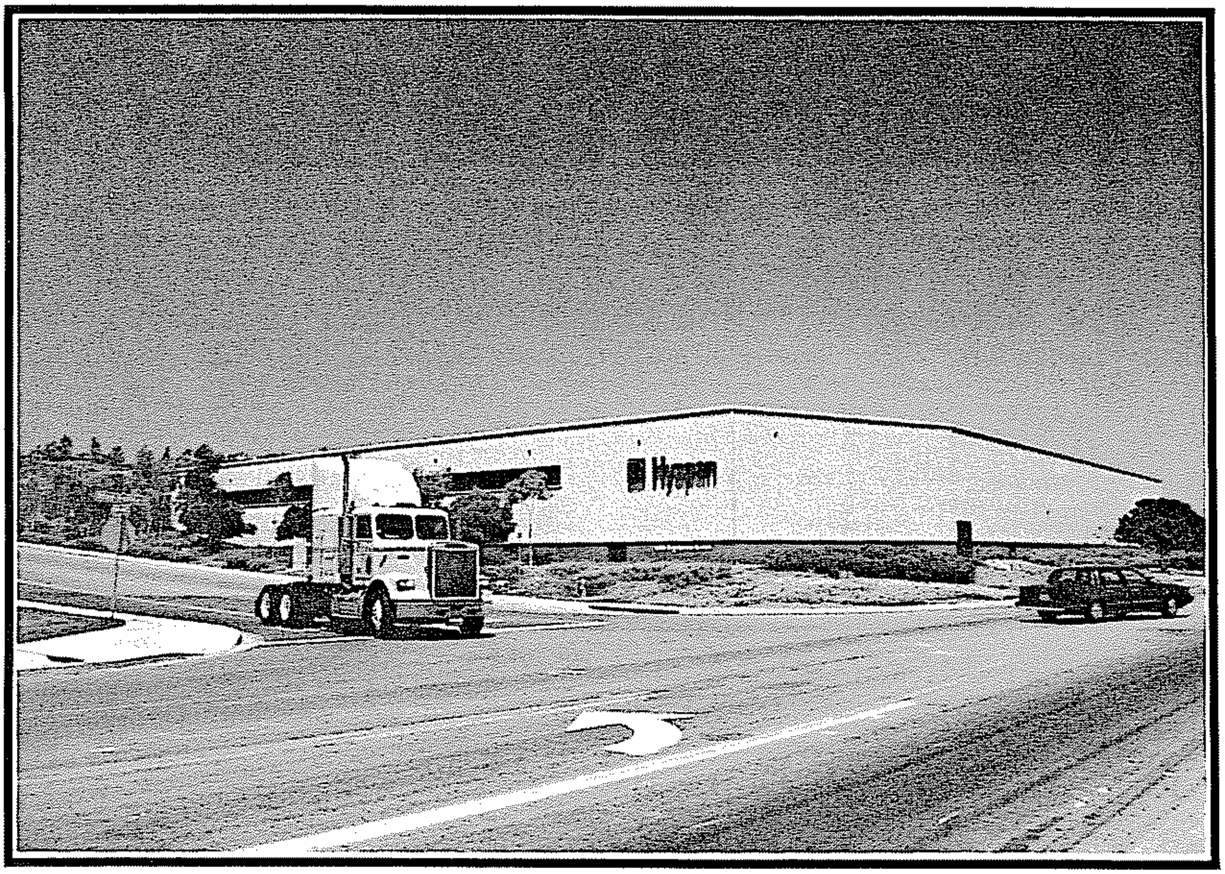


Shell Service Station

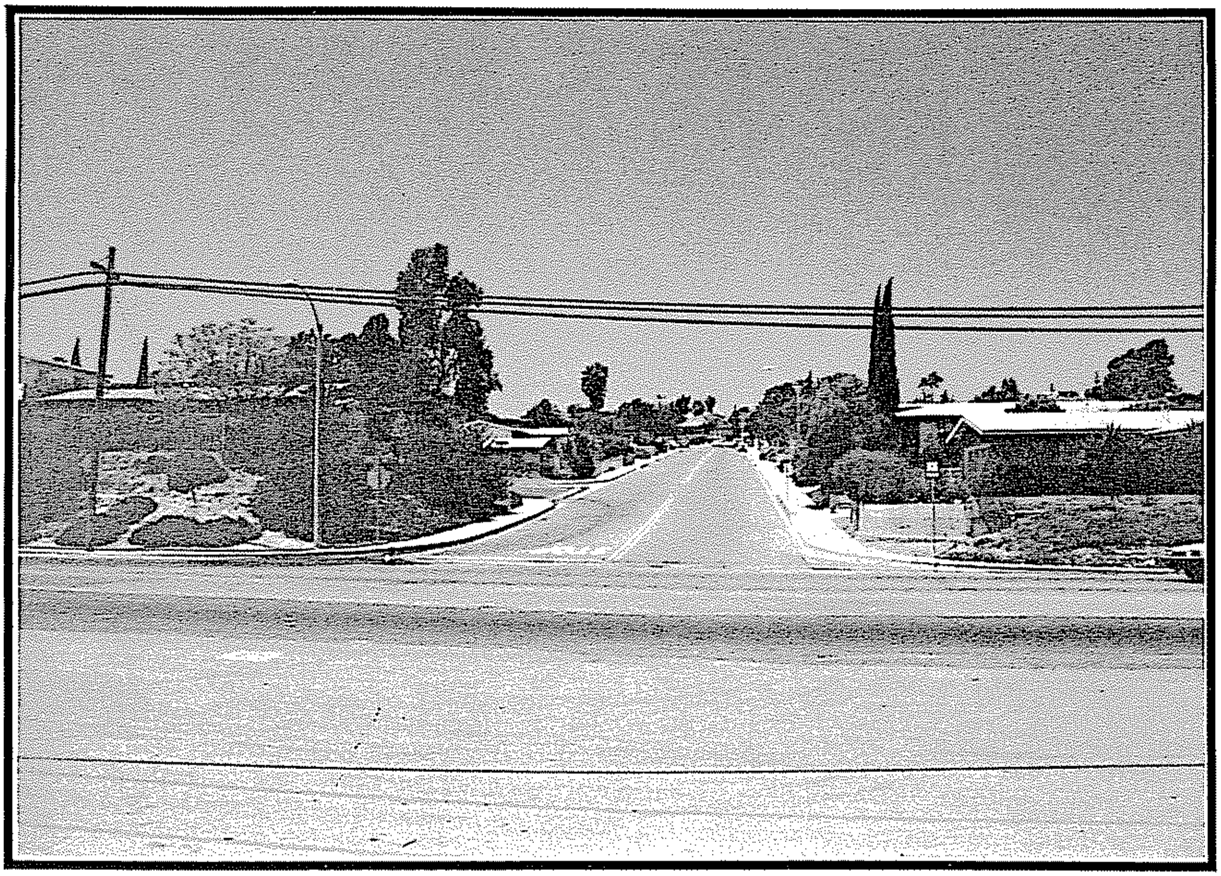


City Of Chula Vista Animal Shelter

PLATE 2 LAND USES SOUTH OF OTAY VALLEY ROAD

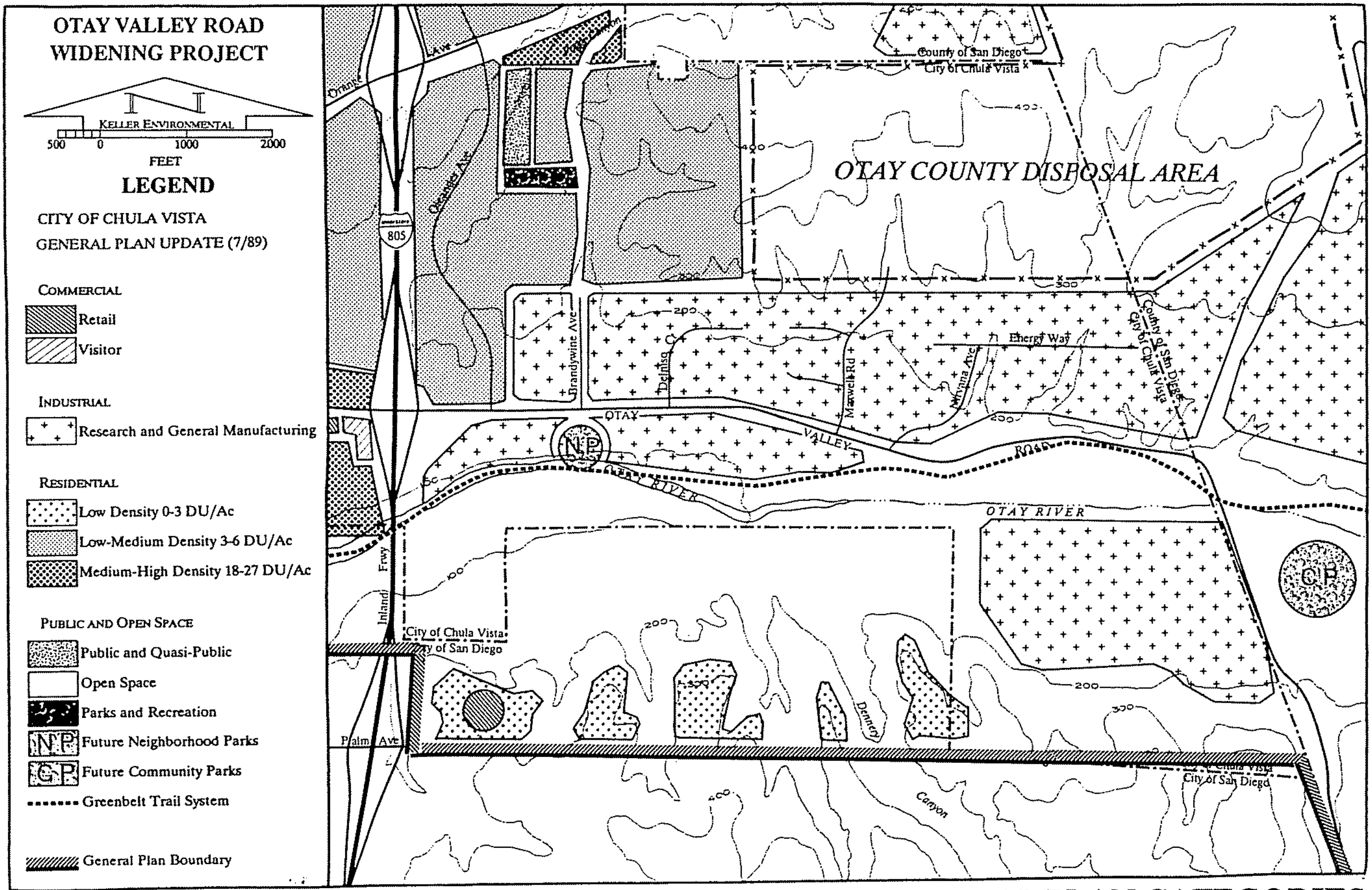


Brandywine Industrial Park Development



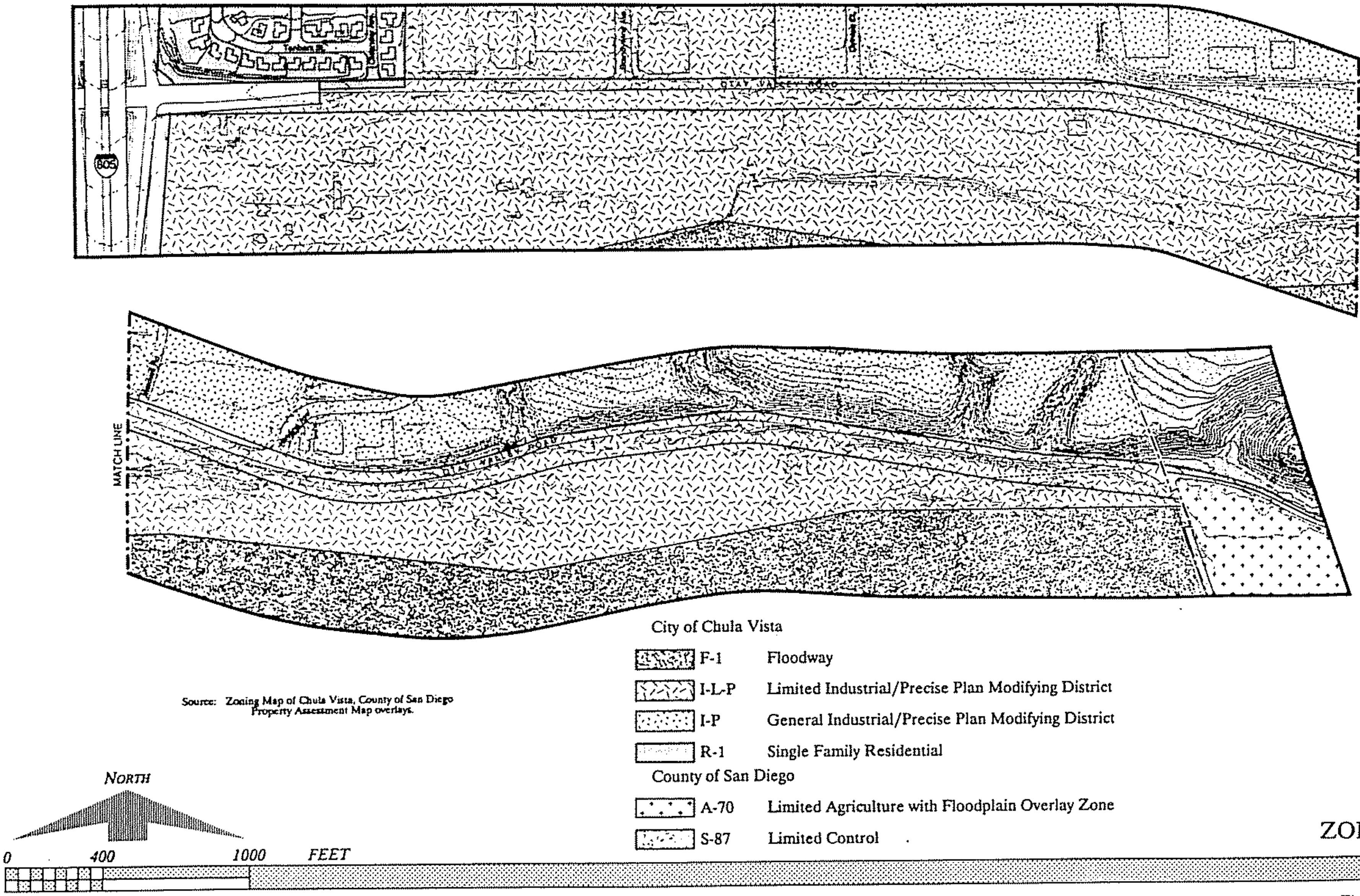
Princess Manor Unit 5 Subdivision

PLATE 2(CONT.) LAND USES NORTH OF OTAY VALLEY ROAD



GENERAL PLAN CATEGORIES

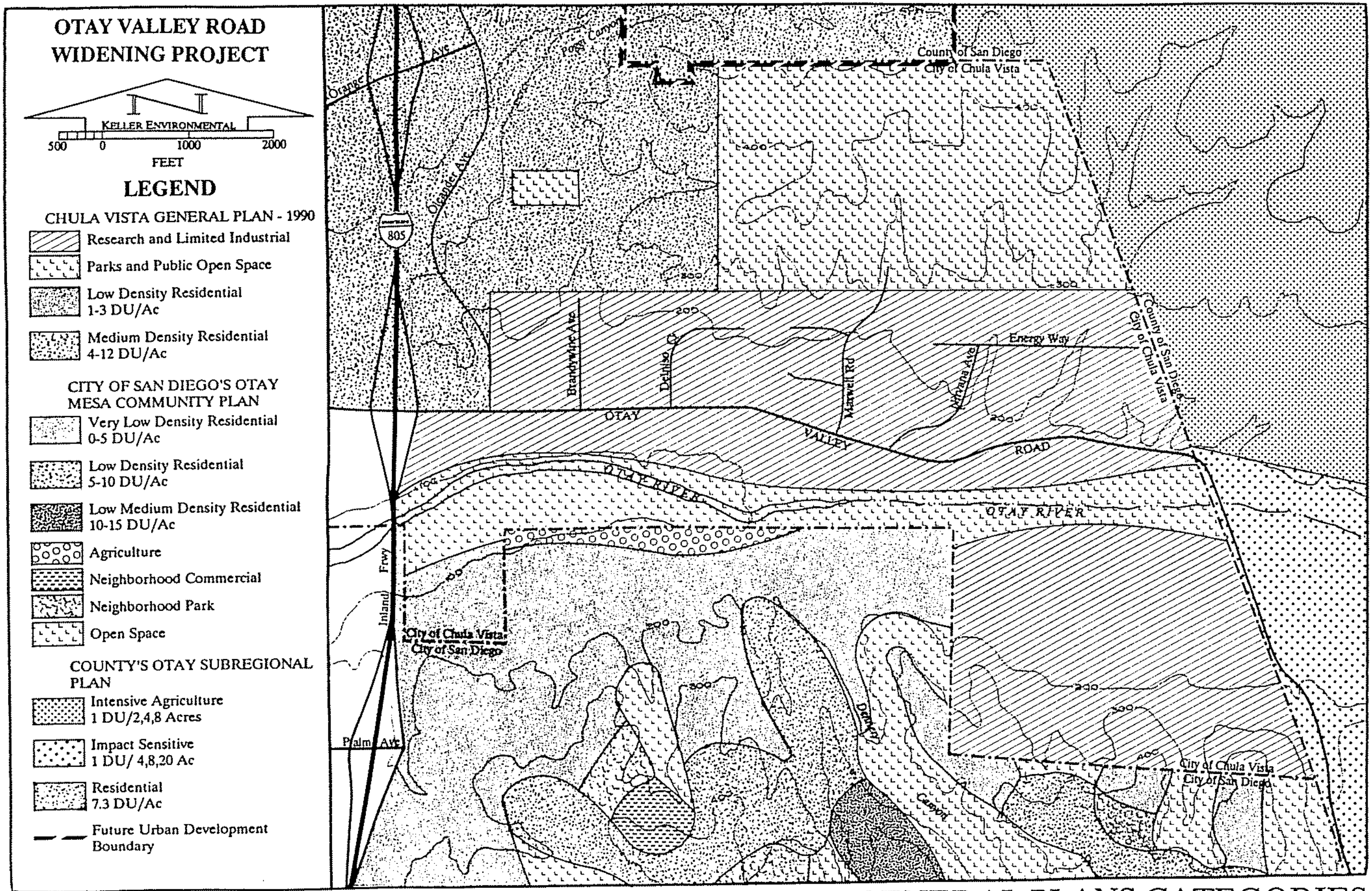
Figure 3.5-2



Source: Zoning Map of Chula Vista, County of San Diego Property Assessment Map overlays.

ZONING

Figure 3.5-3



OTHER JURISDICTION'S GENERAL PLANS CATEGORIES

Figure 3.5-4

designations in the *General Plan Update*, shown in Figure 3.5-2, include designations of Research and Limited Industrial, Low-Medium Density Residential (3-6 du/ac), Future Neighborhood Parks, and Open Space. Research and Limited Industrial is the predominant land use designation for areas adjacent to the roadway on both the north and south sides. This category includes research and development, light manufacturing, small scale warehousing, and flexible use buildings that combine the above uses with office space. The Low-Medium Density Residential category (3 - 6 du/ac) is applied to the Princess Manor Subdivision, east of I-805. The Future Neighborhood Park designation is south of the roadway near the intersection of Otay Valley Road and Brandywine. Open Space is located primarily south of Otay Valley Road and predominates in the eastern part of the project area along the Otay River.

Zoning. In the State of California, zoning must be in conformance with the General Plan categories. Existing zoning for the study corridor is shown in Figure 3.5-3. The northwestern portion of the study area is zoned R-1, Single Family Residential. This zone allows single-family dwellings and accessory uses such as guest houses and foster homes. Other accessory uses, such as churches, schools and other quasi-public uses, require a Conditional Use Permit.

The majority of lands adjacent to the roadway are zoned I-L-P, Limited Industrial with a Precise Plan Modifying District. The I-L-P zone applies to all adjacent lands south of the roadway and lands north of the roadway between the R-1 zone and approximately 300 feet west of Delniso Court. This zone permits manufacturing, printing, assembling, processing, repairing, or packaging of products from previously prepared materials, as well as wholesale and warehousing, storage yards, minor auto repair, and the manufacture of food products. Accessory uses, such as offices, restaurants and incidental services to serve employees, and retail sales of products produced on the site, are allowed. Other uses are subject to a Conditional Use Permit. Minimum lot size is 10,000 square feet and the Precise Plan Modifying District Requires that the use of land and buildings, including height, setbacks and open areas, be developed in accordance with the approved precise plan. The plan takes precedence over the restrictions of the underlying zone.

The remainder of the area north of Otay Valley Road is zoned I-P, General Industrial with a Precise Plan Modifying District. This zone allows manufacturing, processing, assembling, research, wholesale or storage uses, and other uses that are of the same general character. Accessory uses, such as offices and services to serve employees and retail sales of products manufactured on the site, are allowed with a Conditional Use Permit. The minimum lot size is 20,000 square feet. The Precise Plan Modifying District requirements are the same as those noted above.

Land Use Policies and Objectives. The *Otay Valley Road Redevelopment Project Area Redevelopment Plan* (1983) and the Land Use Element of the *General Plan Update* set forth the objectives and policies for lands in the project area. The overall purpose and objective of the Otay Valley Road Redevelopment Plan is to:

> "promote development that is viable, both physically and economically within the Project Area boundaries. The primary reason leading to the preparation of the Redevelopment Plan for the Otay Valley Road Project Area is the need to correct problems within the Project Area boundaries, including problems relative to circulation, infrastructure and public utility inadequacies...."

Specific objectives set forth in the Redevelopment Plan include the following that are particularly relevant to the proposed Otay Valley Road Widening Project:

- The development of public services and facilities including, but not limited to, recreational, maintenance, and operational services and facilities as are necessary and required for the development of the project area (Section 400.10.3:14).

- The elimination of environmental deficiencies including inadequate street improvements, inadequate utility systems, and inadequate public services; and mitigation of highway impacts, including its circulation, movement and its potential social, physical, and environmental characteristics of blight (Section 400.10.4:14).

- The development of a more efficient and effective circulation corridor system free from hazardous vehicular, pedestrian, and bicycle interfaces (Section 400.10.5:14).

- o The implementation of techniques to mitigate blight characteristics resulting from exposure to highway and public right-of-way corridor activity and affecting adjacent properties within the Project Area (Section 400.10.6:14).

As such, the proposed project is a positive action towards the implementation of the plan.

The *General Plan Update* further defines policies relevant to the project under the Circulation Element, transportation corridors. These are discussed in Section 3.8 of this EIR. In addition, the *General Plan Update* contains policies and objectives that pertain to the open space lands. These are discussed in Section 3.7 Parks, Recreation and Open Space.

County of San Diego

County of San Diego lands are adjacent to and east of the project boundary (see Figure 3.5-4). According to the County's *Otay Subregional Plan* (San Diego County, 1984), lands in the project vicinity are designated for Intensive Agriculture, with 1 dwelling unit allowed per 2, 4 or 8 acres; and as Impact Sensitive, where one dwelling unit per 4, 8 and 20 acres is allowed. Impact Sensitive lands are found in the vicinity of the Otay River Valley and further south. San Diego County lands are also located approximately one mile to the north of the project area and are designated for residential (7.3 du/ac) within the County's future urban development boundary.

The County's *Otay Subregional Plan* does not specifically address the project area. Several policies are relevant to the project vicinity, however, including the phasing of development in accordance with available public services and facilities. In addition, the County has special review policies for proposed development in the areas designated as Impact Sensitive. The Plan notes that this designation was applied to protect environmentally sensitive areas but that there may be areas within the designation that do not contain these resources and/or hazards and are, therefore, safe for more intensive development. The Plan also notes that the County has designated a portion of the Otay River as a Resource Conservation Area (RCA); this area is located approximately 0.4 mile east of the project vicinity. The purpose of the RCA is to protect rare and endangered plants, including *Ferocactus viridescens* and *Navarretia fossalis*, which are considered endangered, as well as important populations of jojoba, which is being examined for its oil production potential (County of San Diego, 1984).

County lands within the City of Chula Vista's sphere of influence are shown on the City's *General Plan Update* as Open Space and Research and Limited Industrial. Open Space lands generally correspond to the County's Impact Sensitive areas. Research and Limited Industrial classifications are generally shown in areas designated Intensive Agriculture in the County's plan. In addition, the City of Chula Vista's *General Plan Update* reflects the County's future plans to construct Paseo Ranchero Road to the east of Otay Valley Road.

City of San Diego

The City of San Diego's *Otay Mesa Community Plan* (August 1984) addresses lands within one-half mile south of the project. San Diego City's land use designation closest to the project area is Very Low Density Residential (0 - 5 du/ac). Other designations in the project vicinity include Low Density Residential (5 to 10 du/ac), Low Medium Density Residential (10 - 15 du/ac), Open Space, Neighborhood Park, Neighborhood Commercial and Agriculture. The City's Community Plan contains no policies specific to the project area. The City of Chula Vista's *General Plan Update* identifies Open Space, Low Density Residential (0 - 3 du/ac), and Commercial (retail) uses for City of San Diego lands in the project vicinity.

3. Proposed and Approved Land Uses In the Project Vicinity

The Otay Valley and Otay Mesa areas of the Cities of Chula Vista and San Diego and the County of San Diego have been rapidly developing in the past decade. Numerous projects have been recently approved but are not yet constructed, and other projects are in the project approval process. These projects are shown on Figure 2.4-1 and are summarized in Table 2.4-1.

Within the City of Chula Vista, a number of industrial projects are proposed north of Otay Valley Road. South of the roadway, proposed developments include industrial park and commercial uses with some residential uses proposed at the southeastern extent of the city limits. Within the City of San Diego, proposed developments are primarily residential uses on the southern mesas, with supporting commercial and related community services. Proposed development processing in this part of the City of San Diego is presently under a moratorium, however, until the City completes studies on Brown Field, and SANDAG finished similar investigations on the feasibility of a regional airport in the southern part of the City.

In the County of San Diego, conceptual plans are being developed for the Baldwin Project. The developer is planning to propose a major project east of Otay Valley Road consisting of a wide variety of mixed uses and community services. At the present time, no conceptual plans have been made public and the schedule for processing this project is undetermined.

B. Impacts

Existing Land Uses. Impacts to existing land uses include short-term disruptions of land use activities and access and long-term reductions in frontage land availability due to the right-of-way requirements. The implementation of the proposed project will remove frontage from existing developments located south of the roadway. Existing land uses that will be affected by the project include:

- The Shell Gas Station - the proposed project will remove approximately 6,000 square feet of frontage land. The proposed right-of-way and grading will extend approximately 40 feet south of the existing road within an area presently dedicated for the Otay Valley Road Widening. The Shell Station operation, including gas pumps and service buildings will not be physically affected; however, present landscaping will be removed. Shell has redesigned the service station. The company's redesign is compatible with the right-of-way requirements for Otay Valley Road and I-805.

- The South Bay Storage Area and Border Truck Sales - Approximately 9,120 square feet of frontage land, currently used for RV storage, will be removed for the road widening project. This property is planned light industrial use and an Auto Park is currently being proposed for the site, and as such, existing uses are considered to be interim and temporary.

- The Pacific Bell Service Center - Approximately 11,550 square feet of the Pacific Bell Service Center land will be removed for the road right-of-way. Lands affected by the roadway widening are currently undeveloped frontage lands for the service center. No long-term impacts to service center operations (e.g., buildings and parking) will result from the proposed project. It should be noted that the service center site is also planned for future development similar to the South Bay Storage Area and Border Truck Sales.

- The Chula Vista Animal Shelter - The Otay Valley Road Widening Project will physically impact land currently used for access, parking, office/administration and work rooms. The widening of the road will impact approximately 18,800 square feet of the City's land. The City plans to relocate parking, workroom, and administration facilities to the property's southern side. Improvements to the site will include construction of two (24 x 60 feet and 20 x 20 feet) facility rooms, 12,000 feet of asphalt paving, 3500 cu. yards of fill (compacted and graded) and a new sewer lateral line to Otay Valley Road.

- Agricultural Lands - Approximately 122,400 square feet of agricultural lands will be removed from production for the proposed project. Impacts to agricultural resources are discussed in more detail in Section 3.6.

Planned Land Uses. The proposed project will not adversely affect future planned developments adjacent to the roadway. As shown of Figure 2.4-1, there are three proposed developments south of Otay Valley Road that could be affected by the road widening. These include:

- The Shell Oil Company's remodeled service station, (Map I.D. No. 3) previously discussed above. The redesign plans were approved by the City of Chula Vista in November 1988 and are compatible with the proposed roadway. Consequently, there will be no impacts on this development.

- The City of Chula Vista Auto Centre (Map I.D. No. 18), is proposed to be built by Guardian Builders, Inc. Plans for the project are consistent with the Otay Valley Road Widening requirements, and an EIR is presently being prepared by P&D Technologies. No impacts have been identified.

- The Walker Scott light industrial project (Map I.D. No. 14). An application is presently pending for a 250,000 s.f. light industrial project, located on 106 acres. The proposed road widening will reduce the frontage of the Walker

Scott property, however, this impact is not considered significant since it will not adversely affect the developability of the property.

With respect to land use plans and policies, the proposed project will have a beneficial impact on land use development in the general project region. The project will create transportation and utility infrastructures that will allow for the future planned development and upgrading of the area, in accordance with the goals and objectives of the Otay Valley Road Redevelopment Plan. Similarly, the proposed project will be in compliance with, and implement, the Chula Vista Draft General Plan Circulation Element, which designates Otay Valley Road as a six lane prime arterial and major street. See Section 3.8 for additional information.

C. Mitigation Measures

No mitigation measures are suggested since no adverse impacts to land uses are identified. As discussed above, potential impacts to the City's Animal Shelter are being mitigated by the redesign of the site.

D. Analysis of Significance

The proposed project will have insignificant adverse effects on existing land uses, except for the City's Animal Shelter. Impacts to this facility will be mitigated to acceptable levels through the redesign of the site and relocation of parking, workroom and administration facilities to the southern part of the property.

On balance, the road widening project will have beneficial impacts on existing and planned land uses by facilitating the implementation of the General Plan and the *Otay Valley Road Redevelopment Area Plan* (1983).

3.6 AGRICULTURE

A. Project Setting

The Otay River Valley in the general project vicinity was, in earlier years, an agricultural area. It has a coastal climate, with relatively uniform temperature and humidity, and is generally frost-free. It is well suited to agriculture, particularly truck crops and flowers. Since the early 1970s, however, industrial uses have largely consumed most of the land that was previously planted. The general project vicinity has followed the trend of the rest of the County's coastal agricultural areas, in that urban development has been replacing farmland. San Diego County lands under cultivation in 1987 totaled approximately 76,714 acres, which was 2,444 acres less that the 79,158 acres cultivated in 1986 (County of San Diego Department of Agriculture, Weights & Measures, 1987).

The U. S. Department of Agriculture's Soil Conservation Service (SCS) has developed a ranking system for soil agricultural suitability based upon such criteria as slope, soil depth and erosion hazards. This system ranks soils on a scale of I to VIII, with Class I soil being the most favorable to crop production. Classes I through V may be considered prime agricultural soils; although the final determination must include an analysis of climate.

The soils of the project area are described in Section 3.1 and are shown on Figure 3.1-2. A summary of the agricultural suitability ranking for soils potentially affected by the proposed project are summarized below.

The SbC soils which characterize a substantial portion of the project area, are rated Class II, with the main limitation for agriculture being potential erosion. These soils are typically used either for pasture, or for growing citrus, truck crops, tomatoes and flowers. Within the project area, SbC soils are located along roughly the western two-thirds of the Road both to the north and south. Much of this area is currently developed with light industrial uses. The remaining soils crossed by Otay Valley Road (OkC, TeF and Gravel Pit) are either unsuitable for agriculture and/or have been given no capability unit rating by the SCS. Those that remain undeveloped are too rocky, on steep slopes, and/or have erosion limitations.

There is only one agricultural operation left along Otay Valley Road. It belongs to Jimmie and Judy Shinohara, and is located just east of the Pacific Bell service center on SbC soils (see Figure 3.5-1). Land in the general area has been farmed by the Shinohara family since around 1905. Though tomatoes, celery and cucumbers have been grown in the past, the cost of growing tomatoes was extremely high, and today only cucumbers are grown on the 20 acres just south of Otay Valley Road (personal communication with Jimmie Shinohara, 1988).

The Shinohara land was formerly in the unincorporated portion of San Diego County. It was included in the Brandywine Industrial Park project, which encompassed land both north and south of Otay Valley Road. At the time of that project, the Shinohara land south of Otay Valley Road was under County jurisdiction. The project included annexation of the southern area to the City of Chula Vista, an amendment to the Chula Vista General Plan, a rezoning, and prezoning of the land proposed for annexation. Shinohara land south of Otay Valley Road was designated for Research and Limited Industrial uses at that time. Since then, the Brandywine Industrial Park land north of Otay Valley Road has been developed east and west of Brandywine Avenue. It is likely that the Shinohara property currently in agriculture will be developed with similar uses at some point in the future.

One of the policies of the Open Space Element of the Chula Vista General Plan states that "highly productive agricultural lands should be retained as open space, through use of the Land Conservation Act (Williamson Act) and such other means as may become available." The City recognizes in the Conservation Element of the Plan, however, that agriculture cannot compete with urban uses, and states that "at best, farming activities in the vicinity of urban areas must be viewed as interim uses." It further notes that the remaining agricultural activity in Chula Vista will eventually be eliminated unless a conscious effort is made to preserve lands for agricultural use. As the City has zoned project area cropland for Research and Limited Industrial uses, it is apparent that the City has planned for the ultimate conversion of the farmland to urban uses in this portion of the City.

B. Impacts

The proposed project will eliminate approximately 3.9 acres of land within the construction corridor that is currently in agriculture. Though only a small area, this will add to cumulative agricultural impacts, as farmland is being lost to urban development all over the County. Approximately an additional 0.5 acre of property will be temporarily unavailable during construction activities, which will be returned to the landowners following road completion.

C. Mitigation

Due to the conflicting nature of the project and current land uses, no mitigative actions are proposed.

D. Analysis of Significance

The permanent loss of 3.9 acres will contribute to the relatively significant loss of agricultural land on a cumulative (county-wide) level. The project area is not primarily agriculturally oriented, however. Though rural in nature, prevailing uses are both residential and light industrial. Reviewed independently, therefore, loss of this acreage will not create a project significant impact.

3.7 PARKS/RECREATION/OPEN SPACE

A. Project Setting

There are no public parks in the project vicinity. Along the Otay River, however, much of the open space is privately owned and may be unofficially used for informal recreation, such as hiking or wildlife observation. In addition, the hillsides north of Otay Valley Road in the eastern part of the project area are currently undeveloped and could be used for wildlife observation. The nearest public park is Valle Lindo Park, in the northwest quadrant of the intersection of Brandywine and Sequoia Street, about 0.5 mile north of the project area.

The City of Chula Vista's adopted General Plan designates a corridor along the Otay River for parks and public open space uses (see Figure 3.5-3, in Section 3.5). This corridor would begin approximately 150 feet south of Otay Valley Road in the easternmost part of the project area. In areas further west, it would start nearly 800 feet south of the road. In its narrowest areas, the corridor would extend approximately 500 feet to the south.

The Cities of Chula Vista and San Diego and the County of San Diego are currently working together as a steering committee under the auspices of the San Diego Association of Governments (SANDAG) on a proposal for an Otay Valley Regional Open Space Park. This park would encompass the land along the Otay River that the City of Chula Vista has designated for public park and open space uses in the adopted General Plan. It would also include some of the County land along the River. From I-805 to Heritage Road, the area being evaluated for the park extends southerly from Otay Valley Road and the Otay Valley industrial area. Southern limits will include at a minimum the wetlands associated with the river, but may extend as far south as the ridge of the bluffs located in the City of San Diego, encompassing the river terraces, canyon slopes and the bluff itself.

SANDAG has applied for a grant from the State of California, using funds from the license plate fund, to finance environmental and park planning studies. The goal of these efforts is to develop a plan for the long-term preservation and maintenance of Otay Valley as an open space system. It is not known at this time exactly what type of park it might be or what level of development will be appropriate, but it is anticipated that at a minimum this portion of the park will have a hiking/bicycle trail system linking other parks in the City to the planned 28 mile greenbelt.

A time-frame for acquiring land for the park has not yet been established. The County is currently identifying parcels that might be acquired with funds from Proposition 70, the open space initiative passed in June 1988. Evaluation and review by the committee of these parcels is ongoing and may be completed by summer or early fall 1989. The long-term strategy for the park will include: (1) analysis of the existing plans of the Cities and the County for consistency and resolution of potential conflicts; (2) development of a comprehensive plan for open space; (3) preparation of implementation strategies; and (4) the preparation of agreements for carrying out implementation. The park plan could be finalized by January of 1990 (Personal communication with Alexander, Cheu, and Pass, 1988; SANDAG, 1988).

The City *General Plan Update* also shows a neighborhood park south of the Otay Valley Road/Brandywine Avenue intersection. This designation is intended to show general locations for further parks, rather than site-specific areas. Although no plans have been formulated specific to this neighborhood park, parks of this type generally consist of a minimum of seven acres and have an open playfield, play equipment, and picnic tables. Occasionally, the City may also provided a designated softball field, restroom or parking facilities or security lighting.

In addition, the City has designated an area approximately 1,600 feet north of Otay Valley Road in its easternmost section for parks and public open space uses. This area is immediately north of the industrial development along Energy Way and extends westward for approximately 4,900 feet (0.9 mile). It is currently owned by the County of San Diego and is being used as a landfill. The County has expressed its intent to transfer the land to Chula Vista, and it will eventually be used for open space uses. A timeframe has not yet been established. After the landfill is closed, the soil will be left to settle. The site was previously a Class A dump site, and some areas may not be safe for public use.

B. Impacts

The proposed road widening will have no impact on the park that is proposed for the landfill site north of the project area. The project will facilitate the eventual use of the Otay River Valley as a regional park/open space system by upgrading the road that will be used to access the park and by providing adjacent bike paths.

In the short term, access to the regional park open space system could be hampered by potential biological mitigation measures. The project will eliminate approximately 3.0 acres of existing wetlands. This biological impact will be mitigated by the creation and enhancement of approximately 5.8 acres of wetlands. The newly planted vegetation will have to be monitored for three to five years. Fences and signs will be posted at the access roads so that public access is minimized, enhancing opportunities for plant growth. This could temporarily restrict access to the river park until it is established. It should be noted, however, that most or all of the mitigation wetland areas will be in areas which already have wetlands or which have had wetlands in the past. Wetlands are valuable habitat and can be degraded by public use. In fact, because of vegetation density they are also not generally conducive to public use. Thus, the implementation of the wetland mitigation may not impact use in those areas. In reality, the temporary closing off of access to the open space will probably occur before the lands are even acquired for a public park. The access restrictions are expected to be short-term insignificant impacts.

C. Mitigation

Since there are no significant impacts on park and recreation uses or open space, no mitigation is required.

D. Analysis of Significance

No significant impacts on park and recreation uses or open space will accrue from the proposed project.

3.8 TRAFFIC

The traffic report, prepared by Basmaciyan-Darnell, Inc. (BDI), is included as Appendix B in the Technical Appendices Volume.

A. Project Setting

1. Existing Traffic Volumes and Roadway Characteristics

Otay Valley Road

Otay Valley Road runs easterly from I-805 for approximately two miles, where it turns in a southerly direction to its junction with Heritage Road. West of I-805, Otay Valley Road merges with Main Street which traverses the City of Chula Vista.

Between I-805 and Oleander Avenue, Otay Valley Road is currently a four lane roadway with two travel lanes in each direction. Left turn pockets are provided at major intersections. In 1987, this segment of Otay Valley Road was carrying 12,460 average daily trips (ADT). Based upon more recent counts further east, a better estimated for current traffic volumes on Otay Valley Road are 17,370 vehicles per day (VPD).

Between Oleander Avenue and Brandywine Avenue, Otay Valley Road is currently a three lane roadway with two westbound lanes and one eastbound lane. This segment also includes a center two-way left turn lane. The last count, taken in 1987, showed this segment of Otay Valley Road carrying 9,980 VPD. Based upon more recent counts further east, an estimate of 14,890 VPD is considered more reflective of current conditions.

Between Brandywine Avenue and Maxwell Road, Otay Valley Road is a two lane roadway with one travel lane in each direction. This roadway segment also has a center two-way left turn lane. The 1989 traffic count showed this segment of Otay Valley Road carrying 12,270 VPD.

Between Maxwell Road and Nirvana Avenue, Otay Valley Road is a two lane roadway with one travel lane in each direction. The 1989 traffic count indicated that this segment carries 7,740 VPD.

Between Nirvana Avenue and the Fenton Rock Plant Driveway, Otay Valley road is a two lane roadway with one travel lane in each direction. The most recent 1989 counts indicate that this segment of the road carries 3,930 VPD.

Southeast of the ~~Fenton~~ *Nelson & Sloan* Rock Plant Drive, Otay Valley Road is a two lane roadway with one travel lane in each direction. The most recent traffic counts, taken in 1989, indicate that this segment of the roadway is carrying 3,430 VPD.

Connecting Streets

Melrose Avenue is a Class II two lane collector. At its signalized intersection with Otay Valley Road, Melrose Avenue has a third lane striped for left turns. In 1987, Melrose Avenue was carrying 2,760 VPD just north of Otay Valley Road.

Oleander Avenue is a Class II two lane collector which carries 1,730 VPD just north of Otay Valley Road. It is controlled by a stop sign at its T-intersection with Otay Valley Road, and some on-street parking is allowed.

Brandywine Avenue is a Class III three lane collector carrying approximately 2,160 VPD just north of Otay Valley Road. it is controlled by a stop sign at its T-intersection with Otay Valley Road, and on-street parking is allowed.

Maxwell Road is a Class II three lane collector with two northbound lanes and one southbound lane. It is controlled by a stop sign at its T-intersection with Otay Valley Road, and on-street parking is not allowed.

Nirvana Avenue is a Class III two lane collector roadway with on-street parking on both sides. It is controlled by a stop sign at its T-intersection with Otay Valley Road.

Evaluation of Existing Daily Traffic Volumes

Table 3.8-1 presents a comparison of the existing traffic volumes shown on Figure 3.8-1 and the City's recommended daily traffic volumes for the roadways (per functional classification). Excerpts from the City of Chula Vista's draft Circulation Element are included in the Traffic Appendix, Section A.

From Table 3.8-1, it is evident that some of the roadway segments within the study area are carrying daily traffic volumes which exceed the City's recommended maximums for their classifications. This is true for the segments between Oleander Avenue and Nirvana Avenue.

The City of Chula Vista staff noted some concern about the I-805 ramp terminals (both southbound and northbound off-ramps), possibly needing signalization under existing conditions. In examining the existing traffic volumes on the I-805 ramps and Otay Valley Road, it was determined that these intersections probably warrant signalization. The signal warrant worksheets for the ramp terminal intersections are included in the Traffic Appendix B.

B. Impacts

Daily traffic volumes for the build-out network forecast were provided by the most recent run of the City's Scenario 4 General Plan Update forecast (SANDAG 11/88). Figure 3.8-2 presents the daily traffic volumes from the build-out network forecast.

TABLE 3.8-1

COMPARISON OF EXISTING DAILY TRAFFIC VOLUMES
AND CITY'S RECOMMENDED MAXIMUM
DAILY TRAFFIC VOLUMES

Street Segment	Classification(a)	Existing Daily Volume	Recommended Approxim. LOS C	Exist/ Rec.
Otay Valley Rd. West of I-805	4M	18,890	30,000	0.63
I-805 to Oleander Ave.	4C (c)	17,370	22,000	0.57
Oleander Ave. to Brandywine Ave.	3C (d)	14,890	12,000	0.83
Brandywine Ave. to Maxwell Rd.	2C (d)	12,270	12,000	0.61
Maxwell Rd. to Nirvana Ave.	2C (d)	7,740	12,000	0.50
Nirvana Ave. to Rock Plant Driveway	2C (e)	3,930	7,500	0.52
South of ~~Fenton~~ Rock Plant Driveway	2C (e)	3,430	7,500	0.46
Brandywine Ave.: N. of Otay Valley Rd.	3C (e)	2,160	7,500	0.29
Oleander Ave.: N. of Otay Valley Rd.	2C (e)	1,730	7,500	0.23
Melrose Ave.: N. of Otay Valley Rd.	2C (e)	2,760	7,500	0.37

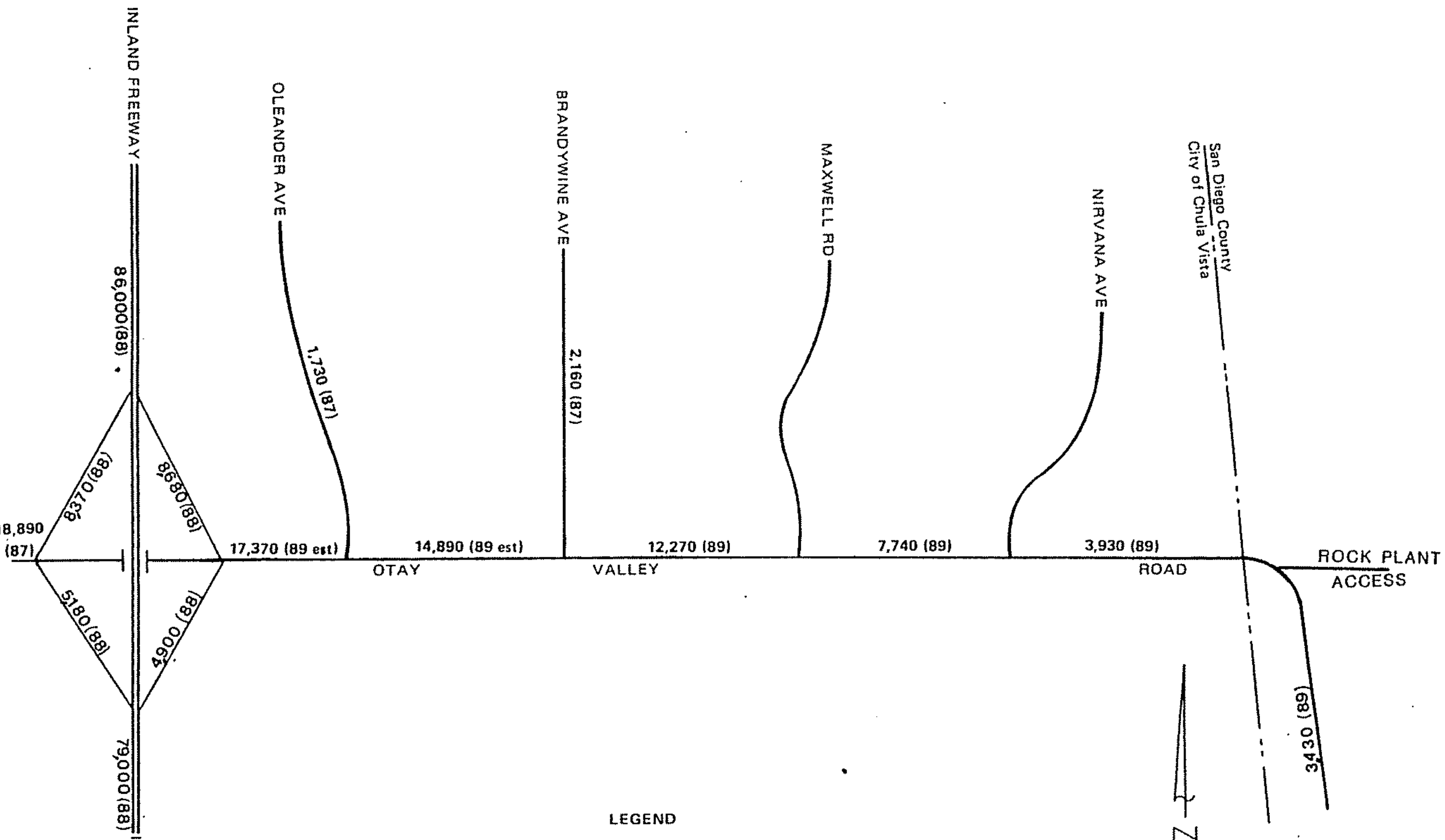
(a) # = Denotes number of lanes
M = Major road
C = Collector

(b) Approximate LOC C from Table 2-1 of the City of Chula Vista's Draft Circulation Element (11/88) (See Traffic Appendix B)

(c) Class III Collector

(d) Class II Collector

(e) Calss I Collector



LEGEND

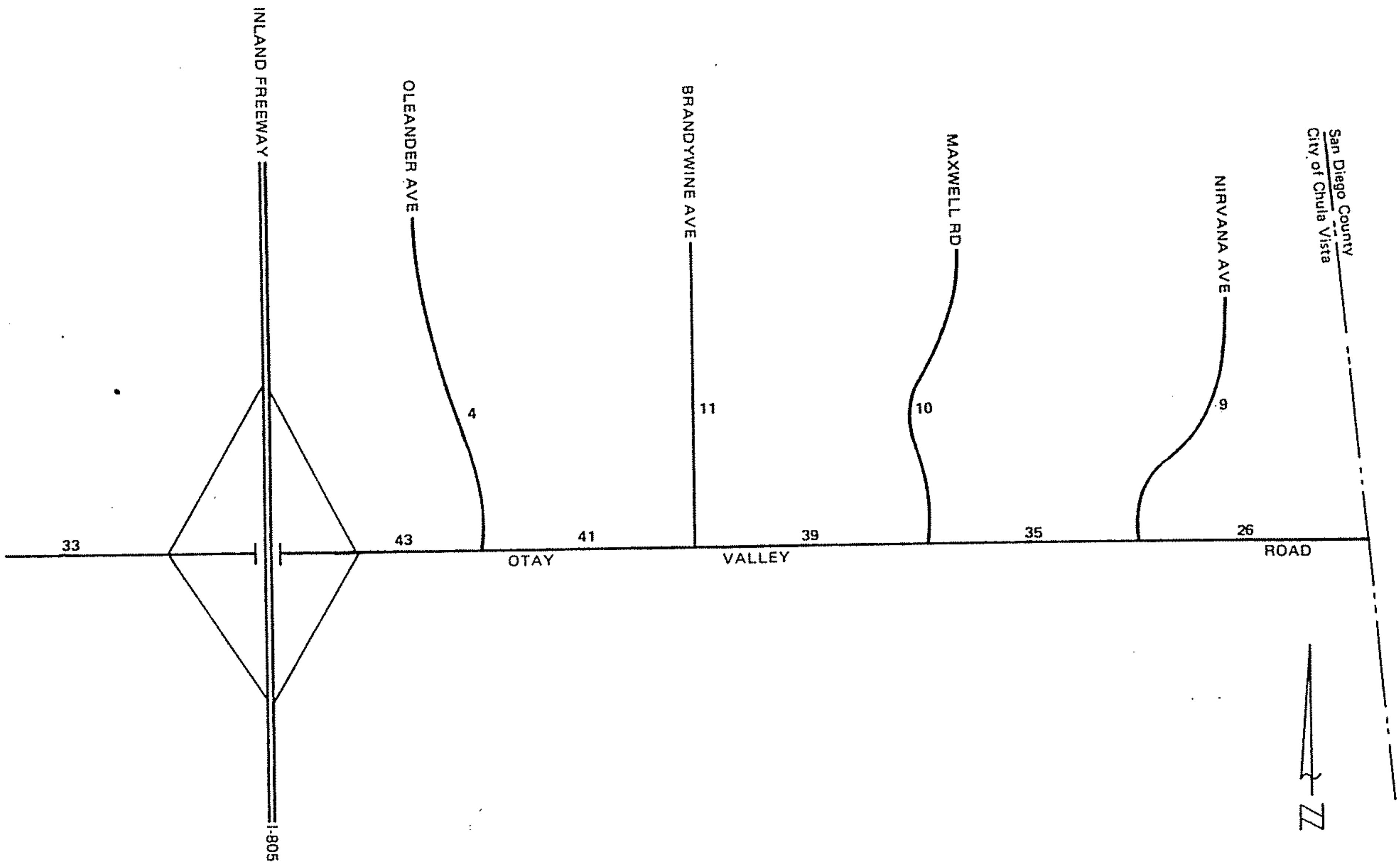
(XX) = YEAR OF COUNT
est = ESTIMATED

SOURCES:
CALTRANS
CITY OF CHULA VISTA

BASMACIYAN-DARNELL, INC

Figure 3.8-1

EXISTING DAILY TRAFFIC VOLUMES



SOURCE: CITY OF CHULA VISTA

BASMACIYAN-DARNELL, INC.

Figure 3.8-2

BUILD-OUT NETWORK FORECAST DAILY TRAFFIC VOLUMES

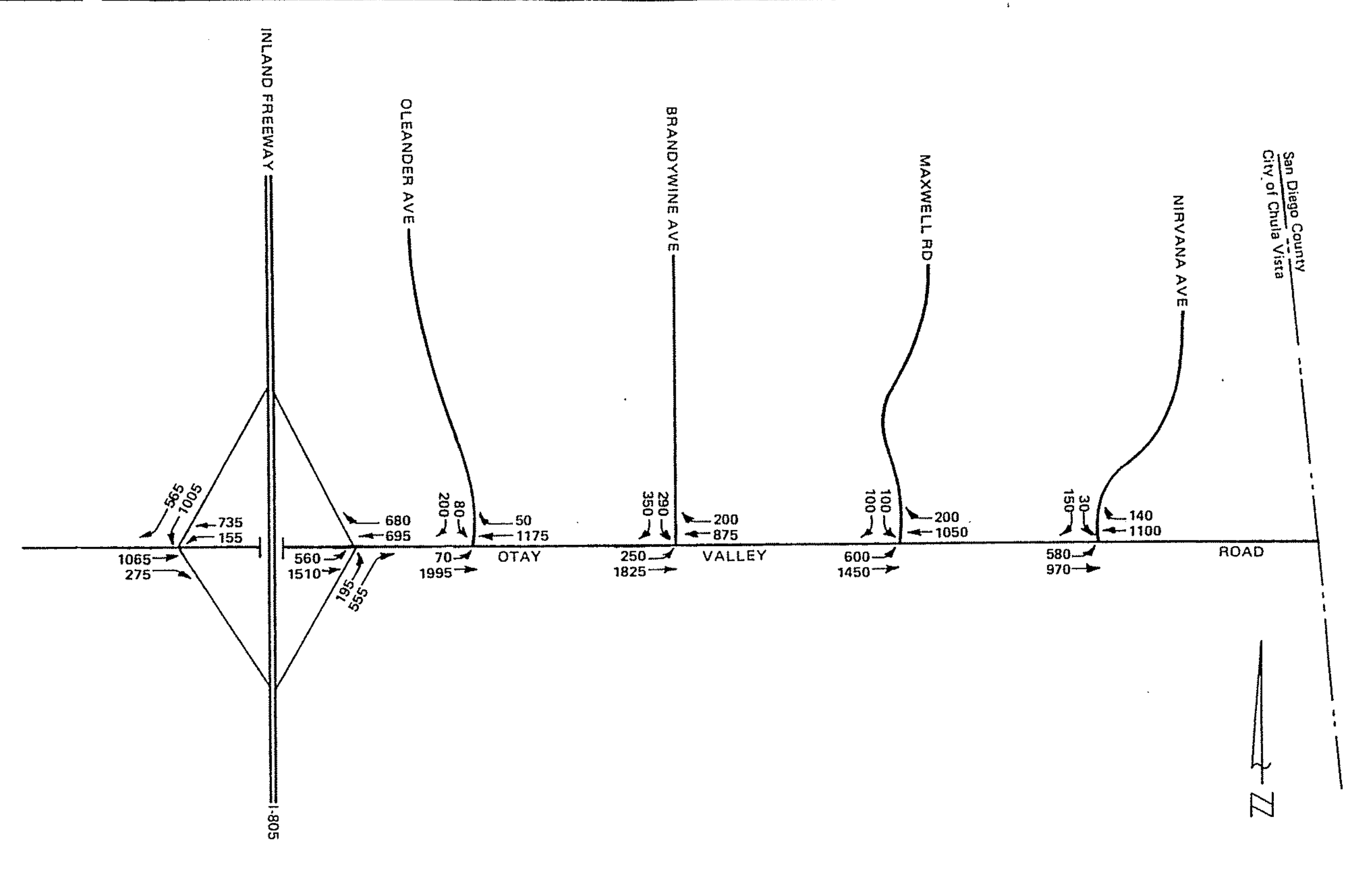


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Figure 3.8-3

BUILD-OUT NETWORK FORECAST
MORNING PEAK HOUR TURNING MOVEMENTS

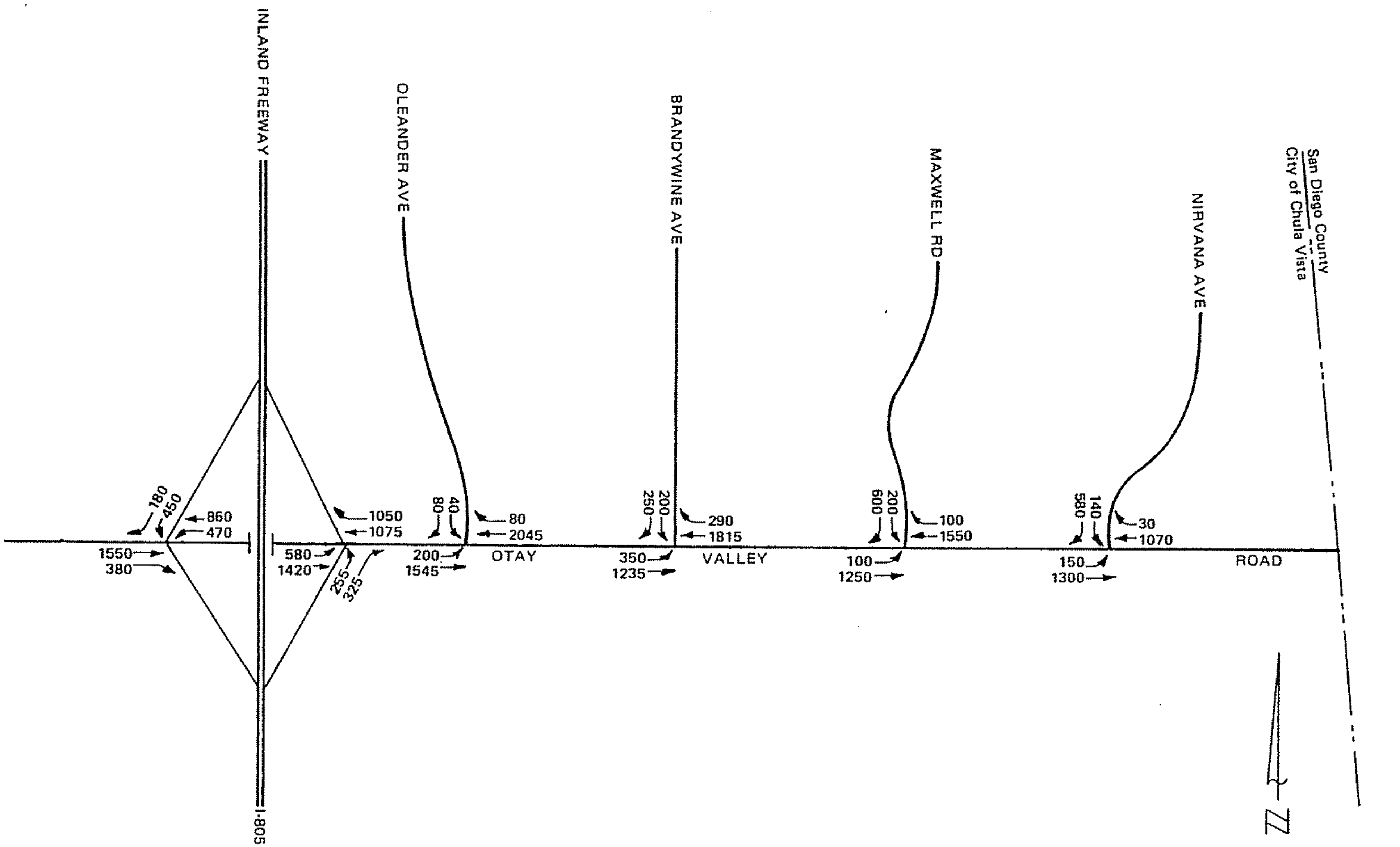

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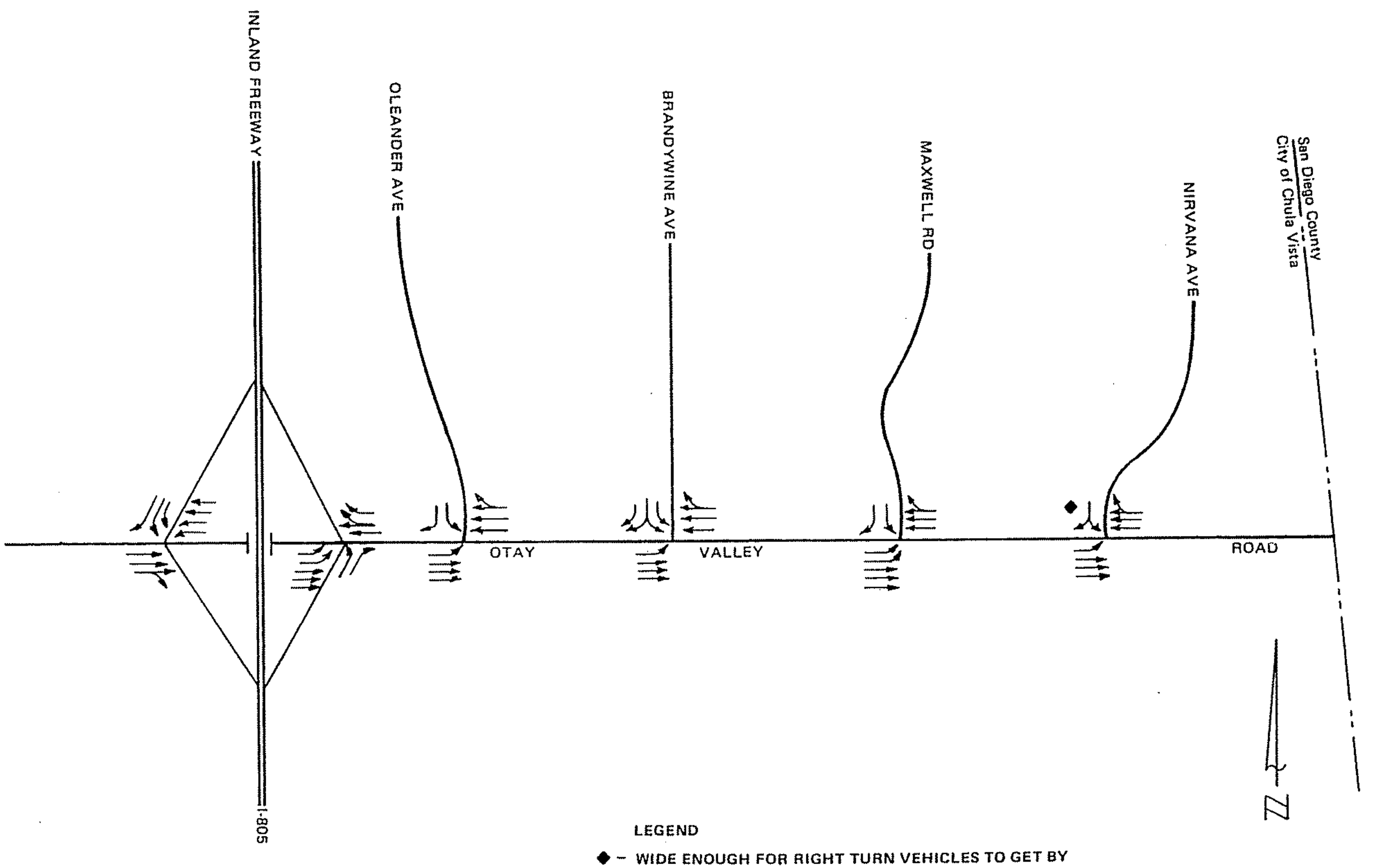
Figure 3.8-4

BUILD-OUT NETWORK FORECAST
AFTERNOON PEAK HOUR TURNING MOVEMENTS



BASMACIYAN-DARNELL, INC.

Figure 3.8-5

LANE CONFIGURATIONS ASSUMED FOR BUILD-OUT NETWORK FORECAST ICU CALCULATIONS

1. Phase II - Evaluation of Build-Out Network Forecast Daily Traffic Volumes

Table 3.8-2 presents a comparison of the build-out network forecast daily traffic volumes shown on Figure 3.8-2 and the City's recommended daily volumes for the roadways (per build-out network functional classification).

From Table 3.8-2, it is evident that Otay Valley Road will be carrying daily traffic volumes exceeding the City's recommended maximum for its classification between its I-805 interchange and Brandywine Avenue. It should also be noted that Otay Valley Road is very close to recommended maximum for its classification between Brandywine Avenue and Maxwell Road.

In addition, Nirvana Avenue, just north of Otay Valley Road, is projected as carrying daily traffic volumes exceeding the City's recommended maximum for its classification.

2. Signal Warrant Analyses

The intersections of Oleander Avenue/Otay Valley Road, Brandywine Avenue/ Otay Valley Road, Maxwell Road/Otay Valley Road, and Nirvana Avenue/Otay Valley Road were analyzed to determine the likelihood of signals being warranted at these locations under build-out network conditions. The Caltrans Figure 9-1C Traffic Signal Warrant (Based on Estimated Average Daily Traffic) was used for the warrant analyses. Copies of the signal warrant worksheets for these intersections are included in the Traffic Appendix B, Section C, which shows that signals are likely to be warranted at all of these intersections under build-out network conditions. The signal at the intersection of Otay Valley Road and Nirvana Avenue will be installed during road construction. The remainder of the signals will be installed as the City Engineer determines appropriate.

3. Evaluation of Build-Out Network Peak Hour Traffic at Key Intersections

Further analysis of the key intersections was conducted because the following intersections warranted signalization:

I-805 Southbound Ramp Terminal/Otay Valley Road
I-805 Northbound Ramp Terminal/Otay Valley Road
Oleander Avenue/Otay Valley Road

TABLE 3.8-2

COMPARISON OF BUILD-OUT NETWORK FORECAST
DAILY TRAFFIC VOLUMES
AND CITY'S RECOMMENDED MAXIMUM
DAILY TRAFFIC VOLUMES

Street Segment	Classification(a)	Year 2005 Daily Volume	Recommended Maximum(b)	Exist/ Rec.
Otay Valley Rd.				
West of I-805	4M	33,000	30,000	1.10
I-805 to Oleander Ave.	6M	43,000	40,000	1.08
Oleander Ave. to Brandywine Ave.	6M	41,000	40,000	1.03
Brandywine Ave. to Maxwell Rd.	6M	39,000	40,000	0.98
Maxwell Rd. to Nirvana Ave.	6M	35,000	40,000	0.88
Nirvana Ave. to ~~Fenton~~ Rock Plant Driveway	6M	26,000	40,000	0.65
Nirvana Ave.:				
N. of Otay Valley Rd.	2C (c)	9,000	7,500	1.20
Maxwell Rd.:				
N. of Otay Valley Rd.	3C (d)	10,000	12,000	0.83
Brandywine Ave.:				
N. of Otay Valley Rd	4C	11,000	22,000	0.50
Oleander Ave.:				
N. of Otay Valley Rd.	2C (c)	4,000	7,500	0.53
Melrose Ave.:				
N. of Otay Valley Rd.	2C (c)	5,000	7,500	0.67

(a) # = Denotes number of lanes
M = Major road
C = Collector
(b) From Table 2-1 of the City of Chula Vista's draft Circulation Element (11/88) (See Traffic Appendix Section A)
(c) Class III Collector
(d) Class II Collector

Brandywine Avenue/Otay Valley Road
Maxwell Road/Otay Valley Road
Nirvana Avenue/Otay Valley Road

The analyses of these signalized intersections were performed utilizing the Intersection Capacity Utilization methodology, lane capacities of 1,500 and 1,700 (for turn lanes and through lanes, respectively), and 0.10 as the minimum volume/capacity (V/C) for the through or left turn movements. The ICU value relates to the driving conditions using a graded scale for level of service (A through F). A table which relates ICU value to level of service (LOS) and driving conditions is included in the Traffic Appendix B, Section D.

In order to evaluate the future peak hour conditions at the intersections, the future peak hour turning movements were estimated based on the build-out network forecast daily volumes provided by the City of Chula Vista staff, taken from the Scenario 4 General Plan Forecast Update (SANDAG, 11/88). The afternoon peak hour volumes were assumed to represent approximately 9 percent of the daily volume, and the morning peak hour volumes to represent approximately 8 percent of the daily volume on Otay Valley Road. For the cross streets, the morning and afternoon peak hour volumes represent approximately 10 percent of the daily volume. Figures 3.8-3 and 3.8-4, respectively, present the estimated build-out network morning and afternoon peak hour turning movements.

Figure 3.8-5 illustrates the lane configurations assumed for the intersections and used in the ICU calculations. These lane assumptions are based on the build-out network forecast classifications of the roadway and the turn lanes necessary to achieve future levels of service (LOS) of C or better at intersections of city streets and LOS D or better at freeway ramp terminals. The ICU analysis worksheets are included in the Traffic Appendix Section D, and a summary of the results is included in Table 3.8-3.

From Table 3.8-3, it is apparent that acceptable levels of service can be achieved during both morning and afternoon peak hours at all intersections assuming the lane configurations on Figure 3.8-5 are implemented.

TABLE 3.8-3

BUILD-OUT NETWORK FORECAST
INTERSECTION PEAK HOUR LEVELS OF SERVICE

INTERSECTION	AM PEAK ICU	AM PEAK LOS (a)	PM PEAK ICU	PM PEAK LOS (a)
Otay Valley Rd./ I-805 SB Ramp	0.70	B	0.69	B
Otay Valley Rd./ I-805 NB Ramp	0.71	C	0.81	D
Otay Valley Rd./ Oleander Ave.	0.49	A	0.65	B
Otay Valley Rd./ Brandywine Ave.	0.51	A	0.75	C
Otay Valley Rd./ Maxwell Rd.	0.55	C	0.73	C
Otay Valley Rd./ Nirvana Ave.	0.73	C	0.59	A

(a) See Traffic Appendix B Section D

4. Phase I Impacts

This section of the report assesses the Phase I Plan, east of Nirvana. Assessments were made of 1) the estimated interim traffic conditions east of Nirvana Avenue and 2) the estimated interim traffic conditions at the intersection of Otay Valley Road and the Rock Plant Access Road. Certain characteristics of the roadway and its usage are pertinent to this analysis. Such considerations include the following:

- At the curve, there is a private road (runs east/west) which intersects Otay Valley Road and forms the east leg of the intersection. There is a stop sign control for vehicles westbound on the access road at Otay Valley Road. This private road accesses the ~~Fenton Materials~~ rock plant *operated by Nelson & Sloan* and contributes a number of heavy trucks to Otay Valley Road to/from the west as well as to/from the south.

- In addition, there are several auto dismantling yards to the south along Otay Valley Road/Heritage Road which also contribute heavy trucks.

- Both of these types of uses are likely to contribute different amounts of traffic on any given day (they are difficult to predict in terms of traffic generation). Also, the rock plant's distribution of hauling may be changeable dependent upon area-wide locations of construction sites.

- Daily traffic counts (road tube machine counts) were taken by the City in March of this year. The total vehicles counted by the road tube is inflated due to the fairly large number of heavy trucks. This is because road tubes count axles and divide by two per vehicle, so that multi-axle trucks count as more than one vehicle.

- BDI took turning movement counts (counting heavy trucks separately) at the intersection of Otay Valley Road/rock plant access road between the hours of 6:30 AM and 5:30 PM. The morning and afternoon counts were taken in March and the mid-day counts were taken in April of this year.

- During the turning movement data collection, field personnel noted a large number of vehicles on Otay Valley Road in this section had Mexican license plates. Although it would seem more expedient for vehicles travelling between Mexico and the U.S.A. using the Otay Mesa border crossing to use area freeways, some apparently chose to use Otay Valley Road instead. This too may be variable daily or seasonally.

- In examining the road tube counts, it is evident that traffic on Otay Valley Road between Nirvana Avenue and the CVCL is fairly evenly distributed beginning about 10:30 AM to about 3:30 PM (in terms of the number of vehicles in each 15 minute period) and it is during this period that hourly traffic is between nine and ten percent of the total daily. Only about five percent of the daily traffic occurs during the morning peak hour that falls within the "commuter peak period", generally considered to be between 7:00 and 9:00 AM. About eight percent of the daily traffic occurs during the afternoon peak hour that falls within the commuter peak period between 4:00 and 6:00 PM.

  Truck traffic, as a percentage of the total traffic on the roadway segment, varies from three percent to nearly thirty percent. During the morning commuter peak hour (occurring from 8:00 to 9:00 AM), 27 percent of the vehicles are heavy trucks. During the afternoon commuter peak hour (occurring from 4:00 to 5:00 PM), four percent of the vehicles are heavy trucks. During the peak hour of traffic on the street (highest hour of the day, from 11:00 AM to 12:00 PM), six percent of the vehicles are heavy trucks. All three of these time periods were evaluated in this analysis.

Estimated Interim Traffic Conditions - Segment East of Nirvana Avenue

The short term future traffic on Otay Valley Road east of Nirvana Avenue was estimated based upon the following assumptions:

- Yearly growth in traffic on the segment would be similar to that which occurred between the last count made for the segment (March 1987) and the latest count made for the segment (March 1989). Both machine counts gave fifteen minute traffic information so that several time periods could be compared.

  The growth assumption used was a 22 percent per year rate of increase. Daily, morning and afternoon commuter peak hours and the "peak of the street" traffic volume increases were considered in arriving at the rate of increase (calculations are included in Appendix B. Section E).

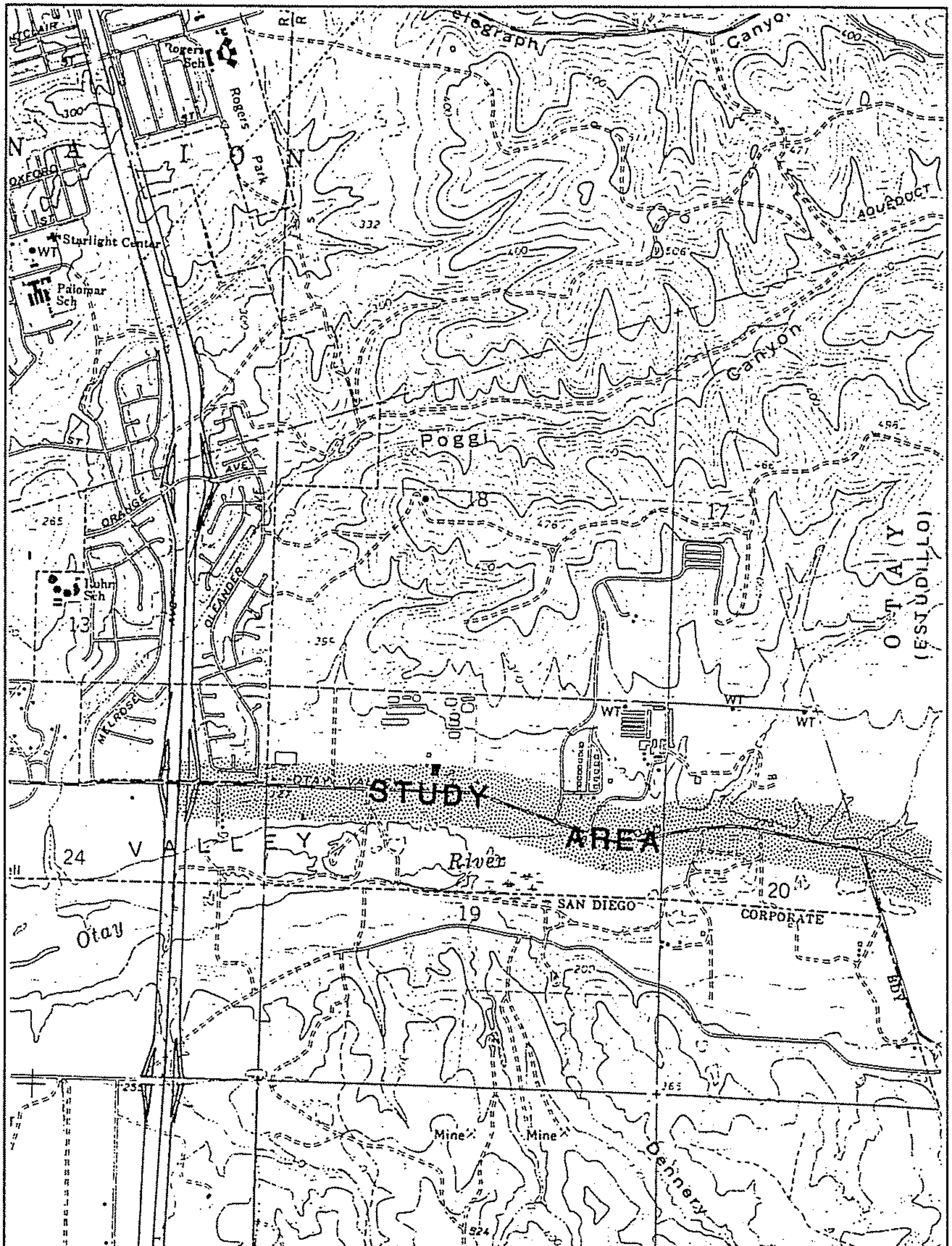


FIGURE 1. PROJECT VICINITY MAP
USGS 7.5' Imperial Beach Quadrangle

N

1" = 2000'

- o The traffic volumes used were those given by the machine counts so that the total vehicles, as noted previously, are overstated.

In analyzing the peak hour conditions and estimating the time period for which the two lane segment would be operating satisfactorily, the following criteria and assumptions were used:

- o Existing directional splits and peak hour factors for the traffic would apply to the short term future traffic as well.

- o Existing truck percentages would apply to the short term future traffic. This is a conservative approach since presumably as traffic increases, the percentage that is trucks would decrease.

- o Level of service (LOS) D is acceptable for peak hour conditions on the roadway segment.

- o The 1985 Highway Capacity Manual (HCM) two lane rural highway analysis was used to evaluate the existing conditions for the two lane section east of Nirvana Avenue and to test increased amounts of traffic (to not exceed LOS D). This methodology uses peak hour traffic and essentially is based on the lower speeds and delay which occur when vehicles wishing to travel at posted speeds can not pass slower traveling vehicles (affected by no-passing zones, truck traffic, and grades).

This analysis showed that peak hourly traffic can be accommodated on the two lane section east of Nirvana Avenue without exceeding LOS D for approximately six years (peak hourly volume of approximately 1,300 vehicles). The HCM calculation worksheets are included in the Traffic Appendix, Section E.

<u>Estimated Interim Traffic Conditions - Intersection of Otay Valley Road/Rock Plant Access Road</u>

Another consideration is the intersection conditions where the road turns south and the rock plant access road intersects Otay Valley Road.

This unsignalized intersection was analyzed using the NCAP Intersection Capacity Analysis Package (based on Transportation Research Board Procedures) and assuming short term future peak hourly traffic volumes consistent with those estimated for the west leg (segment east of Nirvana Avenue) in the segment analysis. It was also assumed that growth in traffic to/from the rock plant would be at a lesser rate than the overall growth assumption used. Therefore, existing turning movements to/from the rock plant were increased using a five percent per year rate of increase. The NCAP worksheets are also included in the Traffic Appendix, Section E. These indicate that under the assumption of six years' growth, the level of service for the vehicles leaving the rock plant would be LOS E during the "peak of the street." For a five year growth assumption, the level of service for the vehicles leaving the rock plant would be LOS D during the "peak of the street," which would be acceptable.

The morning and afternoon commuter peak hour analyses of the intersection showed that six years' growth in traffic could be accommodated. The segment analysis similarly indicated that six years' growth could be accommodated. However, the overall constraint would be "the peak of the street" conditions at the intersection, which indicate that five years' growth could be accommodated before the intersection would need to be improved further. Such improvements would be likely to involve resolution of the intersection alignment in conjunction with further widening efforts (especially the future alignment of Paseo Ranchero).

The five year peak hourly volume on the segment between Nirvana Avenue and the rock plant access driveway would be approximately 1,100 vehicles. The daily volume in five years, at the assumed growth rate of 22 percent per year, would be approximately 10,600 VPD.

C. <u>Mitigation</u>

While the widening of Otay Valley Road itself will not directly increase traffic, significant traffic impacts are cited to occur along Otay Valley Road due to long-term development and population growth. The following recommendations are made to reduce potentially significant impacts to acceptable levels:

- o Given the existing conditions, the ramp terminals at I-805 and Otay Valley Road warrant signals at this time. The City of Chula Vista will request that Caltrans further evaluate signalization needs and timing.

- o The build-out network forecast shows daily traffic volumes on Otay Valley Road west of I-805, on Otay Valley Road between I-805 and Brandywine Avenue, and on Nirvana Avenue just north of Otay Valley Road will exceed the City's recommended maximum daily traffic for their circulation element classifications. Signal warrant analyses performed for the intersections of Otay Valley Road/ Oleander Avenue, Otay Valley Road/Brandywine Avenue, Otay Valley Road/ Maxwell Road, and Otay Valley Road/Nirvana Avenue also indicate that all four intersections will likely warrant signalization with build-out network forecast daily traffic volumes. Mitigation measures include the installation of signals as determined appropriate by the City Engineers, in order to meet the City's Threshold Standard. With signalization and the lane assumptions shown on Figure 3.8-5, all intersections would be expected to operate at acceptable LOS.

- o Maxwell Road requires restriping at its intersection with Otay Valley Road in order to maintain LOS C for future peak hour traffic. Maxwell Road would need to be restriped to provide a southbound left turn lane at the intersection with Otay Valley Road.

- o The Phase 1 construction will widen Otay Valley Road from I-805 east to a point just past Nirvana Avenue where it would remain a two lane road in the interim. Estimates made in this traffic study suggest that with some improvements to the intersection of Otay Valley Road/Rock Plant Access (depicted on 3.8-6), the two lane roadway would need to be improved after about five years. Such estimates are fallible, and it is recommended that the traffic conditions be monitored to implement improvements at an appropriate time. Further improvements to Otay Valley Road east of Nirvana Avenue will likely require the resolution of the intersection realignment and improvement or the south leg of the intersection as well. The south leg is currently Otay Valley Road. Upon realignment it will be the future Paseo Ranchero.

D. <u>Analysis of Significance</u>

While build-out forecasts indicate that daily traffic volumes on project area roads will exceed recommended maximums for their classifications and that four intersections will require signals, as all intersections are anticipated to operate at

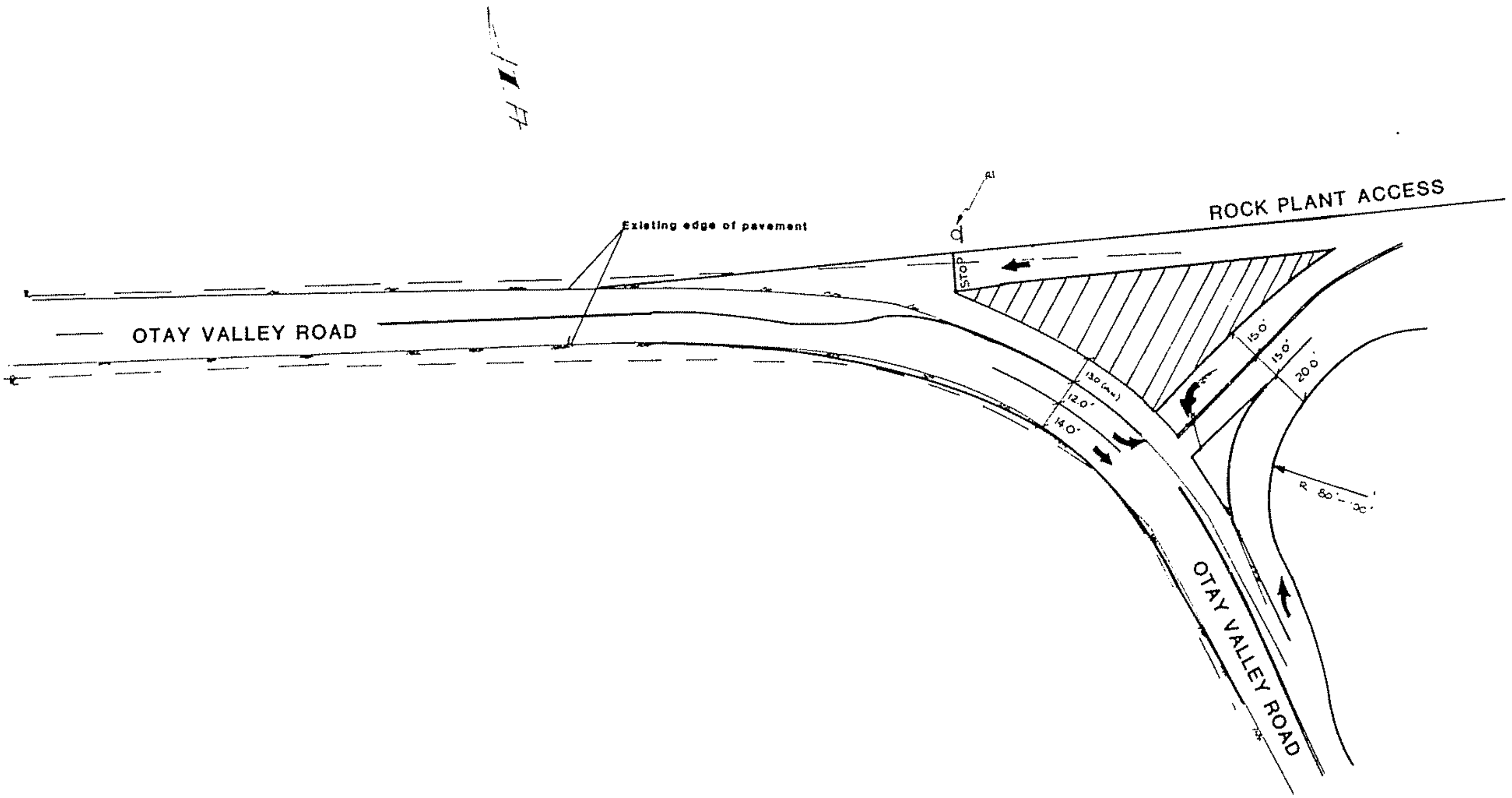


Figure 3.8-6

SCHEMATIC OF SUGGESTED SHORT TERM INTERSECTION IMPROVEMENTS
OTAY VALLEY ROAD/ROCK PLANT ACCESS

acceptable LOS with signalization and lane assumptions cited above, traffic impacts resulting from project construction are not considered to be significant.

3.9 ARCHAEOLOGY/HISTORY/PALEONTOLOGY

A. Project Setting

1. Archaeology/History

The Archaeology/History survey was conducted by Brian F. Smith and Associates. The Cultural Resources Resources Report, including a table showing sites within project vicinity and associated site forms, are located in Appendix C.

As noted in preceding sections, the majority of the project area has been disturbed by modern uses. These have included the construction of Otay Valley Road and various residential streets, the development of various commercial lots and businesses, cultivation, and flood damage resulting from the collapse of the Otay Dam in 1916. The flood plain has also been impacted by gravel mining, which has altered the river course and changed vegetational patterns. Perhaps the only area still undisturbed is the bluff which lies to the north of Otay Valley Road. Because the largest percentage of the project coincides with the present road location, the study area holds only low potential for the existence of intact cultural resources.

The prehistoric setting of Otay Valley is not difficult to imagine or reconstruct, since several areas within the valley, especially in the eastern area, contain elements of the natural topography with native vegetation. The valley, today as well as in the relatively recent prehistoric past, is characterized by gentle slopes which parallel the river course with steeper slopes and terraces along the valley borders. The flood plain must have been very fertile, as several very large sites are found in an almost continuous sequence of occupation locations; characterized by a wide selection of lithic tools typical of a food collecting subsistence pattern. Though the exact nature of the subsistence pattern practiced 2,000 to 6,000 years ago in Otay Valley has not as yet been established by archaeologists, the lack of projectile points or other hunting tools suggests that the subsistence pattern of the occupants of the valley was focused upon foraging. Prehistoric occupation of the area would have been based upon this ideal natural setting, which included a constant source of water and fertile soil to support the growth of lush vegetation.

As part of the cultural resources evaluation for the Otay Valley Road widening project, archaeological site files record searches were conducted at the San Diego Museum of Man and San Diego State University, and a brief literature search was performed. As noted above, the results of the record searches are provided in an appendix to this report. The searches indicated that several cultural resources were present in the near vicinity of the project and approximately 40 sites have been recorded within a one-mile radius.

The study of the archaeological record of adjacent sites reveals a number of pertinent trends. First, there are few indications that any of the sites are affiliated with the Late Prehistoric component, the Kumeyaay Indians. The low frequency of pottery (prehistoric ceramics), time sensitive artifacts (such as small, triangular projectile points of the Kumeyaay Indians), and late period dates at sites located near the project suggest that these sites are mainly attributable to the La Jolla Complex period of occupation, dating to between 6,000 and 3,000 years before the present. It is also noteworthy that none of the site records include descriptions of artifacts which would be conclusively associated with the San Dieguito Complex. Sites SDi-10471 and SDi-10472, which were recorded by Fink in 1973 as sites of the San Dieguito Complex, actually appear to be similar to most of the other sites in the area which are attributed to the La Jolla Complex.

Several types of artifacts used by the La Jolla and the Kumeyaay Indians are very similar in appearance, such as manos, metates, scrapers and hammerstones, because the lithic production and use of these tools were common throughout the Southwest. The artifacts which are not common to both include pottery, which was not introduced to the coast until 900 to 1,000 years ago, and projectile points. The discovery of a potsherd at the site does not imply that the site was used solely by the Kumeyaay Indians, only that the Kumeyaay also used the site.

The sites in the vicinity of the project are unusually similar in characteristics. Nearly all consist of widely dispersed scatters of well-made scrapers, choppers, cores, utilized/retouched flakes, and associated flakes. Very few projectile points or lanceolate blades (bifaces) have been reported. Occasionally, scatters were more dense and were associated with midden deposits, reflecting locations of aggregation. The continuity of the settlement/subsistence pattern represented by the sites suggests that this area, and perhaps a much larger one throughout Otay Mesa, was a particularly rich food resource area. The sparcity of shell suggests that the area was a focus of vegetative food collecting, probably associated with seasonal shifts in the subsistence pattern, as demonstrated by Smith (1987).

Within the actual road alignment, three sites were previously identified. Two of these are SDi-8065 and SDi-8912, which are recorded as widespread, prehistoric artifact scatters. The third site is a recorded but unregistered historic resource associated with the Deneri Ranch. At the time this site was recorded (PRC Engineering 1980), it was projected to have been the remains of the Deneri Winery. During the survey of the current project, the descriptions of these three sites were found to be correct. None of the sites has been tested for significance or critically mapped. The sites do extend further to the south of the survey area, toward the river course.

The area of the present study has been included in the areas covered by three previous EIRs. These were, "*Draft Environmental Impact Report - Brandywine Industrial Park*" (1980), compiled by PRC Toups Corporation, "*Records and Archival Searches for Cultural Resources Located in the Otay General Plan Amendment Area*" (1982), prepared by Susan Hector for RECON, and "*Final Environmental Impact Report - Otay Valley Road South General Plan Amendment*" (1984), prepared by PRC Engineering, Inc. The previous EIR documents noted the existence of the three sites within the area of the current road widening project. It is possible that the two prehistoric sites may be associated with imported fill (PRC Engineering, Inc., 1984); however, this association could not be established during the present study. The historic site recorded by (Scientific Resources Survey, Inc., for PRC Engineering, Inc.), as a portion of the Deneri Winery was considered to be potentially eligible for nomination to the National Register of Historic Places. Elements of the winery identified within the current project area were noted as consisting of several concrete foundations.

The survey for the current project was accomplished through the implementation of a linear transect methodology. Transects, or survey paths, were aligned from east to west at ten-meter intervals parallel to the course of Otay Valley Road. The use of rigidly aligned and spaced survey transects ensured a thorough coverage of the study area. In the northeastern third of the project area, where the flood plain gives way to the steep slopes of the terraces on the northern edge of Otay Valley, the use of the linear transect technique was impractical as steepness of the slopes prevented the implementation of a controlled reconnaissance. Therefore, in the areas of steep, rugged terrain, the survey process was altered to consist of an intuitive search of potentially sensitive areas. The use of this intuitive process did not compromise the integrity of the survey, as all of the nearly level and moderate slopes (those most likely to have been utilized prehistorically) were closely inspected, and only the steepest areas (i.e., those of 15% to 40% slopes) were avoided.

Five prehistoric sites and one historic site were located as a result of survey. Four of these were portions of previously documented sites, while two others are new discoveries. These sites are:

(1)	SDi-8065	A widely dispersed scatter of artifacts with a possible subsurface deposits.
(2)	SDi-8065A	A small concentration of surface artifacts, with a possible subsurface deposit. Included within SDi-8065 in the record searches, the field survey revealed it to be a separate site.
(3)	SDi-8912	A widely dispersed artifact scatter with occasional clustering of cultural materials.
(4)	SDi-1145 OVR-Temp 1	A light to moderate surface scatter along a bluff edge.
(5)	SDi-1146 OVR-Temp 2	A very light surface scatter on bluffs located north of Otay Valley Road.
(6)	OVR-Historic 1	The remains of the Deneri Winery.

All of these sites conform to the occupation pattern described in the previous section; typically including widespread scatters of artifacts that correspond to the collection and processing of food materials from plants and trees present along the valley floor.

2. Paleontology

The paleontology section was prepared by KEA based on geological maps, published documents and a review of available EIR documents relevant to the study area. Mr. Thomas A. Demere of PaleoServices and the Natural History Museum reviewed this section for accuracy.

The Otay Valley Road Widening Project is located in the floodplain of the Otay River and against the northern slopes of the river valley. Elevations range from 80 feet above mean sea level (MSL) to approximately 200 feet above MSL. In the eastern portion of the road length, where this change in elevation is abrupt rather than gradually sloping, erosion has carved a series of small south trending canyons into the slope north of the road. Long term cultivation, shrub and wetlands vegetation, and alluvium and colluvium combine to make it difficult to view the underlying bedrock geology throughout the length of the project.

As summarized on the relevant published geologic maps (Kuper 1977, Kennedy and Tan 1977) the general geology of the project site consists of a "layer cake" series of marine and terrestrial sedimentary formations. From oldest to youngest this geologic series consists of Eocene-aged (approximately 48 million years BP) marine sandstones of the Mission Valley Formation Pliocene-aged (approximately 3 million years BP) marine sandstones of the San Diego Formation, Pleistocene-aged (approximately 10,000 - 120,000 years BP) steam-terrace deposits and recent (Holocene-aged) alluvium and slopewash. In general, the pre-Holocene deposits occur along the northern border of the project right-of-way and the Holocene deposits occur along the southern border. These geologic categories are important from a planning standpoint as the distribution of paleontological resources (fossils) in an area is directly correlated with the distribution of the geologic layers within which the fossils are buried.

The San Diego Formation occurs at the extreme western end of the study area near the intersection of Otay Valley Road and I-805. Here San Diego Formation deposits lie just north of Otay Valley Road. The San Diego Formation (sandstone part) is marine and may contain locally rich fossiliferous segments with mollusks, Foraminifera and marine mammals. As noted in the Otay Rio Business Park EIR (Demere 1987), it has produced large and well-preserved assemblages of fossil marine vertebrates including sharks, rays, bony fish, sea birds, fur seals, walruses, dolphins, baleen whales, and sea cows. Demere (1984) has also reported on the occurrences of fossiliferous exposures of the San Diego Formation at two sites within approximately 1.75 miles of the road alignment (T185, R1W, S31). One of these sites has produced remains of shark, ray, bony fish, albatross, fur seal, dolphin and baleen whale. The Mission Valley Formation is abutted on the north side of and then crossed by the road in the eastern approximate two-fifths of the study corridor. This formation is known to contain a rich Eocene marine molluscan fauna as well as well-preserved remains of various types of terrestrial mammals. The Pleistocene and Holocene deposits consist of poorly consolidated or unconsolidated sand, silt, gravel and cobble-sized particles derived from surrounding formations.

B. Impacts

1. Archaeology/History

The proposed road widening right-of-way and construction zone will physically affect three of the sites identified in the record search and survey. These include: SDi-8065, SDi-8065A and SDi-8912. The consideration of potential impacts to cultural resources due to the widening of Otay Valley Road must be preceded by an evaluation of the significance of the individual archaeological sites. Through an evaluation of significance, the research value and regional importance of a site is established, and from this information the significance of the impacts from the proposed action can be addressed. This evaluation of archaeological resources is required by CEQA (Public Resources Code Section 21083.2) as part of an environmental impact analysis. While the general type of site was determined during the cultural resources survey, more in-depth information was needed to evaluate the significance of the resources and the potentially adverse impacts which may be represented by the project. The following scope of work was completed at each of the above sites:

- All surface artifacts and features were mapped and collected;
- A subsurface test was conducted via excavation of one-meter-square and 20 centimeters deep test units; and

- o All recovered materials were catalogued and analyzed and are presently stored at the offices of Brian F. Smith and Associates.

Site maps, artifact listings and test pit locales are documented in the Cultural Resources Appendix.

Site SDi-8065. Site SDi-8065 was originally recorded as a widely dispersed scatter of cultural materials in a cultivated field. The resource has been moderately impacted by the extensive cultivation of the site area since the late 1800s, and by the grading and construction impacts which resulted from the original installation of Otay Valley Road.

The investigation of SDi-8065 was initiated with the mapping and recovery of surface artifacts, which documented the wide distribution of cultural materials parallel to Otay Valley Road. Additional artifacts associated with SDi-8065 were visible south of the alignment out of the study area; these were not collected or mapped. The surface artifact recovery included two manos, one metate fragment, four flakes, 12 debitage, two cores, four hammerstones, two scrapers, one scraper plane, and nine fragments of *Chione* shell. Surface artifacts were difficult to detect, because the clayey soil in the field clung to the artifacts, thereby masking cultural traits. The surface artifacts were dispersed without any particular pattern, although the eastern portion of the site had a slightly higher frequency of cultural materials.

The subsurface testing of Site SDi-8065 consisted of the excavation of four test units, and distributed along the longest axis of the site. In general, the test units did not reveal any significant cultural deposits.

In conclusion, SDi-8065 is a widely dispersed site which does not contain any detectable subsurface deposits of any research value or significance. The site may retain a high potential for the existence of significant deposits to the south of the alignment, however this area was not part of the present study and was not evaluated.

Site SDi-8065A. Site SDi-8065A was recorded as a widely dispersed scatter of cultural materials in a cultivated field located just east of SDi-8065. The site is very likely a locus of SDi-8065, and is separated from this site by an artifact-free area of approximately 150 feet. The site has been moderately impacted by the extensive cultivation of the site area since the late 1800s, and by grading/construction impacts from the original installation of Otay Valley Road. The site matches the characteristics of SDi-8065 in all respects, and is considered to be a contemporary occupation site with similar site function.

The investigation of SDi-8065A included a surface artifact mapping and recovery effort, which documented the wide distribution of cultural materials parallel to Otay Valley Road. Other artifacts associated with the site were visible to the south of the alignment out of the study area; these were not collected or mapped. The surface artifact recovery included three manos, two metate fragments, one flake, eight debitage, two hammerstones, one scraper, two utilized/retouched flakes, one pestle, and one fragment of *Chione* shell dispersed without any particular pattern. Again, surface artifacts were difficult to detect, because the clayey soil in the fields clung to the artifacts, thereby masking cultural traits.

A single test unit was excavated at SDi-8065A, which did not reveal any significant cultural deposits; producing only one flake and three shell fragments.

In conclusion, the widely dispersed site did not contain detectable subsurface deposits of any research value or significance. The site may retain a high potential for the existence of significant deposits to the south of the alignment, however this area was not part of the present study and was not evaluated.

<u>Site SDi-8912</u>. Site SDi-8912 was recorded as a widely dispersed scatter of cultural materials in a cultivated field, with the scatter stretching from Otay Valley Road to the Otay River. The site has been moderately impacted by the extensive cultivation of the site area since the late 1800s, and by grading/construction impacts from the original installation of Otay Valley Road. In many ways, SDi-8912 parallels the characteristics of SDi-8065, being located in the same type of topographic setting, with a surface scatter of materials dispersed without any indication of a central occupation area, although the western portion of the site had a slightly higher frequency of cultural materials.

Surface artifact mapping and recovery included 15 flakes, 15 debitage, two hammerstones, three scrapers, three retouched flakes, one drill, and one spokeshave. Artifacts associated with SDi-8912 visible south of the alignment and out of the study area were not collected or mapped. Surface artifacts were difficult to detect, because the clayey soil clung to the artifacts, thereby masking cultural traits, and the surface ground cover was dense because the field had not been recently disked or planted.

The subsurface testing of Site SDi-8912 consisted of the excavation of four test units. The units were distributed along the length of the site, to sample the broadest possible area of the resource. In general, the test units did not reveal any significant cultural deposits, all four of the units producing only six artifacts in total.

In conclusion, the dispersed site did not contain detectable subsurface deposits of any research value or significance. The site may retain high potential for significant deposits to the south of the alignment, however this area was not part of the present study and was not evaluated.

In general, any grading of the proposed roadway will impact the cultural resources present in the path of the grading action. The location of the three prehistoric sites within the proposed right-of-way and construction area suggests that planning for the roadway could not avoid all of the sites. Utilizing the data gathered during the testing program, the following table presents the significance rating and likelihood of potentially significant adverse impacts:

SITE	SITE SIGNIFICANCE*	POTENTIAL IMPACTS
(1) SDi-8065	Non-significant; no research potential	Not Significant
(2) SDi-8065A	Non-significant; no research potential	Not Significant
(3) SDi-8912	Non-significant; no research potential	Not Significant

*Relates only to portions of sites within the study area

The three sites are likely to be impacted by the project; however, based upon the collection and testing procedures noted above, as well as the fact that portions of the sites will remain unimpacted by the present project provide the basis for a determination that the impacts to these three sites will not be significant.

The archaeological site files records searches for the project also noted that portions of Deneri Winery were present within the proposed alignment. The concrete foundations noted in the records as being portions of the winery were relocated and interpreted as part of the gravel mining operations that took place in the riverbed. The reason for this interpretation is that the concrete slabs are situated on top of hydraulically mined fill, which matches the spoil piles of rocks visible throughout the riverbed. Portions of the winery may exist elsewhere in the flood plain to the south of the alignment; however, no further investigations were conducted to search for these foundations. The concrete foundations associated with the mining operations do not represent significant resources since these do not retain any research potential concerning historical events or persons. Any impacts to these foundations would not represent an adverse impact to cultural resources.

2. Paleontology

It is possible that expansion of the road will result in impacts to significant paleontological resources. Though San Diego Formation strata are characteristically weak and susceptible to rapid erosion based on the plans and profiles provided by project engineers, grading is not expected at the far western extent of the project in the vicinity of this formation. Fossils located within these strata therefore should suffer no disturbance as a result of road widening. Impacts would principally be expected to occur when grading activities took place crossing the Mission Valley Formation.

C. Mitigation

1. Archaeology/History

No mitigation measures, including additional testing and excavation data recovery are necessary.

2. Paleontology

Mitigation of impacts to paleontological resources may be accomplished by implementing the following measures:

- o A qualified paleontologist should be at the pregrade meeting to consult with the grading and excavation contractors.

- o A paleontological monitor should be on-site at all times during the original cutting of previously undisturbed sediments through and immediately adjacent to the Mission Valley and San Diego formations to inspect cuts for contained fossils (see Figure 3.1.1 above). Periodic inspections of cuts crossing the alluvial and colluvial deposits is also recommended. (A paleontological monitor is defined as an individual who has experience in the collection and salvage of fossil materials. The paleontological monitor should work under the direction of a qualified paleontologist.)

- o In the event that well-preserved fossils are discovered, the paleontologist (or paleontological monitor) should be allowed to temporarily direct, divert, or halt grading to allow recovery of fossil remains in a timely manner. Because of the potential for the recovering of small fossil remains such as isolated mammal teeth, it may be necessary to set up a screen-washing operation on the site.

- o Any fossil remains collected during this program should be cleaned, sorted, cataloged and (with the owner's permission), deposited at the San Diego Natural History Museum.

D. Analysis of Significance

1. Archaeology/History

The present project design will not constitute a significant impact to cultural resources. The intensity of the change represented by the roadway construction is not significant either singularly to any of the resources or in a cumulative sense. In light of the fact that the evaluation of the cultural resources that will be disturbed by the project has revealed that the resources are not unique and offer no opportunities for further research, the impacts will not be controversial. The extent of any impacts to cultural resources which may occur will be minimal, particularly because no subsurface deposits were identified within the area of the proposed road design.

2. Paleontology

Impacts to fossil-bearing horizons in any of the formations crossed by the proposed road widening would be considered significant for the purpose of impact evaluation. Mitigation measures outlined above should be followed. With mitigation, no significant impacts are expected to result from project construction.

3.10 AIR QUALITY

A. Project Setting

1. Regional and Local Meteorology/Climate

The climate of Chula Vista, as with all of southern California, is largely controlled by the strength and position of the semi-permanent high pressure center over the Pacific Ocean. The high pressure ridge over the West Coast creates a repetitive pattern of frequent early morning cloudiness, hazy afternoon sunshine, clean daytime onshore breezes and little temperature change throughout the year. Limited rainfall occurs in winter when the high center is weakest and farthest south when the fringes of mid-latitude storms occasionally move through the area. Summers are often completely dry with an average of 10 inches of rain falling each year from November to early April.

Unfortunately, the same atmospheric conditions that create a desirable living climate combine to limit the ability of the atmosphere to disperse the air pollution generated by the large population attracted to San Diego County in part by the climate. The onshore winds across the coastline diminish quickly when they reach the foothill communities east of San Diego, and the sinking air within the offshore high pressure system forms a massive temperature inversion that traps all air pollutants near the ground. The resulting horizontal and vertical stagnation, in conjunction with ample sunshine, cause a number of reactive pollutants to undergo photochemical reactions and form smog that degrades visibility and irritates tear ducts and nasal membranes. Because coastal areas are well-ventilated by fresh breezes during the daytime, they generally do not experience the same air pollution problems found in some areas east of San Diego. Unhealthful air quality within the San Diego Air Basin's coastal communities such as Chula Vista may occur at times in summer during limited localized stagnation, but occurs mainly in conjunction with the occasional intrusion of polluted air from the Los Angeles Basin into the County, especially North County. Localized elevated pollution levels may also occur in winter during calm, stable conditions near freeways, shopping centers or other major traffic sources, but such clean air violations are highly localized in space and time. Concern has been expressed that transport up from Mexico may also bring pollution into the South Bay area because of fewer air pollution control requirements in Mexico, but little real documented proof of such transport effects exits. Except for this occasional interbasin transport and possible localized air pollution "hot spots," coastal community air quality is generally quite good.

Local meteorological conditions typically conform well to the regional pattern of strong onshore winds by day, especially in summer, and weak offshore winds at night, especially in winter. These local wind patterns are driven by the temperature differences between the normally cool ocean and the warm interior and steered by any local topography. In summer, moderate breezes of 8-12 mph blow onshore by day, and may continue all night as a light onshore breeze since the land remains warmer than the ocean. In winter, the onshore flow is weaker, and reverses in the evening as the land becomes cooler than the ocean. While daytime winds are mainly off the ocean from the W-NW, winds do, at times, shift into the WSW or even SW where air pollution emissions from Mexico may be carried across the border. The daytime onshore and nocturnal offshore flow is further focused by the Otay Valley topography which steers winds along the valley axis. Winds parallel to the Otay Valley Road alignment are therefore much more prevalent than winds with a very distinct cross-roadway directional component.

Both the onshore flow of marine air and the nocturnal drainage winds are accompanied by two characteristic temperature inversion conditions that further control the rate of air pollution dispersal throughout the air basin. The daytime cool onshore flow is capped by a deep layer of warm, sinking air. Along the coastline, the marine air layer is deep enough to accommodate any locally generated emissions. As the layer moves inland, however, pollution sources (especially automobiles) add pollutants from below without any dilution from above. When this progressively polluted layer approaches foothill communities east of coastal developments, it becomes shallower and exposes residents in those areas to the reacted byproducts of coastal area sources. The slow drainage or stagnation of cool air at night creates localized cold "pools" while the air above the surface remains warm. Such radiation inversions occur throughout the San Diego area, but are strongest within low, channelized areas such as the Otay River Valley. They may trap vehicular exhaust pollutants such as carbon monoxide (CO) near their source until these inversions are destroyed by surface warming the next morning. Any such CO "hot spots" are highly localized in space and time (if they occur at all), but occasionally stagnant dispersion conditions are certainly an important air quality concern relative to continued intensive development of the Chula Vista area. The intensity of development east of the Otay Valley is sufficiently small that such non-local background pollution levels during nocturnal stagnation periods are relatively low. The local airshed therefore has considerable excess dispersive capacity that limits the potential for any localized air pollution "hot spots."

2. Air Quality

In order to gauge the significance of the air quality impacts of the proposed Otay Valley Road Widening Project, those impacts, together with existing background air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise, called "sensitive receptors." Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

National Ambient Air Quality Standards (AAQS) were established in 1971 for six pollution species with state governments retaining the option to add other pollutants, require more stringent compliance, or to include different exposure periods. The initial attainment deadline of 1977 was extended to 1987 for certain national AAQS, and that deadline has now passed without attainment having been reached. Because California had established AAQS several years before the federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between state and national clean air standards. Those standards currently in effect in California are shown on Table 3.10-1.

Daily routine measurements of air quality distributions are made in downtown Chula Vista by the San Diego County Air Pollution Control District (APCD), the agency responsible for air quality planning, monitoring and enforcement in the San Diego Air Basin (SDAB). Table 3.10-2 summarizes the last five complete years (final 1988 data have not been officially published) of monitoring data from the Chula Vista (80 E. J. St.) station. An air quality monitoring station was located at Brown Field for a number of years which is an exposure more representative of the project site, but the Brown Field data were sufficiently similar to downtown Chula Vista such that the downtown data characterize the existing air quality environment of the Otay Valley with reasonable accuracy. Progress toward cleaner air is seen in almost every pollution category in Table 3.10-2. The only national standard that was exceeded throughout the 5-year monitoring period was the hourly ozone standard which was exceeded an average less than 4 times per year (once per year is allowable). The more stringent state standards for ozone and total suspended particulates (dust) were exceeded on a somewhat higher frequency, but overall air quality in Chula Vista is nevertheless very good in comparison to other areas of the SDAB.

The continued violations of national AAQS in the SDAB, particularly those for ozone in inland foothill areas, requires that a plan be developed outlining the stationary and mobile source pollution controls that will be undertaken to improve air quality. In San Diego County, this attainment planning process is embodied in a regional air quality management plan developed jointly by the APCD and SANDAG with input from other planning agencies. This plan, originally called RAQS (Regional Air Quality Strategies), is now called the 1982 State Implementation Plan Revisions (1982 SIP Revisions). The underlying premise of this plan was that the County could have continued economic and population growth and still achieve basinwide clean air. The plan outlined the analysis methodology and charted the necessary steps to reduce the existing excess emissions burden plus offset air pollutants associated with continued growth. The 1982 SIP Revisions

TABLE 3.10-1

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		National Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone	1 Hour	0.09 ppm (180 ug/m3)	Ultraviolet Photometry	0.12 ppm (235 ug/m3)	Same as Primary Std.	Ethylene Chemiluminescence
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m3)	Non-dispersive Infrared Spectroscopy (NDIR)	9.0 ppm (10 mg/m3)	Same as Primary Stds.	Non-dispersive Infrared Spectroscopy (NDIR)
	1 Hour	20 ppm (23 mg/m3)		35 ppm (40 mg/m3)		
Nitrogen Dioxide	Annual Average	-	Gas Phase Chemiluminescence	0.053 ppm (100 ug/m3)	Same as Primary Std.	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 ug/m3)		-		
Sulfur Dioxide	Annual Average	-	Ultraviolet Fluorescence	80 ug/m3 (0.03 ppm)	-	Pararosoaniline
	24 Hour	0.05 ppm (131 ug/m3)		365 ug/m3 (0.14 ppm)	-	
	3 Hour	-		-	1300 ug/m3 (0.5 ppm)	
	1 Hour	0.25 ppm (655 ug/m3)		-	-	
Suspended Particulate Matter (PM_{10})	Annual Geometric Mean	30 ug/m3	Size Selective Inlet High Volume Sampler and Gravimetric Analysis	-	-	-
	24 Hour	50 ug/m3		150 ug/m3	Same as Primary Stds.	Inertial Seperation and Gravimetric Analysis
	Annual Arithmetic Mean	-	-	50 ug/m3		
Sulfates	24 Hour	25 ug/m3	Turbidimetric Barium Sulfate	-	-	-
Lead	30 Day Average	1.5 ug/m3	Atomic Absorption	-	-	Atomic Absorption
	Calendar Quarter	-		1.5 ug/m3	Same as Primary Std.	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 ug/m3)	Cadmium Hydroxide STRactan	-	-	-
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm (26 ug/m3)	Tedlar Bag Collection, Gas Chromatography	-	-	-
Visibility Reducing Particles	1 Observation	In sufficient amount to reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70%		-	-	-
Applicable Only in the Lake Tahoe Air Basin						
Carbon Monoxide	8 Hour	6 ppm (7 mg/m3)	NDIR	-	-	-
Visibility Reducing Particles	1 Observation	In sufficient amount to reduce the prevailing visibility to less than 30 miles when the relative humidity is less than 70%.		-	-	-

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TABLE 3.10-2

CHULA VISTA AREA AIR QUALITY MONITORING SUMMARY, 1983-87
(Days standards were exceeded, and maxima for periods indicated)

Pollutant/Standard	YEAR 1983	1984	1985	1986	1987
Ozone:					
1-HR > 0.09 ppm	20	18	28	20	15
1-HR > 0.12 ppm	6	4	4	2	2
1-HR > 0.20 ppm	1	0	1	0	0
Max. 1-HR (ppm)	0.21	0.15	0.20	0.14	0.16
Carbon Monoxide:					
1-HR > 20 ppm	0	0	0	0	0
8-HR > 9 ppm	0	0	0	0	0
Max. 1-HR (ppm)	13.	7.	7.	7.	7.
Max. 8-HR (ppm)	4.4	4.6	3.9	5.1	3.4
Nitrogen Dioxide:					
1-HR > 0.25 ppm	0	0	0	0	0
Max. 1-HR (ppm)	0.18	0.20	0.16	0.14	0.15
Sulfur Dioxide:					
1-HR > 0.25 ppm	0	0	0	0	0
24-HR > 0.05 ppm	0	0	0	0	0
Max. 1-HR (ppm)	0.07	0.07	0.08	0.06	0.04
Max. 24-HR (ppm)	0.021	0.021	0.015	0.013	0.011
Total Suspended Particulates:					
24-HR > 100 ug/m^3	0/60	0/61	0/61	1/61	1/30
24-HR > 260 ug/m^3	0/60	0/61	0/61	0/61	0/30
Max. 24-HR (ug/m^3)	103.	88.	96.	119.	100.
Lead Particulates:					
1-MO > 1.5 ug/m^3	0/12	0/12	0/12	0/12	0/12
Max. 1-MO (ug/m^3)	0.82	0.60	0.38	0.28	0.19
Sulfate Particulates:					
24-HR > 25 ug/m^3	1/58	0/61	0/54	0/60	0/51
Max. 24-HR (ug/m^3)	25.8	18.0	15.4	17.6	13.3
Inhalable Particulates (PM-10):					
24-HR > 50 ug/m^3	-	-	-	3/51	5/61
24-HR > 150 ug/m^3	-	-	-	0/51	0/61
Max. 24--HR (ug/m^3)	-	-	-	104.	68.

Source: California Air Resources Board
Summary of Air Quality Data, 1981-87
Chula Vista Monitoring Station Except for Lead and Sulfate Particles which are from San Diego APCD Island Avenue Station.

recognized that there are meteorological patterns under which County emissions are uniquely responsible for ozone violations, and there are also conditions where interbasin transport is a major factor in observed air quality. The basic conclusion of the 1982 SIP was that emissions would be sufficiently reduced by the end of 1987 such that all County-related ozone violations would have been eliminated, but that violations due to transport from the Los Angeles Basin will continue as long as that basin continues to experience very unhealthful ozone levels. By the end of 1987, it was apparent that the prediction that County-induced ozone violations would be completely eliminated was overly optimistic as some limited violations of the federal ozone standard due to San Diego County-only emissions persisted into 1988.

The SIP Revisions are now again being revised in another update cycle. The new plan is designed to lead to incremental improvement toward a long-range attainment target date and to ensure that programs are in place to continually off-set the emissions increases associated with continued growth of the basin. The proposed roadway widening project relates to the air quality plan through the inclusion of the regional transportation plan (RTP) and regional transportation improvement program (RTIP) in the air quality plan. If the widening project is an identified project in the RTP/RTIP, then consistency with the transportation plan ensures similar consistency with the air plan. Any regional air quality implications of roadway projects are therefore incorporated through the internal consistency of regional plans, and are not analyzed on a project by project basis. Transportation project-related air quality impact analysis is therefore confined to any local, microscale concerns near the roadway, and not on any sub-regional or regional scale.

B. Impacts

Vehicular sources potentially impact ambient air quality on two scales of motion. As cars drive throughout San Diego County, the small incremental contribution to the basin air pollution burden from any single vehicle is added to that from several hundred thousand other vehicles. The number and type of vehicles, their operating and maintenance characteristics, and especially their travel speed determine the overall basinwide mobile source contribution. The impact from any single transportation project, even if it affects a significant number of vehicles, is very small on a regional scale. Basinwide air quality impacts from the regional transportation system are therefore addressed in terms of the overall system efficiency and project compatibility with regional air quality plans, but generally not on any single project basis. If any given project has been properly incorporated into area transportation improvement plans which are the basis for regional air quality/transportation planning, then the basinwide impact of any proposed improvement project is presumed to be insignificant.

Locally, however, changes in the location of any collection of automotive sources, or changes in the number of vehicles or travel speeds may impact the microscale air quality around any given project site. Such microscale impacts, in addition to any temporary fugitive dust and construction equipment exhaust emissions, comprise the primary air quality concerns for any transportation project.

1. Construction-Related Impacts

Soil disturbance to clear and grade the widened roadway site, prepare the road base, pave the roadways and install curbs, medians, gutters, etc. will generate considerable quantities of fugitive dust during the construction phase. Dust emissions in areas where any part of the bank must be cut on the north side and fill must be placed on the south side of the roadway may be substantial. Dust generation depends on a large number of variables such as soil moisture, silt content, wind speed, disturbance level, etc. such that there is no universal dust emissions factor to allow accurate estimates of project dust impacts.

The California Air Resources Board (ARB) estimates that roadway construction disturbance covers 6.5 acres per mile, and that the average monthly dust emissions factor is 2 tons per mile currently under construction if no dust control measures are applied. Watering during grading and soil compaction, as required by the rules of the SDAPCD, will reduce the uncontrolled dust level by about 75 percent. Localized dust emissions, when spread over the length of the roadway project and all the hours of a month, are thus fairly small. If the entire length of almost two miles of roadway is under simultaneous disturbance, the above factor yields a predicted monthly dust generation rate of around one ton per month. For cut/fill operations, the EPA estimates that excavation and soil placement generates 0.07 pounds of dust per yard handled. Truck or scraper loading and unloading generates an additional 0.044 pounds per yard. Applying these factors to an estimated 120,000 yards of fill, these operations will add another 6.8 tons of airborne dust beyond that generated by normal construction activities.

Soil dust is generally chemically inert, and much of the dust is comprised of large particles that are readily filtered by human breathing passages and rapidly settle out on horizontal surfaces such as parked cars, landscaping foliage, outdoor furniture, etc. It thus comprises more of a soiling nuisance rather than an adverse air quality impact. With prevailing west to east winds during the daytime, the existing residences north of Otay Valley Road will not be substantially exposed to dust soiling nuisance potential. A secondary dust concern may present itself when Santa Ana winds develop in the fall and blow from the east down the length of the roadway alignment. Such winds will put the residential area downwind of disturbance activities instead of the more normal upwind orientation. Even with "standard" dust control, dust plumes can be kicked up by strong winds during soil disturbance activities. If major clearing, grading or compaction occurs during such wind events, the contractor will need to implement extra dust procedures to prevent a soiling nuisance from occurring.

In addition to fugitive dust, construction activities will also cause combustion emissions to be released from on-site construction equipment and from off-site vehicles hauling concrete and other roadbed materials. As with the construction dust, prevailing winds during the daytime will expose only the homes closest to the roadway alignment to any noticeable exhaust concentrations. The mobile nature of these sources is such that no single receptor is exposed for any length of time to the nitrogen oxides (NOx), carbon monoxide (CO) and combustion soot released by the heavy equipment. Any noticeable local impacts will be an occasional "whiff" of diesel exhaust, but not in any concentration to threaten clean air standards. As with the dust, such effects are an infrequent minor nuisance, and not a health-threatening impact.

2. Mobile Source Impacts

On a regional scale, the Clean Air Act requires that all transportation projects be consistent with the State Implementation Plan (SIP) to achieve clean air if the federal government is to participate in the funding of such a project. In the San Diego Air Basin, this consistency requirement requires consistency with the 1982

SIP Revisions in its current update. Since the Otay Valley Road Widening Project is a Capital Improvements Project as part of the regional TIP, that consistency requirement is met and the project has no net regional impact. The Caltrans guidelines for air quality impacts from transportation projects suggest the following wording for such a consistency statement:

> This project is in an air quality nonattainment area which has transportation control measures in the State Implementation Plan (SIP). The revised SIP is awaiting EPA approval of compliance with post-'87 planning requirements. The Federal Highway Administration (FHWA) has determined that both the Regional Transportation Plan and the Transportation Improvement Program (TIP) conform to the SIP. The FHWA has further determined that this project is included in the TIP for the San Diego Association of Governments. Therefore, pursuant to 23 CFR 770, this project conforms to the SIP.

Project-related air quality concerns are therefore confined to the immediate project vicinity. Locally, changes in the distribution or location of traffic near existing housing may create ambient air quality distributions different from existing patterns. To determine whether such source changes might create an adverse air quality impact, the California line source roadway dispersion model CALINE4 was run to determine future roadway air pollution due to project implementation. The model was initialized with very restrictive dispersion conditions and with maximum AM and PM peak hour traffic in order to generate a worst-case impact assessment. Light winds almost parallel to the roadway were used to estimate pollutant exposure at six intersections along Otay Valley Road. Carbon monoxide (CO) was used as an indicator of any "hot spot" potential.

Results of the CALINE4 calculations for the AM and PM scenarios are summarized in Table 3.10-3. Future CO levels at the maximum exposure points are seen to be completely negligible compared to the hourly standard of 20 ppm. Maximum CO impacts are 2.0 ppm or less at 25' from the edge of each identified intersecting roadway. With generally low background values, there is absolutely no potential for the formation of any CO "hot spots" by a very wide margin of safety. Microscale project impacts under worst-case conditions will not create any impediment to project implementation.

TABLE 3.10-3

FUTURE OTAY VALLEY ROAD WIDENING MICROSCALE
AIR QUALITY IMPACTS
(Hourly CO concentrations in ppm above non-local background)

Location	AM Peak	PM Peak
Otay Valley Road/ I-805 SB Ramps	1.0	1.0
Otay Valley Road/ I-805 NB Ramps	1.4	2.0
Otay Valley Road Oleander Avenue	0.8	1.2
Otay Valley Road/ Brandywine Avenue	0.9	1.4
Otay Valley Road/ Maxwell Road	1.3	1.4
Otay Valley Road/ Nirvana Avenue	1.1	0.8

Source: CALINE4 Roadway Air Pollution Model

C. Mitigation

There are no mitigation measures indicated for consideration because microscale air quality impacts are completely insignificant. Nominal impact mitigation from temporary construction nuisance may be possible, and should therefore be integrated into construction planning. These measures include:

- o Using effective fugitive dust control measures as required by APCD rules which prohibit the formation of a dust nuisance at the fenceline of any project. During Santa Ana wind conditions, these measures may need to be accelerated when strong winds loft dust more easily.

- o Maintaining a regular street sweeping and washing program where project construction activities interact with existing traveled roadways to remove dirt spillage or materials deposited from dirty equipment tires.

- o Routing construction traffic to minimize interference with existing traffic patterns and to minimize idling truck queueing near any occupied receptor locations.

- o Regulating construction activity schedules to not begin until winds are strong enough to blow dust away from the nearby houses between Oleander Avenue and I-805 (approximately seven o'clock AM) and stopping when winds die down (approximately four o'clock PM).

D. Analysis of Significance

Construction of the Otay Valley Road Widening Project will not result in any significant impacts to air quality.

3.11 NOISE

A. Project Setting

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is unwanted sound. Sound is characterized by various parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The decibel (dB) scale is used to quantify sound intensity. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, human response is factored into sound descriptions by weighting sounds within the range of maximum human sensitivity more heavily (middle A) in a process called "A-weighting," written as dB(A).

Time variations in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called Leq), or, alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law requires that for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL). An interior CNEL of 45 dB(A) is mandated for multiple family dwellings, and is considered a desirable noise exposure for single family dwelling units as well. Since typical noise attenuation within residential structures with closed windows is about 20 dB, an exterior noise exposure of 65 dB CNEL is thus typically the design exterior noise exposure for new residential dwellings in California. Because commercial or industrial uses are not occupied on a 24-hour basis, a less stringent noise/land use compatibility criterion is generally specified for these less noise sensitive land uses.

These guidelines form the basis for the Noise Element of the City of Chula Vista's General Plan which suggests a desirable exterior noise exposure of 65 dB(A) for residential and other noise sensitive uses. The City's noise policy states as its first objective that every citizen has a right to live in an environment where noise is not detrimental to his or her life, health, and enjoyment of property. Within the policy's implementation provisions, there is a mandate for the City to consider the effects of noise, especially from transportation sources, in its land use decisions in order to realize the above objective.

For roadway improvement projects with federal (Federal Highway Administration - FHWA) funding participation, a slightly different noise metric is applied. The FHWA highway program manual requires that the "noisiest" traffic hour not exceed

67 dB Leq at the exterior of noise-sensitive land uses and that interior levels not exceed a 52 dB hourly Leq. Less sensitive land uses are allowed a maximum of 72 dB peak hourly Leq at the nearest point of receiver exposure. On many suburban roadways, the 24-hour CNEL, because of its artificial nocturnal penalty, and the peak hour Leq are not much different. The distance of the 65 dB CNEL contour and the 67 dB peak hour contour often differ by only a few feet. If, however, there is a very high truck percentage during the day and very little traffic at night, the federal peak hour criterion is somewhat more conservative (farther from the roadway) than the state-mandated CNEL land use planning contour distance.

Existing noise levels along Otay Valley Road derive primarily from surface vehicular sources on the roadway. Some Brown Field air traffic is sometimes heard, especially near the eastern end of the planned improvement project, but the contribution from this source to the integrated noise environment is small. Along the western end of the proposed widening area, freeway noise from I-805 blends in with arterial noise. The freeway component is somewhat variable because elevated sections are partially screened by the shape of the roadbed itself. Portions of I-805 are scheduled for soundwalls in the future as funding becomes available, but the exact date for installation along the section of I-805 near Otay Valley Road is not known at this time.

In order to characterize current noise levels in and around the proposed widening project, a brief on-site noise survey was conducted on August 5, 1988.

Because of delays in finalizing a project description, another set of on-site readings was conducted on January 27, 1989. Short-term (15 minute Leq) noise levels adjacent to Otay Valley Road were monitored at six (6) locations using standard Caltrans roadway noise monitoring protocols. Monitoring was conducted using a B&K Model 2230 Sound Level Meter operating in the A-weighted Leq monitoring mode. The purpose of this monitoring was two-fold. On-site monitoring provides a "real-world" characterization of baseline noise levels that take into account site-specific vehicle mixes, travel speeds, noise obstructions, etc. Secondly, the monitoring provides a calibration data base by which a computer model of traffic noise can be validated. The calibrated model can then be used with a higher degree of confidence to project future noise distributions from changing traffic patterns.

The Otay Valley Road readings, in conjunction with concurrent traffic counts and speed checks, were used to calibrate the federal highway traffic noise prediction model (FHWA-RD-77-108) initialized with the latest California vehicle noise (Calveno-85) emissions data. The results of the calibration run versus measured data (dB(A)) are shown in Table 3.11-1. The model versus measured comparison shows that ambient noise levels were within model predictions by 0.3 dB(A) on the average with the model slightly overpredicting four sets of readings and predicting slightly too low for four other sets. At the western end of the widening area, non-local traffic contributions from the freeway added excess noise to the local exposure to create an underprediction of 1.6 dB. Partial structural screening near the eastern end of the project area may have led to the overprediction. With only a very small difference between average observations and model results, one can predict that the FHWA Highway Noise Model will give a reasonable noise characterization in the project area, but the predicted exposure at any single receptor may have an uncertainty of plus or minus 1 - 2 decibels. Any land use planning actions, noise wall considerations, etc. as a result of anticipated changes in Otay Valley Road traffic noise should incorporate a small extra margin of safety to account for any uncertainties in model predictions.

B. Impacts

Implementation of the proposed Otay Valley Road improvement project will change the community noise exposure adjacent to the roadway through several factors. The widened roadway will have a portion of the traffic sources slightly closer to existing receivers than current conditions. The widened roadway may experience changes in mean travel speeds, which will affect the noise emissions characteristics of automobiles and trucks. Most importantly, there will be continued development of the Otay Valley, creating a substantial increase in travel volumes that will alter the existing noise exposure. Of the three factors, the change in roadway geometry will have a minimal effect, but both the speed and volume changes are important determinants in changes in noise exposure after project completion.

In addition to long-term noise concerns from changes in traffic patterns and roadway geometries, roadway construction activities will create short-term noise impacts during the demolition of existing pavement, laying new base where appropriate, repaving, and adding curbs, gutters and improvements. Construction

TABLE 3.11-1

EXISTING TRAFFIC NOISE ENVIRONMENT - OTAY VALLEY ROAD

Monitoring Location:	LDA/MDT/HDT (per hour)	SPEED (mph)	NOISE LEVELS (dB Leq) Obs.	Model	Diff.
August 5, 1988					
W of Oleander	822/ 96/174	40	72.2	72.5	+0.3
Near Delniso	552/126/180	45	73.9	73.2	-0.7
W of Maxwell	528/ 90/186	35	70.6	71.8	+1.2
E of Nirvana	180/ 72/ 12	40	62.4	65.1	+2.7
Near City Bdy.	174/ 6/ 30	40	65.2	64.6	-0.6
January 27, 1989					
Near I-805	1080/108/150	30	73.4	71.8	-1.6*
Near Delniso	738/ 60/138	45	74.1	73.3	-0.8
Near Maxwell	576/ 78/ 72	40	69.0	70.8	+1.8
			AVERAGE DIFFERENCE	=	+0.3 dB

* - some background contamination from freeway traffic noted by technician

Source: FHWA-RD-77-108 Noise Model with CALVENO-85 factors.

equipment noise impacts tend to be of greater intensity (higher decibel levels) but of short duration while long-term traffic noise changes tend to be a smaller absolute increase, but are a chronic, permanent change in community noise perception.

1. Construction-related Impacts

Temporary roadway construction noise impacts vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated initially by any needed roadbed demolition or grading/filling, then by truck noise to haul and dump base and to construct a new surface, and finally for any secondary improvements. The demolition and grading sources are the noisiest with equipment nose as high as 95 dB(A) at 50 feet from the source for jackhammers or graders. Point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance. Based on a desirable exterior noise exposure of 65 dB, it might require as much as 5 distance doublings (over 1000 feet from the source) to reduce the very loud 95 db(A) initial source strength to an acceptable 65 dB(A) exposure level. Intervening structures and topography will often provide partial shielding such that the actual noise "envelope" from construction sources tends to be somewhat less than its theoretical maximum. Construction noise sources are not strictly relatable to a noise standard because they occur only during selected times and the source strength varies sharply with time. Construction noise impacts are usually controlled by placing time limits on construction activities imposed as conditions on construction and use permits. The hours from seven AM to seven PM during weekdays are typically the allowed times for construction activities if there are occupied dwellings within a reasonable exposure zone surrounding the construction site.

Materials handling and small stationary noise sources have lower initial noise levels, and their corresponding noise impact zones during later phases of roadway construction are therefore much smaller. The period of potential adverse construction noise impact is therefore relatively short. The noise emission level from trucks, rollers, compressors, etc. are normally around 75 dB such that the zone of objectionable construction noise after the demolition and earthworks phase is confined to about 200 feet from the roadway instead of extending several times as far during the most noise-intensive period.

2. Peak Hour Traffic Noise Impacts

Future traffic noise along Otay Valley Road will change as traffic levels increase, as vehicle mixes change, as travel speeds respond to congestion or signalization, and as a function of any source-receiver changes due to roadway modifications. For a widening project that creates one travel lane closer to a roadway edge receiver and one farther away than for the existing condition, the change in roadway geometry is the least critical of these causative factors. Changes in noise exposure will be far more dependent upon the nature and character of traffic using the widened roadway rather than upon the geometry of the roadway itself.

Existing and future noise levels adjacent to Otay Valley Road were calculated using the FHWA Highway Traffic Noise Prediction Model as previously detailed. Calculations were made for the CNEL metric specified in the Chula Vista General Plan Noise Element as the standard noise/land use compatibility criterion based on observed traffic mixes and speeds projected over a 24-hour period. A comparable set of calculations was also made for the peak noise hour consistent with federal noise analysis guidelines because the short-term input data were more accurately observed during on-site nose measurements rather than having to be estimated throughout the evening and night.

The most critical traffic noise exposure in terms of land use compatibility occurs in the residential area east of I-805 and north of Otay Valley Road, which represents the closest point of sensitive receiver noise exposure relative to the proposed widening project. CNEL levels at the rear yards of these residences (100 feet from the roadway centerline) were calculated for existing and for future traffic patterns. Table 3.11-2 shows that existing noise levels (CNEL) between I-805 and Oleander east of I-805 on the patios of the closest homes are 64+ dB. With projected traffic growth, the CNEL level will increase from 64.4 dB to 69.8 dB within the next 15 years. The existing exposure is marginally acceptable based on the City's guidelines while the future exposure is well in excess of recommended levels. These calculations do not take into account freeway background noise (which would tend to increase noise exposure even more), nor do they account for the fact that these homes are slightly elevated and partially screened by the elevation difference (which reduces the traffic noise to some extent). Each residence will experience a slightly

TABLE 3.11-2
COMMUNITY NOISE EQUIVALENT LEVELS (dB CNEL)
ADJACENT TO OTAY VALLEY ROAD

Analysis Location:	CNEL at 100' to C	Dist to 67 CNEL	Dist to 72 CNEL
EXISTING TRAFFIC			
West of I-805	66.2	120'	56'
I-805 to Oleander	64.4	91'	<50'
Oleander to Brandywine	63.4	79'	<50'
Brandywine to Maxwell	62.1	64'	<50'
Maxwell to Nirvana	61.2	56'	<50'
FUTURE TRAFFIC			
West of I-805	68.6	174'	81'
I-805 to Oleander	69.8	208'	97'
Oleander to Brandywine	69.6	201'	93'
Brandywine to Maxwell	69.4	195'	91'
Maxwell to Nirvana	68.9	181'	84'

Source: FHWA-RD-77-108 (CALVENO-85 Modification) different noise level as a function of distance from the freeway and precise source/receiver geometry. There is, therefore, a small uncertainty in the above results. What is not uncertain is that there will be a significant future increase in traffic noise exposure to these residents. That increase is due to development of the Otay River Valley quite independent of whether Otay Valley Road is widened as proposed.

While noise levels exceed land use compatibility guidelines for residential uses (and possibly for a proposed river park farther east up the valley if the park extends all the way to the roadway shoulder), the future 70 CNEL contour distance considered acceptable for commercial and light industrial uses is slightly under 100 feet from the roadway centerline. The combination of roadway half-width and set-back for existing and future development are generally adequate to meet the CNEL guideline for less noise sensitive uses along Otay Valley Road.

Peak hour noise levels shown in Table 3.11-3 are about 3 dB higher than the CNEL levels, but the FHWA guidelines for peak hour exterior noise exposure (67 dB sensitive - 72 dB less sensitive land uses) are 2 dB higher than the state CNEL guideline levels. There is therefore not much difference in the traffic noise impact zones using either the City/state or federal criteria. Both approaches indicated that homes in the residential area between Oleander and I-805 backing on to Otay Valley Road will be excessively exposed to traffic noise from traffic volume growth. That noise increase is not related to the proposed widening project except that the widening may induce a more rapid or more intense development than if the roadway were allowed to become more congested. At the distances from the roadway to the nearest home, adjustment of travel lanes from the widened roadbed (one lane closer, one lane farther away than for the existing case), changes noise levels by less than 0.5 dB for the same traffic volume. There is therefore no adverse noise impact associated with project implementation, but the construction project may offer the opportunity to abate the noise nuisance that exists and will continue to grow in conjunction with increased development of the Otay River Valley.

C. Mitigation

Noise abatement can be achieved in a number of ways. One can reduce the number or intensity of noise emitters, one can increase the distance between source and

TABLE 3.11-3
PEAK HOURLY NOISE LEVELS (dB LEQ) ADJACENT TO OTAY VALLEY ROAD

Analysis Location:	Leq at 100' to C	Dist to 67 Leq	Dist to 72 Leq
EXISTING TRAFFIC			
West of I-805	68.9	135'	62'
I-805 to Oleander	67.1	102'	<50'
Oleander to Brandywine	66.2	88'	<50'
Brandywine to Maxwell	64.8	72'	<50'
Maxwell to Nirvana	64.0	63'	<50'
FUTURE TRAFFIC			
West of I-805	71.4	195'	91'
I-805 to Oleander	72.5	233'	108'
Oleander to Brandywine	72.3	226'	105'
Brandywine to Maxwell	72.1	218'	101'
Maxwell to Nirvana	71.6	203'	94'

Source: FHWA-RD-77-108 (CALVENO-85 Modification) receptor, or one can erect a physical barrier that interrupts the line of sight noise transmission pathway. Assuming that the Otay Valley reaches its planned level of development and that trucks will continue to be an important means of shipping and receiving goods for such development, the physical barrier represents the only viable means of noise reduction. This would basically entail erecting a perimeter masonry wall, approximately six feet in height, at the back lot line at those residences backing up to Otay Valley Road. The wall would need to be atop the slope to utilize slope height to increase the line of sight break between traffic and rear yard receiver locations. Maximum effective height (slope + wall) of such a barrier is a critical factor because of the high volume of trucks on Otay Valley Road whose exhaust stacks are so high that their engine noise propagates directly over a short barrier. Placement of such a barrier within the roadway right of way would therefore be less effective since its "soundshadow" would be smaller if constructed at the toe of the slope instead of at the top. With the inclusion of an adequate protective barrier at these homes, and with adoption of construction activity time constraints to minimize construction noise impacts, the proposed roadway improvement will not create any adverse noise impacts, and will, in fact, result in a better noise environment than exists under current conditions. Such a barrier may also provide visual screening and reduce light and glare and on-site noise from a proposed auto center south of Otay Valley Road. If the construction of the recommended wall is not feasible as part of the widening project, then perhaps it may be included as a condition of approval for the proposed auto center.

D. Analysis of Significance

Although construction-related noise will exceed the desirable exterior noise exposure of 65 dB (by as much as 30 points at a 50 foot distance) the fact that the impacts will be of relatively short duration--during construction only,--will be restricted to certain hours, and will be partially screened by intervening structures and topography results in construction noise not being considered a 'significant' impact overall.

Of greater significance will be increased noise related to the greater carrying capacity of Otay Valley Road. Existing noise level readings made at the closest homes (64 + dB) show that the maximum desirable exterior noise level has basically already been met. Based on projected traffic growth the increase of approximately 5 dB within the next 15 years will constitute a significant noise impact to residences in the project area. A barrier wall can be constructed which would aid in abatement of this significant impact.

3.12 AESTHETICS

A. Project Setting

1. Landscape Character and Scenic Quality

Otay Valley Road is a predominantly level roadway through the Otay River Valley, where elevations range from 118' to 142' above mean sea level. The viewshed, defined as the 'seen area' from the roadway, is restricted to the north and south by adjoining mesas that rise to 240 feet above mean sea level. These mesa hillsides are located approximately 0.1 to 0.5 miles north of the road and 0.8 to 1.5 miles south of the road and thereby restrict views to these distances. Visibility to the east is generally more expansive, with distant views to the mountains occurring in this direction. To the west, the I-805 interchange and roadway land use developments limit visibility from the roadway to the immediate foreground.

Common natural visual experiences along the entire project roadway are intermittent views to the Otay River and wetlands in the foreground and more distant middleground views to the surrounding mesa hillsides. The visual quality of the wetlands ranges from generally natural and scenic to areas disturbed with debris dumping and unimproved roads. The northern mesa hillsides vary in character from developed and urbanizing in the northwest, to undeveloped in the northeast. The visual quality of the southern mesa hillsides has been generally disturbed, numerous unimproved roads and off-road bike trails crisscross the hillsides.

The overall visual character of the roadway views has been gradually changing in recent years from a rural agricultural valley and open space landscape to a developing urban and industrial park center. From I-805 to Nirvana, the landscape is presently a mixture or natural open space, agricultural and urban uses. Recent developments, including residential, industrial, public and commercial uses are found intermittently and primarily north of the roadway. South of the roadway, limited commercial, public and industrial uses are intermittently viewed along with the rural agricultural and open space lands. Plate 2 in the land use section shows photographs of recent developments. In comparison, east of Nirvana, the roadway character has remained predominantly rural. While some industrial developments have occurred along portions of lands north of Otay Valley Road, the roadway views in this area are primarily to the Otay River wetlands, the southern mesas, as well to the remaining agricultural lands and more distant mountains to the east. Plate 3 is representative of the rural settings viewed from Otay Valley Road.

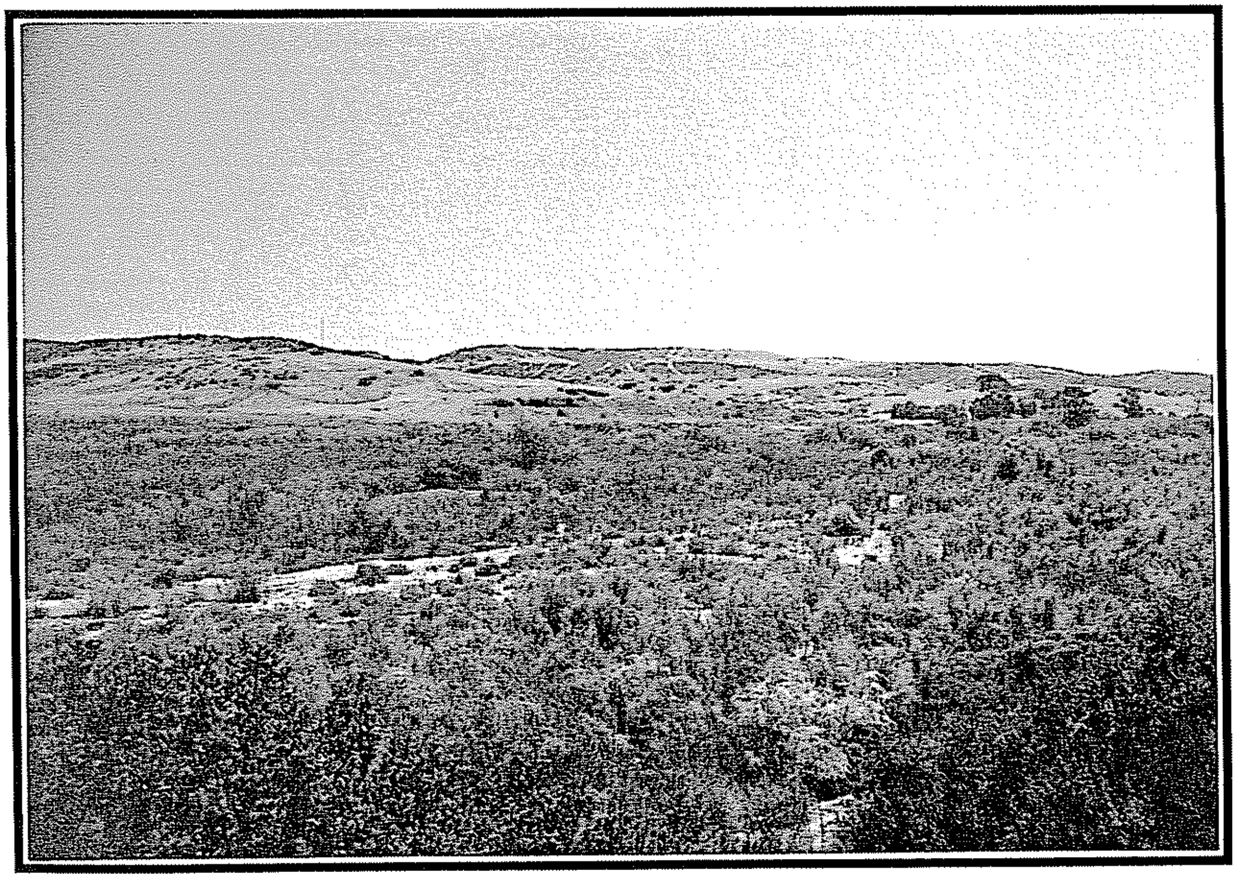
As discussed in Section 3.5, Land Use, the project area is planned for open space and park uses along the river, with research and general manufacturing planned to the north and south of the roadway where conditions permit (See Figure 3.5.4). As such, the visual character of the roadway views will continue to change over time from a rural agricultural and open space landscape to a mixture of urban uses and open space elements.

2. Visual Sensitivity

Visual sensitivity is a measure of the degree of viewer presence and exposure. Numbers of viewers include those that will utilize the road (i.e., roadway travelers having views from the roadway) and people viewing the roadway from adjacent areas (i.e., people having views to the roadway). Views from the road will increase in frequency significantly over the next several decades. The number of people estimated to have views from the roadway is based upon average daily traffic volumes (ADTs). In 1989, the ADT along Otay Valley Road ranged from 17,370 at the western extent of the project roadway (between I-805 and Oleander) to 3,930 at the eastern end (between Heritage Road and Otay Valley Road). By project buildout, ADT's along Otay Valley Road are projected to be between 43,000 and 26,000 ADT's at these same locations.

Views to the roadway will be from adjoining roads, from research and general manufacturing uses, and from commercial, public and residential uses located within the project viewshed. At present, the majority of viewers are associated with industrial, commercial and public uses. Existing residential viewers are found only at the Princess Manor Unit 5 Subdivision and from the remaining single family residences in the valley.

Otay River Valley Agricultural Lands



Otay River Valley Wetlands And Mesas

PLATE 3 REPRESENTATIVE RURAL VIEWS SOUTH OF OTAY VALLEY ROAD

In addition to the existing land uses located adjacent to the roadway, views will be afforded by future developments planned for the project vicinity. Figure 2.4.2 and Table 2.4-1 list the proposed developments within the project area. In general, industrial projects are presently proposed within portions of the City of Chula Vista. A number of residential projects are proposed south of the project area in the City of San Diego. In addition, views to the roadway may also be afforded in the future by the potential Otay River Valley Regional Park.

B. <u>Impacts</u>

The proposed project will have a beneficial impact on the aesthetics in the project area. In addition to the six traffic lanes, the proposed roadway design, shown on Figure 2.2-4, includes landscaped medians that will be 16 feet in width and landscaped areas on both sides of the roadway. Within the roadway medians, decorative pavements will be installed in 65% of the area, with trees and shrubs planted in the remaining 35%. North of the roadway and sidewalk, a landscaped parkway, 6 feet in width will be planted where space permits between the sidewalk and the northern right-of-way line. South of the roadway, a 20' landscape area will be installed with species that will be ecologically compatible with the adjacent wetlands. *In the area east of Maxwell Road, the landscaping will only cover the slopes down to the wetland boundary and may not include the full 20-foot landscaped area.*

Cumulatively, the landscape design will create a scenic enhancement along the roadway and from portions of the roadway that currently have views to disturbed landscapes. In addition, the wetlands mitigation plan will result in the creation and enhancement of approximately 6.0 acres of wetlands along the Otay River Valley. See Section 3.3.C for information of the wetlands mitigation. As part of the wetlands mitigation program, native trees and shrubs will be planted in presently disturbed portions of the Otay River Valley, thereby enhancing the natural scenic amenities of the area.

The existing viewers within the City of Chula Vista, that will have visibility to the road are the same as those described above in Section A. Once development occurs in the City of San Diego to the south, those areas on the edge of the mesas will also have views to the project. At the present time, due to the uncertainty of future land use policies in this portion of the City, the types of viewers (i.e., residential, commercial, public etc.) is unknown. (See Section 2.4).

C. Mitigation

No mitigation measures are required since the proposed project will have no adverse impacts on aesthetic qualities.

D. Analysis of Significance

The proposed project will alter and enhance the visual quality of the project area through the roadway design and landscaping plan and through the implementation of a wetlands mitigation program that will create and enhance a total of 6.0 acres of wetlands habitat. Given the nature of surrounding zoning designations, as well as existing adjacent industrial and disturbed areas, the impacts of constructing this six lane prime arterial highway is considered to be beneficial and compatible with both the Otay River and the ultimate urban development that is planned for this area.

3.13 COMMUNITY SOCIAL FACTORS

A. Project Setting

For most of the proposed project's length, Otay Valley Road is surrounded by industrial, agricultural and open space uses. The only identifiable residential community or neighborhood within the project area is located north of Otay Valley Road, east of I-805 and south of Orange Avenue. This neighborhood is bound, and constrained on the east by the existing County landfill and Otay Valley Road industrial area.

Major land uses within this neighborhood include single family and multi-family residential, Valle Lindo Park and Valle Lindo Elementary School. Based on 1980 U.S. Census data, residents of this neighborhood are predominantly white and Hispanic, relatively young and members of larger than average family households. Median household income is above average with relatively few below the poverty level. The median value of owner-occupied housing units is slightly above the regional median.

B. Impacts

The proposed project passes adjacent to the south side of this neighborhood and would not displace any of its residential, commercial, recreational or institutional elements. Consequently, the project would not alter the level of community cohesion or community character for this neighborhood. Other neighborhoods to the west of the project are isolated from its effects by I-805. During project construction, vehicular accessibility to and from this neighborhood from the south as well as all other land uses in the project area may be temporarily reduced. It is expected, however, that all existing legal access will be maintained and no detours will be required. Similarly, the response items for emergency services (police, fire, ambulance) may be reduced slightly by project construction activities. In general, after project completion, vehicular access and emergency services response times will be improved for land uses in the project area.

In particular, the Shell Oil service station and Chula Vista Animal Shelter may temporarily experience some lost sales and income from access limitations.

The proposed road widening and upgrading of utilities will facilitate the future development and redevelopment of industrial properties along Otay Valley Road. Consequently, higher employment levels and property values could be expected within the Otay Valley Road Redevelopment Area as a result of the planned improvements.

C. Mitigation

Fair market value will have to be paid to all private landowners whose property (land and improvements) is required for the proposed project. In addition, all existing legal access will be maintained throughout construction.

D. Analysis of Significance

Most of the impacts concerning community social factors are temporary, construction-related effects. However, the project also affords some long term benefits by improving accessibility in the project area. On balance, adverse impacts to community social factors are not considered significant.

3.14 COMMUNITY TAX STRUCTURE

A. Project Setting

The proposed project right-of-way is located entirely within the City of Chula Vista and would affect properties in Tax Rate Areas 1126 and 1132. Taxing agencies that receive a significant share of the property taxes collected in the affected Tax Rate Areas include the County of San Diego, City of Chula Vista, Chula Vista School District, Sweetwater Union High School District and Sweetwater Community College District.

The project is also entirely within the Otay Valley Road Redevelopment Area. The Redevelopment Area includes 762 acres targeted by the City for redevelopment, rehabilitation and revitalization. It does not include the residential neighborhood north of Otay Valley Road and east of I-805, nor the Atomic Investments property that is leased by Pacific Bell for its service center.

Construction of the proposed project will probably be financed through formation of an assessment district.

B. Impacts

The proposed project would convert land from private ownership to a long-term public use. Approximately 15 acres of property would be removed from the tax rolls. In total, less than $2,000 per year of property tax revenue will be lost to the affected taxing agencies. These agencies will not benefit from the increased property values accruing from future development and redevelopment in the Redevelopment Area, which may result from implementation of the proposed project. Any such property tax benefits will accrue to the Chula Vista Redevelopment Agency.

The project will facilitate implementation of the Otay Valley Road Redevelopment Plan, which will enhance property values and increase employment opportunities. In general, the community will benefit from the economic development stimulated by the proposed project.

C. Mitigation

The conversion of private property to a public use and the resulting loss of property tax revenues are unavoidable. No mitigation measures are proposed.

D. Analysis of Significance

None of the impacts concerning community tax structure is considered significant. The annual revenue loss to each of the taxing agencies affected by the proposed project land conversion would be nominal in comparison to total revenues.

3.15 UTILITY SERVICES/ENERGY CONSERVATION

A. Project Setting

Existing utilities paralleling Otay Valley Road include primarily overhead electrical, telephone and cable television lines as well as a gas pipeline and water mains.

The Otay Valley area is provided with energy by San Diego Gas and Electric (SDGandE), Southbay, located at 436 "H" Street, Chula Vista. The primary electrical line along Otay Valley Road is 12 kV and was recently reconductored with larger conductors to accommodate energy obtained from a methane generator located at the County dump just north of Energy Way. The line parallels the road to the south from I-805 until just before Nirvana Avenue. At this point the line is undergrounded, passing beneath the road to the north side and paralleling it eastward. Approximately 500 feet east of Nirvana Avenue, the line once more becomes an overhead circuit. Feeder lines servicing residential and other uses along the road head off of the main line in the vicinity of Oleander Avenue and east to Maxwell Avenue on the north side. These lines are either underground or above ground for a short distance (e.g., 400 feet) before undergrounding. An above ground distribution line also extends south of Otay Valley Road in the vicinity of the Otay Rio Business Park development. This line is currently slated to be undergrounded during development of the Business Park on their property.

SDGandE also currently maintains an eight inch steel gas line with four inch polyetheline pipe attachments/distribution mains, which is located under the existing Otay Valley Road. This pipe currently extends to Maxwell Road. A four inch polyetheline extension will be laid from Maxwell to Nirvana Avenue before the new road is paved. Present plans are to wait until a firm date is set for improvements to Otay Valley Road east of Nirvana Avenue before any further line is laid. Before the road is paved, the new polyetheline pipe will be continued from Nirvana easterly to serve Otay Rio Business Park and future development on County land to the east (personal communication from Mr. Richard Heilman, April 21, 1989).

The Otay Municipal Water District also currently maintains waterlines in the Otay Valley Road. A 12 inch main extends from Oleander Avenue east to Brandywine Avenue. From Brandywine to Maxwell Road, two lines are currently in place, one 10 inch and one 12 inch. A 10 inch main currently extends east from Maxwell to several hundred feet east of Nirvana (personal communication with Mr. Manuel Arroyo, April 20, 1989).

Telephone and private television cables are also located along Otay Valley Road. These lines are partially overhead and partially underground. The Pacific Bell lines presently continue to Maxwell Avenue (personal communication with Ms. Frances Estrada, April 20, 1989). The Cox cable television lines stop just east of Oleander Avenue (personal communication with Ms. Christie Andrew, April 21, 1989).

B. Impacts

As part of the project, new water line segments will be installed along the Otay Valley Road roadbed prior to paving. A 12 inch pipe will be installed from I-805 east to Brandywine Avenue. Starting at Maxwell Road a 16 inch water line will be installed easterly by the Otay Rio Business Park Project proponent (to half-way between Nirvana Avenue and the Rancho boundary) (personal communication from Mr. Manuel Arroyo, April 20, 1989). A 12 inch line will extend south of here to serve the developing Otay Rio Business Park. Eventually, an additional 12 inch line to the east is expected to serve developing properties such as Baldwin, and may at that point hook up to new pipes coming into the project area from Otay Reservoir. Impacts to the Otay Valley water system from the proposed project would be beneficial as the system would be enlarged in anticipation of future use and be able to provide water to an extended service area.

With the exception of the (varying) cost differential, none of the utilities contacted foresaw any negative impacts to their utility due to the planned undergrounding of the lines. Favorable impacts were noted by Mr. Heilman of SDGandE. Because of several bad corners on Otay Valley Road, the existing poles have been hit by cars. He also noted that overhead lines are more easily affected by storms, resulting in power outages. Any difficulty in operation due to the relative inaccessibility of underground lines is well-balanced by the lessened susceptibility of the line to damage.

C. Mitigation

No mitigative actions are required as no negative project-related impacts were identified during the study.

D. Analysis of Significance

No significant negative impacts will result to the systems discussed above as a result of the project.

3.16 THRESHOLD/STANDARDS

The City of Chula Vista has adopted a series of Threshold/Standards (November 17, 1987) as part of its Growth Management Program. Of the eleven issue areas addressed in the Policy, seven require project-by-project review. The following discussion addresses these seven issues.

Fire and Emergency Medical Service - The objective of this Standard is to "ensure that fire and emergency medical service staff are properly equipped, trained and funded to provided the desired level of service throughout the City." The Standard identified is a response time of seven minutes or under in 85 percent of the cases. The City of Chula Vista has prepared a Draft Fire Station Location Study to plan for the future facilities needed at buildout of the proposed General Plan Update.

During construction, portions of the road will be torn up. At no time, however, will through traffic be rerouted completely nor will access to intersecting roadways be disrupted or blocked. Following construction the widened and improved road may provide decreased response time, particularly if a new eastern area fire station is constructed.

Police - The Threshold objective is to "ensure that police staff, equipment and training levels are adequate to provide police service at the desired level throughout the City." The standard identified is a response time of five minutes or under in 75 percent of emergency calls and of seven minutes or under in 90 percent of emergency calls.

During construction portions of the road will be torn up. At no time, however, will through traffic be rerouted completely nor will access to intersecting roadways be disrupted or blocked. Following construction the widened and improved road may aid in decreased response time.

Traffic - The main traffic objective contained in the Threshold Policy is to ensure adequate capacity while maintaining acceptable levels of service, including the planning of new roadway segments and signalized intersections. Threshold/ Standards apply particularly to intersections. The method by which the Policy requires the level of service to be assessed for an intersection is Intersection Capacity Utilization (ICU). The method implies that only signalized intersections are required to meet the Policy goals. A rating of LOS 'C' or better must be maintained at all intersections, with the single exception that LOS 'D' may occur of signalized intersections for a period not to exceed a total of two hours per day.

For the analysis of interim conditions at the unsignalized intersection of Otay Valley Road/Rock Plant Access, it is assumed that the Thresholds/Standards do not directly apply. However, the policy guidelines were considered in the analysis since the criterion used was that the peak hour level of service be LOS D or better. It should be remembered that this level of service was for movements on the private driveway and not the movements on Otay Valley Road.

At build-out, it is anticipated that every signalized intersection along Otay Valley Road will operate at LOS 'C' or better.

Parks and Recreation - The Threshold Policy goal is to "provide a diverse and flexible park system which meets both the active and passive recreational needs of the citizens of Chula Vista." It sets a standard ratio requiring three (3) acres of neighborhood and community park land with appropriate facilities per 1,000 population east of I-805.

The City of Chula Vista adopted General Plan designates lands along the Otay River drainage for public park and open space uses. Chula Vista and San Diego cities, as well as the County, are also currently working on an Otay Valley Regional Open Space Park. The southern limits of this park area will include at a minimum the wetlands associated with the River (see Section 3.7).

The proposed project will not directly result in an increased population base in the project area. Road construction will, however, impact the existing wetlands area. Approximately 4.1 acres will be impacted, including 3.0 acres of wetlands permanently lost, and 1.1 acres subject to short-term construction impacts. Mitigation proposed as part of the road widening project includes 1:1 restoration of areas subject to short-term impacts (including enhancement to a higher quality vegetation). An appropriate figure for replacement of acreage lost would be a ratio of 2:1, resulting in the overall creation of approximately 6.0 acres of new wetland habitat dominated by willow woodland. These efforts will significantly improve and enlarge the wetlands habitat to be incorporated into the planned regional park. As such, the proposed project will improve the condition of lands potentially incorporated into the planned regional park.

Drainage - The goal of the drainage standard in the Threshold Policy is to ensure that "individual projects will provide necessary improvements consistent with the Drainage master Plan(s) and City Engineering Standards" sufficient to "provide a safe and efficient storm water drainage system."

There are currently twelve storm drainage culverts under the existing road which drain water north to south into the Otay River (see Section 3.2). One-hundred year frequency flows show that drainage capacity would be exceeded at at least five of these locations.

The project proposes a roadway drainage system consisting of catch basins and piping which will generally follow the natural course of drainage and will be sized to accommodate roadway surface flows. Surface drainage will follow street gutters and storm drains, which will empty into the Otay River floodplain. Provisions will be made for erosion and sediment control during construction. Improvements will be consistent with the Drainage Master Plan and the drainage system will be evaluated by the City's Engineering Department for adequacy. As such, the proposed project is consistent with the Threshold Policy.

Sewer - As stated in the Objective, "individual projects will provide necessary improvements consistent with Sewer Master Plans and City Engineering Standards." This is to be accomplished by ensuring that sewage flows and volumes do not exceed City Engineering Standards. The proposed road widening will not result in any changes to current use levels or system capacities. As such, growth forecasts and new facilities will not be required. The project is in compliance with this Policy/Threshold.

Water - Two Objectives are noted by the City for this topic: To 1) "Ensure that adequate storage, treatment and transmission facilities are constructed concurrently with planned growth," and 2) "Ensure that water quality standards are not jeopardized during growth and construction."

The Otay Municipal Water District currently maintains waterlines from Oleander Avenue to several hundred feet east of Nirvana Avenue in the Otay Valley Road bed (see Section 3.15). These lines will not be removed. Prior to paving, however, new 12" and 16" water lines will be installed which will also extend further to the east and south than the existing water mains. Impacts to the Otay Valley water system from the proposed project will be beneficial as the system will be enlarged in anticipation of future use and will be able to provide water to an extended service area.

4.0 ALTERNATIVES

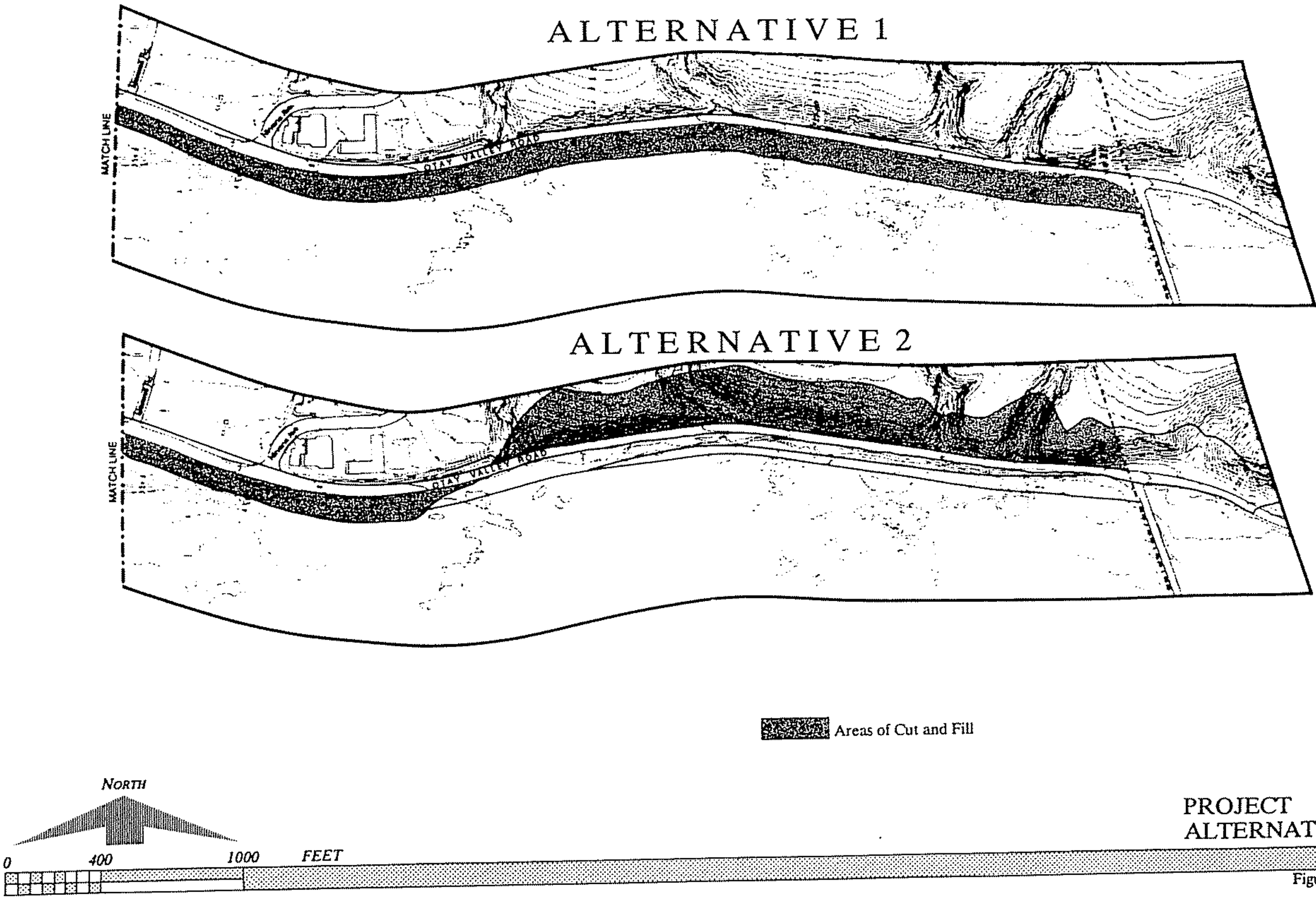
The proposed project will not result in significant adverse impacts if all recommended mitigation measures are implemented. Two locational alternatives, as well as the No Project Alternative, were evaluated for this project in order to compare the proposed project effects with other right-of-way options. The locational alternatives were identified to provide routing options and right-of-way width alternatives that may provide environmental savings to significant natural resources, including wetlands, soils and cultural resources.

- Alternative 1 - Alternative 1, shown on Figure 4.1-1, is the same as the proposed project from I-805 to a point east of Nirvana Road where the existing curb and gutter improvements end. In this western roadway section, Otay Valley Road would be widened to a six lane prime arterial road, within a 128 foot right-of-way. East of Nirvana, Alternative 1 would transition from a six lane prime arterial roadway to a four lane major street, which would require a 100 foot right-of-way. The right-of-way boundary for Alternative 1 would be the same as the proposed project's northern boundary for the entire road length. A suboption to Alternative 1 is to reduce the right-of-way in the western project area to 84 feet, in accordance with standards for a four lane collector street.

- Alternative 2 - Alternative 2, shown on Figure 4.1-1, is also the same as the proposed project from I-805 to the point east of Nirvana Road where the existing curb and gutter improvements end. East of Nirvana Road, Alternative 2 would transition from a six lane prime arterial roadway to a four lane major street, within a 100 foot right-of-way. The right-of-way boundary for Alternative 2 would be established immediately adjacent to, but not within, the wetlands area. Consequently this alternative encroaches into steep hillsides at the northeastern edge of the project area. An 84 foot right-of-way is also a suboption for Alternative 2.

The potential consequences of the No Project Alternative and Alternatives 1 and 2 are discussed below.

OTAY VALLEY ROAD
WIDENING PROJECT



PROJECT
ALTERNATIVES

Figure 4.4-1

4.1 NO PROJECT ALTERNATIVE

The No Project Alternative consists of no action taken by the City of Chula Vista to construct or implement the proposed project or either of the project alternatives. This alternative would discourage future infill industrial growth along Otay Valley Road and inhibit economic growth in the Otay Valley Road Redevelopment Area. This is contrary to the goals of the Chula Vista Redevelopment Agency as set forth in the Otay Valley Road Redevelopment Plan. The plan specifically calls for the correction of problems relative to circulation, infrastructure and public utility inadequacies. The No Action Alternative would also be inconsistent with the City of Chula Vista's Draft General Plan Circulation Element roadway designation for Otay Valley Road, which calls for a six lane prime arterial and major street standards for Otay Valley Road. In addition, if this alternative is selected, the lack of capacity and low level of service on Otay Valley Road could constrain future developments north, south and east of the project. Future development proposals that would contribute traffic to Otay Valley Road, or require the extension of utility services along the roadway, would be affected most.

4.2 ALTERNATIVE 1

The environmental consequences of constructing Alternative 1 would be identical or very similar to the proposed project with respect to geology and soils, landforms, land use, agriculture, aesthetics, cultural and paleontological resources, and park, recreation and open space. The differences in environmental impacts between Alternative 1 and the proposed project are primarily to biological resources and to traffic conditions.

A. Biological Resources

This alternative reduces the right-of-way from 128 feet to 100 feet east of Nirvnana Avenue while retaining the same general road alignment as the proposed project. Impacts of this alternative would generally parallel those of the proposed project with only a slight reduction in magnitude. Loss of wetlands would total approximately 1.23 acres with proportionally fewer San Diego Marsh-Elder impacted. Loss of habitat for riparian bird species would still be considered significant. Reducing the right-of-way to 84 feet would lower the wetland impacts to

0.60 acre, still resulting in significant adverse wetlands impacts. Under either the proposed project or the reduced widths of Alternative 1, wetland impacts and impacts to the sensitive San Diego Marsh-Elder are considered significant but mitigable through creation of replacement wetland habitats including the heavy utilization of marsh elder in the plantings.

The adverse impacts to the degraded Diegan Sage Scrub, disturbed roadsides, and agricultural fields would be considered insignificant.

B. <u>Traffic</u>

The City's recommended maximum traffic volume for a four lane major street is 30,000 VPD. Since the forecast volume at build-out is 26,000 VPD east of Nirvana Avenue, the alternative of a four lane classification would be adequate. However, such a classification may require an amendment of the General Plan Circulation Element if it is adopted as is. Such an amendment will likely occur in the near future since the General Plan Circulation Element now shows that at some point between Brandywine Avenue and Paseo Ranchero, Otay Valley Road changes classification from a six lane major to six lane primary arterial. In a telephone conversation with the City Traffic Engineer, he indicated that the plan is for Otay Valley Road to be a six lane major classification, not a primary arterial. In that same conversation, he stated that such inconsistencies would be dealt with during an amendment process in the near future.

4.3 ALTERNATIVE 2

The environmental consequences of constructing Alternative 2 would be the same as the proposed project and Alternative 1 with respect to land use, agriculture, and parks, recreation and open space. Environmental impact differences between Alternative 2 and the proposed project are identified for traffic conditions, biological resources, cultural resources, geology and soils, and landforms and aesthetics, as well as traffic. Impacts to transportation are the same for Alternative 2 as described above for Alternative 1. Overall, impacts on the remaining natural, cultural and scenic resources would be greater from Alternative 2 than from the proposed project.

A. Biological Resources

This alternative would hold the southern boundary of the roadway constant and widen to the north to achieve a 100 foot right-of-way east of Nirvana Avenue. Under this alternative all direct adverse impacts to the wetland habitats would be eliminated. Due to the extensive slope cutting required, however, an extensive loss of quality Diegan Sage Scrub habitat and a wide array of sensitive plants and animals occurring on these hillsides would be severely impacted by this proposed alternative. The biological impacts of this loss would be significant.

The only known large population of Greene's Ground Cherry would be lost. Such a loss is considered unmitigable. Also eliminated would be the dense stands of Coast Cholla and the Fishhook Cactus population. The latter occurs in densities seldom seen in San Diego County; moreover, the average size of specimens far surpasses other known substantial populations. Also heavily impacted would be the State-listed endangered Otay Tarweed population, along with significant colonies of Coast Barrel Cactus and Cleveland's Golden Stars.

One pair of California Gnatcatchers would probably be lost from the slopes under this alternative. The Orange-throated Whiptail population would also be impacted. The Diegan Sage Scrub slopes which would be impacted are considered excellent gnatcatcher habitat.

B. Cultural Resources

Alternative 2 would impact the three cultural sites documented for the proposed project and further impact two additional sites located on hillside terraces east of Nirvana Road and north of Otay Valley Road, where Sites SDi-11145 and SDi-11146 were documented. SDi-11146 is not considered unique and offers no opportunities for further research. Surface artifact mapping and recovery included one mano, six flakes, two debitage, four cores, one scraper, three scraper planes, and one utilized flake. One test unit was positioned in the area of the greatest concentration of surface artifacts. The test unit produced only a single utilized flake and did not reveal the presence of cultural deposits of any research value or significance. The site has therefore been evaluated as a non-significant resource.

Site SDi-11145 was evaluated as being potentially significant. This is due to the fact that the site has an association with the late prehistoric occupation of the Otay River Valley. The site provides access to the river area along a narrow ridge that follows the course of a tributary canyon into the Otay River. Three manos, 1 metate fragment, 25 flakes, 13 debitage, 2 cores, 3 hammerstones, 2 scrapers, 1 scraper plane, 4 retouched flakes, 4 shell fragments, and 1 prehistoric ceramic sherd were collected. The artifacts were dispersed over a wide area, with a concentration noted toward the southeastern portion of the site.

One test unit was excavated, positioned in the area of the greatest concentration of surface artifacts. The subsurface deposit did not include any indication of an actual occupation, but the recovery of 2 tools, 2 cores, and 19 flakes and debitage indicated that the site was used repeatedly over a period of time. The lack of any indication of actual occupation and cooking suggests the site was only a small subsistence camp associated with a larger occupation village located in the vicinity.

In conclusion, Site SDi-1145 consists of a widely dispersed site which does contain a subsurface deposit retaining a moderate level of research value. The presence of such a subsurface deposit suggests that information could be derived regarding the course of the adaptation of the subsistence pattern over time. In light of this moderate level of research potential at the site, the resource has been evaluated as potentially sensitive.

The intensity of the impacts represented by Alternative 2 would be significant, since the resource is sensitive and unique. The extent of the impacts would also be significant, since grading for this alternative would include the total resource, or at least that portion of the site which contains the significant subsurface deposits. Since Alternative 2 would impact all of the sites that will be affected by the proposed project, and would additionally impact this potentially significant site, Alternative 2 is less preferred for cultural resources than the proposed project.

C. Geology and Soils

Alternative 2 would require cutting into the steep hillsides located in the northeastern section of the project area. Potential areas of disturbance assuming 2:1 slopes are shown on Figure 4.1-1. Soil conditions in this area consist of terrace escarpments and are considered to be unstable due to the presence of cobble strata. Consequently, greater maximum slope ratios could be required (e.g., 4:1) thereby increasing even further the amount of land disturbed. In addition, retaining walls, with a maximum height of 20 feet, would most likely be required as mitigation. In summary, Alternative 2 is less preferred than the proposed project with respect to geotechnical and soils constraints.

D. Landform and Aesthetics

Alternative 2 would also result in significant landform impacts. This Alternative would result in major landform alteration due to the amount of cutting that would be required to acheive 2:1 or 4:1 slope ratios. Cut slopes would be required north of the roadway for approximately one-half mile in the northeastern part of the project area. Maximum height of cut slopes would be approximately 65 feet.

Landform modifications in this area would have significantly adverse impacts on landscape aesthetics since this Alternative would result in strong visual contrasts with the current natural hillsides and vegetation cover.

Consequently, Alternative 2 is less preferable than the proposed project with respect to landforms and aesthetics.

5.0 UNAVOIDABLE SIGNIFICANT ENVIRONMENTAL IMPACTS

The proposed widening of Otay Valley Road will result in a significant change to the character of lands located south of the existing roadway, and which will be converted to the roadway land use. However, no significant, unmitigable environmental impacts will result from the implementation of the project.

6.0 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

This section discusses cumulative and long-term effects which adversely or beneficially affect the environment. Cumulative effects are anticipated from the development of the related projects (see Table 2-1) in the project vicinity.

The proposed Otay Valley Road Widening Project would change the existing land uses from agriculture, open space, and unauthorized off-road vehicle use to a six-lane prime arterial roadway. In order to achieve the proposed land use, impacts would occur to the environment, all of which can be mitigated.

Cumulative impacts are briefly summarized below.

- Agricultural Resources - Lands north and south of Otay Valley Road, along the western two-thirds of the roadway are classified as Prime agricultural land by the Soil Conservation Service. Only one active agricultural land parcel remains in production, south of Otay Valley Road. The loss of this resource is only a slight, incremental amount from the County's agricultural land base, yet this loss, in conjunction with the conversion of agricultural lands throughout the County due to development pressures, is cumulatively significant. This incremental impact could be mitigated only by retention of the agricultural resources onsite.

- Air Quality - As with most development projects, air quality impacts are insignificant at the project scale, yet significant when added to the number of regionally proposed projects and projects under construction. Each project can implement measures to aid in reducing emissions, such as transportation control measures. While this project will not in itself cause long-term air quality impacts, it will facilitate the development of other projects that will increase traffic on the roadway.

- Wetlands - The proposed project will physically remove 3.0 acres of wetlands habitat including Tamarisk/Mulefat Shrubland, Willow Riparian Woodland and Freshwater Marsh. The loss of this resource, while only a slight amount, is significant due to the high biological resource values and limited amount available in the County. Impacts to wetlands will be mitigated through the creation and enhancement of six acres of wetlands habitat in the Otay River Valley.

- Fire and Police Protection - The proposed project would incrementally increase the City's response time, and as such, will have a slight beneficial effect on these services.

- Water and Sewer Service - Water use would incrementally contribute toward a demand for water which is beyond the resources capabilities of the southern California area. Water must be imported from the Colorado River and northern California. By landscaping with native vegetation and installing water saving devices, the project could reduce its water demand potential, incrementally aiding in water conservation in the southern California area.

- Transportation/Access - Ultimate development of the proposed project would significantly affect the existing capacity on Otay Valley Road. Development of the surrounding area proposed projects would result in significant cumulative impacts that would be mitigated by widening this existing two-lane road to a six-lane road.

7.0 IRREVERSIBLE ENVIRONMENTAL CHANGES THAT WILL RESULT FROM THE PROPOSED PROJECT

As a result of the proposed project, the project site would change from a primary rural roadway to an urban six lane prime arterial roadway. The irreversible changes associated with implementation of the project include:

- o The loss of Prime agricultural land (though presently it is minimally utilized for crops which are not considered highly valuable);
- o Site topography would be altered slightly due to grading for the proposed development;
- o Air quality and noise levels would be degraded slightly due to the development of other regional projects that would benefit from the Otay Valley Road Widening;
- o Ambient noise levels would be increased due to construction activities, and other cumulative project-related vehicles and activities; and
- o Energy and water resources would be committed in site construction activities and as future site usage.

8.0 GROWTH INDUCING IMPACT OF THE PROPOSED PROJECT

8.1 EXISTING CONDITIONS

The proposed project is located along the Chula Vista urban fringe. On the west, the project is bound by I-805 and continuous urban development. North of the proposed project alignment major land uses include a residential neighborhood, county landfill and partially developed industrial area. Land to the south is dominated by the Otay River channel and undeveloped open space with some scattered commercial and agricultural uses bordering Otay Valley Road. Land to the east of the project is also predominantly undeveloped open space with some extractive uses. Refer to Section 3.8, Land Use.

Various specific development plans within the project area or sub-region are currently being processed by the County of San Diego and Cities of San Diego and Chula Vista. See Table 2.4-1 and Figure 2.4-1. A number of applications are pending with the City of Chula Vista for new industrial developments in the Redevelopment Area north of the Otay River channel. Several major mixed residential, industrial and commercial development plans have been submitted to the Cities of San Diego and Chula Vista for the area south of the Otay River and north of State Route 905/Otay Mesa Road. In November 1988, however, the San Diego City Council imposed a one year moratorium on the approval of new residential development near Brown Field, pending a SANDAG study recommendation for a replacement airport for Lindbergh Field. The SANDAG study is focusing on the Brown Field/Otay Mesa and NAS Miramar options. The building freeze covers an area west of Brown Field, east of I-805, and between the Mexican border and Chula Vista city limits. In addition, a one year moratorium was imposed on all commercial and industrial projects north of Route 905/Otay Mesa Road. Developers with existing proposals in the moratorium areas can proceed with the planning process without assurance of approval. Finally, the Otay Mesa industrial area south and east of Brown Field is also developing rapidly. The recent approval of a five-site foreign trade zone in this area by the U.S. Customs Service is expected to further spur development.

Much of the vacant, undeveloped land to the east of the project area is owned by the Baldwin development company. Although concept plans and studies have been prepared for this property in coordination with San Diego County, no specific development plans have as yet been proposed. Preliminary information indicates that Baldwin is proposing a broad mix of residential, commercial, industrial, institutional and recreational uses for this 20,000 acre property. At buildout, projected for 2030, this community is proposed to contain as many as 150,000 residents in 60,000 housing units. Most of the Baldwin property west of Otay Reservoir is within the Chula Vista sphere of influence. The Chula Vista City Council has recently approved a "statement of intentions" that would expedite City processing of Baldwin development plans.

In addition to the above specific development plans, the *Draft Chula Vista General Plan Update (Scenario Four)*, *Otay Valley Road Redevelopment Plan*, City of San Diego *Otay Mesa Community Plan* and County of San Diego *Otay Subregional Plan* anticipate the character of future land use in the project area and sub-region. Refer to Section 3.8, Land Use.

8.2 GROWTH PROJECTIONS

The San Diego Association of Governments (SANDAG) is responsible for developing growth forecasts for the San Diego region. The *SANDAG Final Series 7 Regional Growth Forecast* (July 1988) projects population, housing and employment data to the year 2010, based on 1986 estimates. Series 7 data for Census Tracts 13305 and 10007 best reflect the subregion potentially affected by the proposed project. These tracts are bound on the west by I-805, on the north by Telegraph Canyon Road, on the east by the Otay Lakes, and on the south by the international border with Mexico. The Otay River channel is the common boundary between these tracts. In general, Series 7 forecast extraordinary levels of real and relative growth for these tracts. Within the 1986 to 2010 Series 7 time frame, these areas will be transformed from largely vacant rural lands to major urban areas.

Data for Tract 13305 generally reflect future development levels for the Baldwin property. Population in this area is projected to increase from 8,379 in 1986 to 32,976 in 2010, a 293.6 percent increase. This represents an annual growth rate of 5.9 percent, as compared to 1.6 percent projected for the San Diego region. Housing is expected to grow from 2,233 occupied units in 1986 to 11,107 units in 2010, a 397.4 percent increase. This represents an annual growth rate of 6.9

percent, 3.6 times the annual rate for the region. Finally, civilian employment in this Tract is expected to grow 168.4 percent between 1986 and 2010, or about 4.2 percent annually. This is about twice the average yearly employment growth rate for the region.

Data for Tract 10007 generally reflect the future development of the Otay Mesa area. Population in this area is projected to increase from 792 in 1986 to 49,716 in 2010. This constitutes a total change of 6,177.3 percent, and an average annual increase of 18.8 percent. This is nearly twelve times the average annual population change forecast for the San Diego region. Housing is expected to grow from 267 occupied units in 1986 to 15,908 units in 2010, a 5,858.1 percent increase. This represents an average annual change of 18.6 percent as compared to 1.9 percent for the region. Finally, civilian employment is projected to increase from 2,516 in 1986 to 30,818 in 2010, a 1,124.9 percent increase. This represents an average annual change about 5.5 times that for the region.

The City of Chula Vista, City of San Diego and County of San Diego have all adopted the Final Series 7 Forecast and the *Draft Chula Vista General Plan Update* is consistent with the Series 7 population projections.

8.3 CONSTRAINTS TO DEVELOPMENT

The future development of lands within the project area and subregion will be subject to natural, land use, public services and growth control constraints.

Natural resources constraints include the Otay River floodplain, steep slopes, biologically sensitive lands, and significant cultural resources. Both the City and County of San Diego have recently enacted or interim programs in place to protect environmentally sensitive lands from future development. The extent to which natural resources constraints in the project region will actually inhibit development is not known.

The primary land use constraint is associated with the Brown Field Airport on Otay Mesa. The possible use of this facility as an international airport to replace or supplement Lindbergh Field has resulted in a temporary building moratorium and could potentially constrain long-term future development on Otay Mesa. This option is currently under study by SANDAG, with recommendations expected by the end of the year.

Substantial developable acreage exists within the project subregion. SANDAG Series 7 data for Census Tract 13305 indicate that of the nearly 13,000 acres of vacant land north of the Otay River, about 10,500 is considered usable for development. Similarly, data for Tract 10007 indicate that of the 14,500 acres of vacant land between the Otay River and international border, about 8,300 acres is considered usable.

The availability of water and sewer service is not expected to significantly constrain future development in the project area or subregion. In general, the Otay Municipal Water District and San Diego County Water Authority can be expected to meet the short-term and long-term demand for water service. The water pipe installed as part of this project (see Section 3.15) is being sized to serve a portion of the Baldwin proposed development east of the road as well as future development at Otay Rio Business Park. As a portion of the necessary line would be constructed in advance of Baldwin development, it would in part, remove a future constraint. The Cities of Chula Vista and San Diego, the Otay Water District and the San Diego Metropolitan Sewer System can be expected to meet the near-term demand for new sewer service in the subregion. The planned upgrade of the Metro system to secondary treatment will be designed to meet long-term (2050) sewage capacity needs.

The November 1988 ballot contained four growth control measures; two competing propositions each for the City of San Diego and the County of San Diego. All of these measures would have imposed annual housing caps at levels below the probable market demand, but all were rejected by the voters. However, another County-wide measure requesting voter endorsement of a regional approach to growth management was approved. The passage of Proposition C resulted in the formation of a "Blue Ribbon Committee" which is attempting to formulate a regional strategy to manage growth. Proposition C was largely derived from the work of the County/SANDAG Regional Growth and Planning Review Task Force. This group was formed in late 1986 and issued a final report in November 1988. This report contains 48 recommendations for regional growth control. The County is currently in the process of formulating a work program for the implementation of this document's recommendations. The Board of Supervisors is expected to act on the implementation plan in May 1989 and forward it to the Blue Ribbon Committee for approval. This effort may result in a truly regional growth management plan.

In response to voter rejection of the slow growth measures on the November 1988 ballot, the San Diego City Council has adopted a managed growth plan that is designed to protect environmentally sensitive lands, preserve single family residential neighborhoods and ensure the provision of needed public facilities as new development occurs. In addition, by the end of May, the City will have phased out the Interim Development Ordinance (IDO) which limits housing construction to 8,000 units per year.

In the City of Chula Vista, future growth will be keyed to the timely provision of adequate public facilities and services. Since 1987, new development has had to meet established performance standards for fire, police, traffic, parks and recreation, drainage, libraries, air quality, economics, schools, sewer and water. In November 1988, a controlled growth initiative (Proposition V) was passed by the voters of Chula Vista. This proposition mandates that adequate public facilities be in place as new development occurs, places limits on the rezoning of residential property, and requires the General Plan to have a Public Facilities Element. Finally, the City is currently preparing a Growth Management Element to the General Plan and a comprehensive program to address development and public facility phasing and implementation.

8.4 GROWTH INDUCEMENT

The proposed project would not have a significant direct or indirect influence on regional growth. SANDAG Agenda Report Number R-83, "Causes of Growth and Possible Control Measures in the San Diego Region" (September 1987), identifies new employment and natural population increases (births minus deaths) as the primary causes of the region's growth in the 1980s. Improvements to the transportation system do not have a significant influence on regionwide growth.

Although the proposed project would not significantly influence regional growth, it could facilitate growth within the immediate project area, or within the subregion, either south on Otay Mesa or east on the Baldwin property.

Within the project area, the road widening would increase capacity and improve the level of service to accommodate existing traffic and anticipated near-term development. As noted above, the proposed modifications to the water line system would partially remove a future constraint to building east and south of the roadway improvement as it will provide a ready connection for water utilities. To this extent it anticipates the development and eliminates the constraints, thereby facilitating development in the area. The project is intended to stimulate infill industrial development in the Otay Valley Road Redevelopment Area north of the Otay River channel. It is a goal of the Redevelopment Plan to promote and facilitate industrial growth and economic development in this area. The location, amount and type of future industrial development here will not likely be influenced by the roadway widening, however, it probably will increase the pace at which this industrial development will take place.

In general, future growth in the subregion is not likely to be significantly different with or without the proposed project. The project would not provide new access to any area not now served by the existing Otay Valley Road. In addition, although the project would increase the capacity of the roadway, it would not create enough excess capacity so as to prompt substantial new or premature growth in the subregion. Finally, no approved specific development plans in the subregion are contingent upon completion of the proposed widening. None the less, the project would provide a ready, major roadway with which access routes to the south and east could connect to I-805 and the regional transportation system.

Primary access to I-805 and the regional transportation network for developments south of the project area and the developing Otay Mesa industrial area would be State Route 905/Otay Mesa Road and Palm Avenue. It is not likely that substantial amounts of traffic would use the Otay Valley Road/Heritage Road route for access to these areas, primarily because it is indirect and Heritage Road is a substandard two lane facility. Future improvements to Heritage Road will be staged to occur with development south of the Otay River. The Otay Rio development will be required to construct a new bridge across the Otay River when the ADT on Heritage Road exceeds 7,100. Similarly, the facilities financing plan for the Otay Mesa Community Plan provides for a benefit assessment district to upgrade Heritage Road.

The Baldwin property east of the proposed project will develop as a planned community, with a mix of residential, commercial and employment uses as well as parks, schools, recreational facilities, and open space. This community will be planned and developed through the City of Chula Vista's Sectional Planning Area process. The result is likely to be a very controlled, long-term, staged buildout wherein construction will be phased to assure adequate public facilities, including sufficient traffic capacity within the circulation system.

Currently it is unknown to what degree the Baldwin property will be annexed to the City of Chula Vista as it develops. It is also unknown what portions of the property will be developed first, although it is reasonable to expect that they will be adjacent to existing urban areas. If developed in accordance with Chula Vista's Draft General Plan Update, Otay Valley Road will not be a major transportation facility east of Paseo Ranchero. In addition, development east of the project before 2005 will be limited to about 200 acres of industrial use.

It can reasonably be assumed that the Cities of Chula Vista and San Diego, and the County of San Diego, through their general plan, zoning, environmental review, and development planning and permitting mechanisms, will exert effective control over growth rates and patterns. In addition, these entities have growth management policies and controls intended to guide growth in an orderly fashion and avoid leapfrog development. The extent to which adopted land use and growth management plans will be adhered to or modified in the future, however, is unknown. Ultimately, development will be subject to future Chula Vista, City of San Diego, and County of San Diego discretionary actions on individual proposals.

8.5 SECONDARY EFFECTS

Future development within the project area would primarily reduce open space, agriculture, and natural resources and increase regional economic activity. In addition, specific development proposals may individually have significant effects on natural resources, cultural resources, or the human environment. It is expected that jurisdictional environmental review and permitting processes would mitigate potential project-specific impacts.

9.0 CERTIFICATION OF ACCURACY AND QUALIFICATIONS

This Environmental Impact Report was prepared by Keller Environmental Associates, Inc. of San Diego, California. Members of Keller Environmental Associates who contributed to the report are listed below.

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I hereby affirm that, to the best of our knowledge, the statements and information contained herein are in all respects true and correct, and that all known information concerning the potentially significant environmental effects of the project have been included and fully evaluated in this EIR.

Christine A. Keller
Project Manager

10.0 ORGANIZATIONS AND PERSONS CONTACTED

California, State of.

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C. Planning Department. Mr. Steve Conway. June 14, 1988; Mr. Mike Stang. June 29, 1988.

D. Transportation and Traffic Engineering. Mr. Bill Schempers. June 14, 1988.

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Schmidt Design. Mr. Glenn Schmidt.

Jimmie Shinohara. July 6, 1988.

Walker Scott Properties. Fred Borst. April 18, 1988.

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FINAL
ENVIRONMENTAL IMPACT REPORT
OTAY VALLEY ROAD WIDENING PROJECT
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October 1990

APPENDICES

The following appendices are included:

- Appendix A - Biological Resources Report
- Appendix B - Traffic Report
- Appendix C - Cultural Resources Report

APPENDIX A

REPORT OF A BIOLOGICAL SURVEY OF THE PROPOSED OTAY VALLEY ROAD CORRIDOR

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12 June 1989

Keith W. Merkel

Keith W. Merkel, Vice President

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INTRODUCTION

A biological survey of the Otay Valley Redevelopment Area, Otay Valley Road corridor was performed by Pacific Southwest Biological Services, Inc. at the request of Keller Environmental Associates for the Chula Vista Redevelopment Agency. The purpose of the survey was to identify sensitive biological resources and constraints in the preliminary phases of development design and assess potential biological impacts under different project alternatives for the widening of Otay Valley Road.

LOCATION

The section of Otay Valley Road included within the survey is found in Section 24 of Range 2 West, Township 18 South; and continues eastward into Section 19 and 20 of Range 1 West, Township 18 South of the USGS 7.5' Imperial Beach Quadrangle (Figure 1). The western boundary of the study area is at the road's intersection with the Interstate-805. The study corridor continues eastward a distance of 1000 feet beyond the City of Chula Vista/County of San Diego boundary. The total corridor length is approximately 9,500 linear feet and the corridor examined was approximately 400 feet wide (200 feet on either side of the existing roadway centerline). Additional limited investigations were made outside of this study corridor to determine the extent of specific sensitive resources and evaluate the proposed project on a regional perspective.

METHODS

The botanical portion of the survey was conducted by Craig H. Reiser on 28, 29 April 1988 and 14 September 1988. The on-foot survey covered all slope aspects, soil types, and drainages within the study corridor. Sensitive plant locations and vegetation were mapped on a 1" = 200' topographic map. Extensive portions of the roadside at the western end are industrially developed and horticulturally planted; other sections consist of heavily disturbed, disced fields without native vegetation. These areas were only briefly examined, while other significant native habitat was comprehensively scrutinized. Wetland areas were further delineated utilizing the Corps of Engineers guidelines (Environmental Laboratory, 1987). This work was performed by Dr. R. T. Huffman (Brandman, 1987), and was further refined by Keith W. Merkel utilizing new 1" = 40' topographic base maps (Pacific Southwest Biological Services, 1988).

The zoological portion of the survey was conducted according to the following schedule and by the biologists identified:

3 May 1988	Keith W. Merkel Stephen J. Montgomery	0915-1200	Skies clear; temperature 74° F. at 1200 hours; winds negligible.
4 May 1988	Stephen J. Montgomery	0700-1050	Skies overcast; temperature 55° F. at 0700 hours; winds 3-5 mph.
5 May 1988	Keith W. Merkel Stephen J. Montgomery	0715-0900	Skies overcast; temperature 58° F. at 0800 hours; winds 8-12 mph.
14 September 1988	Eric R. Lichtwardt	1200-1400	Sunny; 76° F. at 1200 hours; winds negligible.
16 September 1988	Eric R. Lichtwardt	0800-1100	Hazy; 70° F. at 1100 hours; no wind.

Wildlife identifications were aided by binoculars (10 x 40 power and 7 x 35 power). Unobserved species were identified through indirect signs (i.e. scat, tracks, calls, nests, and burrows, etc.). Significant zoological resources were plotted on field topographic maps (1" = 200') and are identified in Figure 3. Repetitive surveys were made to identify use areas and status of some of the more sensitive species observed.

Scientific nomenclature used in this report is from the following references: vegetation, Holland (1986); flora, Beauchamp (1986) and Munz (1974); birds, Unitt (1984); reptiles and amphibians, Stebbins (1985); and mammals, Bond (1977).

GENERAL PHYSIOGRAPHY

Within the study corridor and north of Otay Valley Road are short bluffs that reach a high elevation of 220 feet. The road surface varies little from 120 feet to 140 feet with elevations in the river bottom at approximately 100 feet. The floodplain is dotted with small cat-tail ponds, saline flats and sandy riverine channels which carry waters during the rainy season. On the late April and early May survey dates, intermittent surface flows occurred in many low-lying areas which typically remain dry in the late summer and early fall months.

Soils are alluvial sand with terrace escarpments on the northern slopes (Bowman, 1973). The underlying geology on these slopes is Eocene Mission Valley formation with Pleistocene stream-terrace deposits on the bluff tops (Kennedy and Tan, 1977).

BOTANICAL RESOURCES

Vegetation

Four distinct vegetation categories were delineated during the field survey: Diegan Sage Scrub, Tamarisk/Mule Fat Riparian, Freshwater Marsh, and Disturbed Roadside/Agricultural Field (Figure 2).

Diegan Sage Scrub

On the hillsides immediately north of Otay Valley Road, along the undisturbed eastern section, extends an intact stand of Diegan Sage Scrub (DSS) which is heavily dominated by succulent vegetation. Particularly abundant on one hillside is a thriving colony of Coastal Cholla (*Opuntia prolifera*). While Coastal Barrel Cactus (*Ferocactus viridescens*) is locally abundant on the eastern plateaus, on the crest it is largely replaced by Fish Hook Cactus (*Mammillaria dioica*). Both the density and robust size of many of these individuals indicates this is one of the best Fish Hook Cactus sites in coastal San Diego County. Also found along the crest are the peculiar, terete-leaved Ladyfingers (*Dudleya edulis*) whose tall flower stalks shrouded in numerous star-shaped white flowers during the late April survey data made the presence of this species extremely pronounced. Coast Prickly Pear Cactus (*Opuntia littoralis*) also occurs in this habitat.

Most unusual was the heavy concentration of Greene's Ground Cherry (*Physalis greenei*) on the easternmost bluffs. This small, and quite rare, native member of the tomato family was common beneath shrubs on the south-facing slope where Otay River Road intersects Otay Valley Road. The diverse assemblage here includes both Maritime Sage community species such as California Desert Thorn (*Lycium californicum*) and Waterjacket (*Lycium andersonii*); along with more typical DSS plants such as Laurel Sumac (*Malosma laurina*), Lemonadeberry (*Rhus integrifolia*), and Jojoba (*Simmondsia chinensis*). San Diego Sunflower (*Viguiera laciniata*) is abundant throughout.

On the plateau above is a vernally moist swale and cracked clay soils with Otay Tarweed (*Hemizonia conjugens*), Cleveland's Golden Stars (*Muilla clevelandii*), Water Tillaea (*Crassula aquatica*), and Canchalagua (*Centaurium venustum*). An adjacent area is heavily laden with Coastal Sagebrush (*Artemisia californica*). The Coast Barrel Cactus is particularly numerous on the plateau and is also found on the County lands to the east.

The western plateaus have been historically disturbed. The habitat is open, with limited grass coverage and low lying forbs such as Filaree (*Erodium cicutarium*) predominating. Scattered about is California Spinebush (*Adolphia californica*). Sandy openings feature annuals such as Thread-leaf Woolly Star (*Eriastrum filifolium*), Skunkflower (*Navarretia atractyloides*), and California Popcorn Flower (*Plagiobothrys californica*). Narrow-leaf Oligomeris (*Oligomeris linifolia*) is found in localized subpopulations.

The slopes below include Littleseed Muhly (*Muhlenbergia microsperma*), a diminutive native grass, and Mohave Yucca (*Yucca schidigera*). Weak-leaf Burbush (*Ambrosia confertiflora*) grows in several small watercourses that drain these hillsides.

Tamarisk/Mule Fat Riparian

South of Otay Valley Road the floodplain is heavily populated with non-native Tamarisk (*Tamarix chinensis*) and native Mule Fat (*Baccharis salicifolia*). Scattered clusters of Willows (*Salix lasiolepis, S. gooddingii*, and *S. hindsiana*) occur throughout the river bottom. This section of the floodplain is largely composed of winding sand and gravel bars and small ponds. San Diego Marsh-Elder (*Iva hayesiana*) is the dominant channel shrub. On open, sandy banks grow Coast Locoweed (*Astragalus trichopodus*), Salt Heliotrope (*Heliotropium curvassicum*), and Mint-Leaf Vervain (*Verbena menthaefolia*). Desert Fragrance (*Hymenoclea monogyra*) is an occasional shrub along the drainages which were filled with recent rainwater during the survey dates. For much of the year surface water is largely restricted to the freshwater ponds; thus restricting much of the understory to spring annuals.

Mature Sycamores (*Platanus racemosa*) are present at scattered locales, as are several large adventive stands of Poison-Oak (*Toxicodendron radicans* ssp. *diversilobum*).

Freshwater Marsh

Low lying areas in the river bed are given over to California Bulrush (*Scirpus californicus*) and Soft Flag Cat-Tail (*Typha latifolia*). Other wetland elements include Southwestern Spiny Rush (*Juncus acutus*) and Spike Sedge (*Eleocharis montevidensis*). Numerous small ponds occur along the roadway; however, few are perennial. During the drier portions of the year, the marsh vegetation in these ponds typically dies back to the tuberous root system with only short and sparse young leaves remaining green. Several of these ponds are high in alkalinity during the summer months and a thin crust of salt can often be seen over the drying mud of mid and late summer. Further, due to the sparse vegetation and open alkaline panne areas present during much of the year, these habitats have been severely impacted by the heavy pressures of off-road vehicle activities. Most, if not all of these small marsh areas are devastated by this activity prior to refilling with water in the following rainy season.

Disturbed Roadside/Agricultural Fields

Much of the western portion of the Otay Valley Road survey corridor is now fronted by light industrial use and includes marginal horticultural plantings. Further east are disced agricultural fields with typical agrarian associated weeds such as Sow Thistle (*Sonchus asper*) and Indian Sweet Clover (*Melilotus indicus*). Along the roadway, Garland Chrysanthemum (*Chrysanthemum coronarium*), Milk-thistle (*Silybum marianum*), and Sunflower (*Helianthus annuus* ssp. *lenticularis*) are also extremely common elements of the vegetation. No true plant community exists in these disturbed areas and the species assemblage, vastly dominated by exotics, tends to reflect the high degree of soil disturbance and landscape materials dumping in the area.

FLORA

One hundred fifteen plant taxa were noted during the survey, of which 41 are non-native (Table 1). Due to the ability to complete both a spring and late summer botanical investigation, it is believed that the plant list for the area is extremely close to complete. It is estimated that well over 95% of the plant taxa present in the area have been noted by the project botanist and occur on the species list with the remainder being small species numbering very few, and a handful of the numerous dumped landscape plants which have taken hold along the existing roadway slopes.

Aside from the unusually high numbers of *Physalis greenei*, the only unexpected element of the flora was a small population (approximately 25 plants) of *Atriplex pacifica*. This small saltbush has been ignored by the compilers of sensitive plant species lists; probably due to its inconspicuous flowers and the general nondescript nature of its appearance. However, the known range is coastal Los Angeles County south to Islas Cedros in Baja California, Mexico. Most of its United States habitat is currently developed and, within San Diego County, the species is extremely rare. As such, this population, growing on a bench within the hillside population of *Physalis greenei*, should be considered "sensitive."

ZOOLOGICAL RESOURCES

WILDLIFE HABITAT

Five major wildlife habitats occur along the proposed road corridor: Diegan Sage Scrub, Tamarisk/Mule Fat Riparian, Willow Riparian, Freshwater Marsh, and Disturbed Roadside/Agricultural Fields.

<u>Diegan Sage Scrub</u>

This habitat is largely restricted to south-facing hillsides and a narrow mesa overlooking the easternmost segment of the road. Most of the habitat directly north has been developed, isolating the area and substantially restricting the fauna. In addition, the mesa has been disturbed along the western portions and now maintains a paucity of shrubs and grasses. The Orange-throated Whiptail (*Cnemidophorus hyperythrus*) was noted utilizing this more open habitat along with a common iguanid, the Western Fence Lizard (*Sceloporus occidentalis*). Desert Cottontails (*Sylvilagus audubonii*) are abundant in denser brush near the eastern boundary of the project.

Avian species occupying this habitat include such locally common birds as the Brown Towhee (*Pipilo fuscus*) and the ubiquitous House Finch (*Carpodacus mexicanus*). Suitable open perching sites provide favorable locales for the Loggerhead Shrike (*Lanius ludovicianus*). Anna's Hummingbirds (*Calypte anna*) were observed in their striking courtship displays which include high speed vertical dives from which they pull out at the last possible moment, forming a hook shaped route.

The slopes include a better quality vegetation than found on the mesa tops. Particularly impressive is a large stand of Cholla that is optimal habitat for the sensitive Cactus Wren (*Campylorhynchus brunneicapillus*) and the Blue-gray Gnatcatcher (*Polioptila caerulea*). Although not found during this survey, these two species have been noted in similar habitat in eastern Otay Valley, particularly the Salt Creek drainage arising just west of Otay Lake. Suitable habitat for the sensitive California Gnatcatcher (*Polioptila californica*) is also found on these slopes. One pair of gnatcatchers was observed on the slopes near the eastern terminus of the study corridor and several additional pairs are known to occur farther to the east within Otay Ranch.

<u>Tamarisk/Mule Fat Riparian</u>

The heavy incidence of non-native Tamarisk has degraded the habitat quality of much of the Otay River floodplain. Nevertheless, the area is still heavily utilized by riparian birds who often forage for insects away from the stands of willow which occur sporadically throughout the sandy bottomlands.

Particularly obvious were Brown-headed Cowbirds (*Molothrus ater*); several flocks of Bushtits (*Psaltriparus minimus*); and both the Lesser Goldfinch (*Carduelis psaltria*) and its brilliantly yellow colored relative, the American Goldfinch (*Carduelis tristis*). Another bird favoring the semi-open, weedy areas among the Mule Fat and Tamarisk is the Song Sparrow (*Melospiza melodia*) with its distinctive call.

Conspicuous migrants noted in the area were 4 Northern Orioles (*Icterus galbula bullockii*) and a pair of Orange-crowned Warblers (*Vermivora celata*). While utilized by several avian species, there were noticeably fewer individuals and species of birds observed in the tamarisk and mule fat shrublands when compared with the well developed willow woodland areas.

<u>Willow Riparian</u>

Although not called out as a separate vegetation type due to the relatively small and isolated nature of the willow stands found within the study corridor, these areas are discussed as a separated wildlife habitat because of their notably higher importance to specific wildlife. Within the study corridor willow riparian is only poorly represented by small, scattered stands of trees occupying more mesic, low sites surrounding ponds and minor drainages. The greatest concentration of willows occurs well south of the roadway corridor along the main flowline of the river. At the eastern end of the study area, near the bridge where the road loops to the southeast, is a stand of Arroyo Willows that was occupied by Wilson's Warbler (*Wilsonia pusilla*) and Yellow-breasted Chats (*Icteria virens*). A Black-headed Grosbeak (*Pheucticus melanocephalus*) and more Wilson's Warblers were sighted in similar habitat to the west.

While the willow riparian habitat present within the survey corridor is extremely limited, it supported both higher diversity and numbers of avian species, by area than any other habitat present. Further, several species including the sensitive Least Bell's Vireo (**Vireo pusillus belli**), Willow Flycatcher (**Empidonax traillii**), and Yellow-breasted Chat, although occasioning other riparian habitats, never ventured far from a large stand of willows. The presence of this vegetation is undoubtedly key to the successful maintenance of populations of these species within the Otay River Valley.

Freshwater Marsh

Good recent rains had enlarged or created several seasonal ponds which have attracted a number of wetland birds. Possibly nesting in the bulrush and cat-tails are the American Coot (*Fulica americana*) and Cinnamon Teal (*Anas cyanoptera*). Aside from numerous Red-winged Blackbirds (*Agelaius phoeniceus*) with their curt, metallic calls, other species utilizing these, seasonal, small marshes and shallow open water areas include the Great Egret (*Casmerodius albus*), Great Blue Heron (Ardea herodias) and Mallards (*Anas platyrhynchos*).

Disturbed Roadside/Agricultural Fields

This habitat principally serves as an urban buffer to more substantial riparian and sage scrub vegetation. Typical open field and opportunistic birds such as the Common Raven (*Corvus corax*), Brown-headed Cowbird, the European Starling (*Sturnus vulgaris*), and Mourning Dove (*Zenaida macroura*) often are observed in the open fields within the corridor. Further, the presence of both open-water ponds, and a sanitary landfill in the vicinity also serve to increase the number of gulls including Ring-billed Gulls (*Larus delawarensis*), California Gulls (*L. californicus*), and Western Gulls (*L. occidentalis*), and ravens roosting and foraging in the field habitats. Spring weeds provide some herbaceous forage; however, this habitat is only of marginal biological utility. Due to the high frequency of soil discing on the agricultural lands, rodent populations in these areas never appear to rise to a level high enough to attract the attention of the numerous raptors which forage throughout the river valley.

Amphibians

The Western Toad (*Bufo boreas*) and Pacific Treefrog (*Hyla regilla*) were the only amphibians observed in the study area. These species were distributed in the vicinity of the shallow ponds and mudflats and undoubtedly provide a food source to the wading birds that frequent these ponds. The Pacific Treefrog is also expected to occur in both the Willow Riparian and Tamarisk/Mulefat Scrublands, although seasonal shifts would occur as dry season conditions forced the species to move into more mesic areas or burrow into the mud to wait for rains. Also expected in the area is the introduced Bullfrog (*Rana catesbeiana*). This species is found in all of the large perennial ponds elsewhere in the valley and would be expected to utilize the larger of the seasonal ponds within the study corridor.

The sensitive Western Spadefoot (*Scaphiopus hammondi*) is also known from areas upstream but was not observed in the study area. This species is discussed in the Sensitive Biological Resources Section of this report.

Reptiles

Five reptile species were observed during the survey (Table 2). Included in these sightings was a Red Diamond Rattlesnake (*Crotalus ruber*) winding across a sandy embankment within an area of tamarisk (Table 2). Although not widely publicized, both the Red Diamond and Western Rattlesnake (*Crotalus viridis*) frequent such riparian haunts. Also present in this habitat are the Western Whiptail lizard (*Cnemidophorus tigris*) and the sensitive Orange-throated Whiptail (*Cnemidophorus hyperythrus beldingi*) which have sporadic but widespread ranges in coastal San Diego County.

Likely to occur in such open, sandy habitats is the Coast Horned Lizard (*Phrynosoma coronatum blainvillei*) which needs an abundant supply of ants as a food source. The larger ponds and marsh areas are suitable to the requirements of the Two-Striped Aquatic Garter Snake (*Thamnophis hammondii*) which was observed during the survey on one occasion. Undoubtedly, other common reptiles such as the Gopher Snake (*Pituophis melanoleucus*), and Common Kingsnake (*Lampropeltis getulus*) also utilize the variety of sites along the road corridor.

Sensitive reptiles known or expected to utilize the habitats of the study corridor are discussed in the Sensitive Biological Resources section of this report.

BIRDS

Forty-four avian species were observed during the period of the field surveys (Table 2). Of particular note was the single male Least Bell's Vireo (*Vireo bellii pusillus*) singing from a perch in a clump of Arroyo Willows at the extreme eastern portion of the study area where a small bridge on Otay Valley Road crosses the Otay River. Four other singing vireos were found to the west of this bird, occupying Willow Riparian habitat several hundreds yards to the south of the road corridor under consideration. The possibility of 5 pairs of nesting Least Bell's Vireos on this portion of the Otay River is certainly noteworthy and surpasses the populations found during previous surveys (Pacific Southwest Biological Services, 1980; Brandman, 1987).

A Willow Flycatcher (*Empidonax traillii*) was noted at the easternmost vireo locale on one of five occasions that the site was visited. This bird was observed making use of the willow stand and an adjacent *Baccharis salicifolia* from which it conducted typical flycatching activities. Based on the brief period in which this bird was present in the area, it is presumed that the bird was migrating through rather than a resident nester. For this reason, the bird was believed to be the northern subspecies, *E. t. brewsteri* rather than the extremely sensitive *E. t. extimus* which is a rare breeding bird in Southern California. In either case, the short-term presence of this species is perhaps even more notable than that of the vireo.

Also important is the occurrence of two Yellow Breasted Chats (*Icteria virens*) and a Yellow Warbler (*Dendroica petechia*) within a small stand of willow riparian habitat adjacent to the existing roadway. These birds while more common in the coastal wetlands of San Diego County are also highly restricted to riparian areas dominated by willow and are often taken as an indication of high viability of an area.

An American Kestrel (*Falco sparverius*) which frequents the area was at one time sighted capturing a small mouse (*Peromyscus* sp.). The small rodent was identified within the talons of the kestrel, based on its white belly, tail coloration, and brown dorsal area.

Numerous other birds of prey utilize the Otay Valley for hunting. Over the course of the survey three Black-shouldered Kites (*Elanus caeruleus*), a male and female Northern Harrier (*Circus cyaneus*), a Red-tailed Hawk (*Buteo jamaicensis*), and a lone Sharp-shinned Hawk (*Accipiter striatus*) were observed. A Golden Eagle (*Aquila chrysaetos*), Prairie Falcon (*Falco mexicanus*), and Cooper's Hawk (*Accipiter cooperii*) were sighted in adjacent habitat to the east on other recent surveys. Red-shouldered Hawks (*Buteo lineatus*) are also present in the area and would be expected to make use of the area.

Several sensitive bird species were observed or are expected to occur in the project vicinity. These species are discussed in the **Sensitive Wildlife** section of this report.

MAMMALS

Eight species of mammals were detected on-site (Table 2). All are common to San Diego County. Raccoon (*Procyon lotor*) tracks were seen in wet mud around ponds. Undoubtedly, numerous rodent species occur within the dense shrub cover of the valley bottom and slopes adjacent to the roadway. Due to the lack of any sensitive rodents occurring in the area, a live-trapping program was not implemented.

The rural nature of the valley is evidenced by the sighting of a Bobcat (*Felis rufus*) hunting rabbits in the river bed on the adjacent eastern parcel during a survey the previous year. Also inhabiting the area are Coyote (*Canis latrans*), and a smaller canid, the Gray Fox (*Urocyon cinereoargenteus*).

Another interesting mammal which is commonly found along creeks and in urban areas is the Virginia Opossum (*Didelphis virginiana*). This marsupial which was introduced into California at San Jose in 1910 has subsequently spread throughout California (Jameson and Peeters, 1988) and is undoubtedly present in the study area.

SENSITIVE BIOLOGICAL RESOURCES

SENSITIVE VEGETATION

Diegan Sage Scrub

The historically extensive Diegan Sage Scrub which occurred throughout coastal and inland San Diego County has been heavily impacted by urbanization pressures. Large blocks of Diegan Sage Scrub have routinely been "fractured" into small isolated pockets of habitat. The area north of Otay Valley Road illustrates just such a trend; extensive agricultural activities followed by fairly recent industrial development have eliminated vast areas of Diegan Sage Scrub creating fragmented, often minuscule areas of habitat. South of Energy Way, north of Otay Valley Road, is an isolated hillside of Diegan Sage Scrub. Although fragmented and only a vestige of a historically much larger habitat, this area has an important accumulation of sensitive plant species and, to a lesser degree, an important assemblage of wildlife.

Small stands of Diegan Sage Scrub also occur south of Otay Valley Road, however, due to the historic mining, floods, off-road vehicle damage, and illegal dumping of debris, these areas have been severely degraded. Almost none of this vegetation remains in a natural condition south of the existing roadway.

Riparian Wetlands

The extensive wetlands in the Otay River Valley represent a highly significant habitat which has sustained a century of impacts from farming, sand and gravel mining, and an upstream dam. From an ecological standpoint, the proliferation of non-native Tamarisk, at the expense of native willow and Mule-fat vegetation, has caused very significant degradation of habitat. However, this damage is still largely surficial and outstanding possibilities for wetland enhancement are available throughout the valley. A major factor in such enhancement would be the modification of existing hydrology to favor such native riparian and freshwater marsh habitats. The losses sustained by wetland habitats in Southern California are well documented and further reductions of even small areas are considered significant.

SENSITIVE PLANTS

Otay Tarweed (*Hemizonia conjugens*)

Only two sizeable extant populations are known for the Otay Tarweed: along Otay Lakes Road south of Bonita, and at several nearby sites in the Poggi Canyon area. On a small bluff above Otay Valley Road approximately 500 plants were found straddling a fence cordoning off the United Enterprises property to the east. It also occurs in similar habitat on the hill to the east. Listed as 3-3-2 by the California Native Plant Society (CNPS) (Smith and Berg, 1988) and Endangered by the California Department of Fish and Game, this population must be considered highly significant (see Appendix I for number code definition). The type specimen for the species was taken in river bottomland near the historic city of Otay, and these colonies may represent the only remaining vestiges of the original population in the valley.

Cleveland's Golden Stars (*Muilla clevelandii*)

Approximately 30 specimens, an important population, were found growing sympatrically with *Hemizonia conjugens*. Cleveland's Golden Stars, although not inhabiting vernal pools, are often associated with Mima Mounds and the environs of vernal pools. The County range extends from Rancho Santa Fe south to Otay Mesa, with the easternmost collection from Foster, just east of El Cajon. The Otay Valley Road population grows in a vernally moist cracked clay soil along the periphery of an *Artemisia californica* dominated Diegan Sage Scrub. CNPS listed as 2-2-2; the plant is considered endangered within a portion of its range. Loss of the on-site population of this species is of moderate significance, but due to the high sensitivity of the other species it co-occurs with, the plant's habitat should be considered very significant.

<u>Greene's Ground Cherry</u> (*Physalis greenei*)

An estimated 200 *Physalis greenei* grow beneath shrubs on a south-facing hillside adjacent to the intersection of Otay Valley Road and the unpaved Otay River Road. Listed by CNPS but unranked owing to taxonomic questions, Greene's Ground Cherry, as currently constituted, is an extremely rare coastal species related to *P. crassifolia* on the desert. The size of the colony makes it the largest known population of this species, and therefore, of major botanical significance. Other substantial sites occur in Salt Creek within a large stand of Coast Cholla (*Opuntia prolifera*), in the Otay Valley off-site and upstream of the study area, and on a small canyon creek near Dulzura. Small populations have been recorded on south-facing hillsides of Otay Valley one mile east of the study corridor. Loss of the on-site population of this species would be considered significant.

<u>California Spinebush</u> (*Adolphia californica*)

California Spinebush is CNPS listed as 1-2-1 and is considered moderately endangered. Twenty to thirty California Spinebush grow on a mesa east of Nirvana Avenue and south of Energy Way. Habitat is degraded and the area appears to have been brushed within the last decade. Shrubs are very slowly returning to this xeric habitat and the California Spinebush is prominent owing to the lack of other sizeable plants. Within San Diego County, *Adolphia* still occurs at numerous sites along the coast. This population, owning to its limited numbers, relatively low rarity, poorly developed stature and marginal habitat, is considered of minor biological significance.

<u>Coast Barrel Cactus</u> (*Ferocactus viridescens*)

Coast Barrel Cactus occurs in small, scattered populations on the mesa and slopes north of the road. A very heavy occurrence of this cactus is found on the easternmost mesa overlapping onto County lands. This population essentially surrounds the *Hemizonia conjugens* and *Muilla maritima* habitat previously noted. Densities at this particular locale make the colony a significant biological resource. CNPS listed 1-3-1; endangered throughout its range; the species is also a Category 2 candidate for future federal listing. Impacts to this species would constitute a significant adverse biological impact due as much to the plant's associates in this area as its own status.

<u>San Diego Marsh-Elder</u> (*Iva hayesiana*)

The Otay River Valley and its tributaries have the heaviest concentrations of San Diego Marsh-Elder known in the County. Within the floodplain, *Iva* is a dominant shrub along both cobbly and sandy channels paralleling Otay Valley Road. This species carries a listing of 2-2-1 and is considered to be of moderate rarity and endangerment. This shrub is opportunistic and locally common in the Otay, Tijuana, San Dieguito, San Diego, and Sweetwater river beds; however, its U.S. range is limited to these few San Diego County riparian sites.

High population density makes the on-site occurrence of *Iva* significant but mitigable by replacement planting in other areas of the river valley.

<u>San Diego Sunflower</u> (*Viguiera laciniata*)

The San Diego Sunflower is a dominant member of many Inland Diegan Sage Scrub communities in southern San Diego County. Such is the case on the hillsides north of Otay Valley Road. Its CNPS listing of 1-2-1 is based on its limited range in San Diego County and Baja, California; as well as the extensive urbanization throughout much of its habitat which is dramatically reducing once extensive stands of Diegan Sage Scrub. The *Viguiera* itself is not significant but its association with a much rarer assemblage of plants occurring on the site is important.

<u>Ashy-footed Clubmoss</u> (*Selaginella cinerascens*)

The Ashy-footed Clubmoss occurs by the thousands on the mesas north of Otay Valley Road. Listed by CNPS at 1-2-1 owing to its range limitations in San Diego County and northern Baja California, this Clubmoss is extremely common in our coastal area. Its occurrence on-site is considered of minor biological significance.

Sensitive Plant Species Known From The Area But Not Found On-Site

San Diego Thornmint (*Acanthomintha ilicifolia*) grows in cracked clay soils such as those found at the Otay Tarweed (*Hemizonia conjugens*) site. It was searched for where suitable conditions occurred, but was not found. This species is known from only a few south county locations.

San Diego Sagewort (*Artemisia palmeri*) may be present in the Otay river bed in small numbers, but no populations are currently known or have previously been located in the study area.

San Diego Ragweed (*Ambrosia pumilla*) is an extremely rare ragweed; however, localized reports in the Otay region, upon further investigation, have turned out to be Weak-leaf Burbush (*Ambrosia confertiflorum*).

Orcutt's Brodiaea (*Brodiaea orcuttii*) prefers deep vernal pool habitats not found at the *Hemizonia conjugens* site or elsewhere on within the study area.

Orcutt's Bird's Beak (*Cordylanthus orcuttianus*) was historically found in small numbers in the Otay River floodplain just east of Interstate-805, but has not been relocated in the recent past. This species occurs in several locations downstream and probably occurs in low numbers on sandy embankments elsewhere in the riverbed.

San Diego Hasseanthus (*Dudleya variegata*) occurs just off-site to the east on open, xeric bluffs, and in broken, rocky habitat on the north-facing slopes of Otay Mesa. This species was not located, however in similar, but limited habitats present in the study corridor.

Both Cliff Spurge (*Euphorbia misera*) and San Diego Burbush (*Ambrosia chenopodiifolia*) are found on Otay Mesa but have not been found or reported on the south-facing slopes of Otay Valley.

Adder's-tongue Fern *Ophioglossum californicum* was searched for at the *Hemizonia* site but was not found. This highly cryptic species is very difficult to find except following heavy rains. It is known from similar habitats in the Poggi Canyon area.

Snake Cholla (*Opuntia parryi* var. *serpentina*) and Palmer's Grappling-hook (*Harpagonella palmeri*) grow at the east end of Otay Valley. Neither species was observed although both were carefully sought in the Diegan Sage Scrub present on the site.

Nightshade (*Solanum tenuilobatum*) is extremely localized on Otay Mountain and Otay Mesa. This species was not found within the study area.

With the exception of the *Ophioglossum*, all plants not found could have been identified during the survey period. Had any of these species been present in the study area in appreciable numbers, they should have been detected during the field surveys.

Sensitive Wildlife

General

Several sensitive wildlife species occur or are expected to occur within the study area for the Otay Valley Road Widening project. Most of these species are of fairly low sensitivity, make limited use of the area and would likely not be seriously impacted by the proposed project, or are mentioned only because of the remote possibility of their presence in the study area. These species have been grouped together and are identified on Table 3. Other species of higher concern also occur on Table 3, but are further discussed individually in the following text. These species are primarily those that are of great ecological importance, are legally protected, or could be directly impacted by the proposed project or one of the project alternatives.

Reptiles

Orange-throated Whiptail (*Cnemidophorus hyperythrus*)

The Orange-throated Whiptail is currently threatened by development pressures. This lizard carries a Federal Category II listing and is considered sensitive by six other listing agencies or organizations (Table). This species is generally found in association with open canopied sage scrub communities, but is also known to occur in other community types where open roadways or unvegetated, sandy soils are found. The status of this species is currently under study by the California Department of Fish & Game. A single whiptail was sighted in fairly open terrain on a mesa just north of Otay Valley Road and two additional lizards were noted in minor sandy channels in the river valley itself (Figure 3).

The population size of this species does not appear to be high in this portion of the Otay River Valley, however, the species is extremely abundant at numerous other sites in the vicinity, including areas around Lower Otay Lake and portions of the Otay Ranch.

Two-striped Aquatic Garter Snake (*Thamnophis hammondi hammondi*)

This aquatic garter snake is generally restricted to wetland areas of the western portions of the county. The species has suffered recent declines due to habitat loss and collection pressures. Currently the species is considered sensitive by the California Department of Fish and Game (1977) and has been listed as threatened by the San Diego Herpetological Society (1980). This species is also protected by international trade treaties (CITES, 1976). Although this species is often difficult to detect, it appears that the habitat requirements for the snake are relatively broad. These snakes occur in areas of freshwater marsh, riparian woodland, and even brackish and marine waters. Within the survey area only one individual of this species was observed, however it is expected that these snakes are widely distributed throughout the wetlands of the valley especially in the vicinity of ponds and marshes. Impacts of the project on this species would be expected to be minor and insignificant.

Birds

Least Bell's Vireo (*Vireo bellii pusillus*)

This subspecies is endemic to California and Baja California, Mexico; however, it has dramatically declined in recent years and is now absent from large areas of its former range. One of the strongholds of its distribution is in Willow Riparian Woodlands in San Diego County, although even here it has seriously declined (Unitt, 1984). As with many riparian birds, Brown-headed Cowbird brood parasitism, primarily, and destruction of riparian habitats, secondarily, appear to be the major reasons for the decline of Least Bell's Vireo. The Least Bell's Vireo is on the Federal Endangered Species list (USFWS, 1986) and is considered endangered by the State of California (CDFG, 1977). A single singing male was found in a stand of willows 200' west of where the Otay Valley Road bridge crosses the Otay River and approximately 300' south of the existing roadway (Figure 3). Four other vireos were discovered in similar habitat approximately one quarter mile to the west of this bird and several hundred yards south of the Otay Valley Road corridor under examination. The proposed roadway is considered to be sufficiently isolated spatially from the occupied habitats to avoid impacts to this species.

Yellow Warbler (*Dendroica petechia*)

This species was once an abundant summer resident in Willow Riparian Woodlands throughout Southern California. As with the Least Bell's Vireos, Brown-headed Cowbird brood parasitism and destruction of riparian ecosystems appear to be the main reasons for the decline of Yellow Warblers (Remsen, 1980; Everett, 1979). Yellow Warblers are seen during migration in the Otay River Valley and have nested along the upper reaches of the Otay River drainage. A single bird was noted in Willow Riparian habitat along the corridor route. This bird does not appear to be a resident breeder on site and no direct impacts to this species are expected due to the proposed project.

Yellow-breasted Chat (*Icteria virens*)

This large warbler is known to nest in the Otay River Valley at locales other than the study corridor (E. Lichtwardt, pers. obs., 1987; Unitt, 1984) and is considered to be a bird of special concern in California (Remsen, 1980) and as a declining species in San Diego County (Everett, 1979). Yellow-breasted Chats were once common in Riparian Woodland in Southern California, but have declined due to destruction of their habitat and brood parasitism by the Brown-headed Cowbird. Several Yellow-breasted Chats were observed or detected through vocalizations on site. While no nests were located within the survey corridor, vegetation clearing during the nesting season could possibly destroy nest sites of this species.

Willow Flycatcher (*Empidonax traillii*)

The subspecies breeding in the southwestern United States (*Empidonax traillii extimus*) is considered to be endangered by local authorities (Unitt, 1984). The bird observed on site could not be identified to subspecies and there is a great possibility that this individual was a migrant of the northern subspecies (*E. t. brewsteri*). As the site was carefully investigated on 5 different occasions with the Willow Flycatcher only noted during the 14 September 1988 survey, the bird is considered a likely migrant and not breeding on site. Breeding season for the species locally is from approximately 20 June to 15 July. No significant impacts to this species are expected to be associated with the proposed project.

California Gnatcatcher (*Polioptila californica*)

The California Gnatcatcher (*Polioptila californica*) is a Federal Category II species and is considered sensitive by numerous other sources (Table 3). This bird typically inhabits scrub vegetation dominated by California Sagebrush (*Artemisia californica*); usually in gently to moderately sloping terrain. A swatch of such habitat occurs on a mesa near the intersection of the unpaved Otay River Road and Otay Valley Road. A mated pair was seen occupying the area over a one week period and are apparently residents.

The California Gnatcatcher is mainly restricted to Baja California, Mexico and exhibits a distribution pattern similar to a number of other Baja California vertebrates, i.e. found the length of the peninsula, in suitable habitat, west of the northern deserts, the northern end of its range being coastal California. Loss of this single pair of birds located on the slope habitat in itself, would not be considered significant. However, the already high value of the habitat, based on botanical resources and other zoological resources, makes this pair of birds a noteworthy concern. This pair would be lost under one of the alternative road designs, but would not be impacted by the proposed roadway design.

EXPECTED BIOLOGICAL IMPACTS

Proposed Project

The proposed project, if constructed, would lead to both direct and indirect impacts to the biological resources along the proposed Otay Valley Road corridor. Further, the project would add to the cumulative loss of habitats favoring native flora and fauna not tolerant to human activities.

Direct Impacts

The proposed roadway expansion would lead to the loss of 18.2 acres of non-urbanized habitats including: disturbed roadsides and agricultural fields, Diegan Sage Scrub, Freshwater Marsh, Tamarisk/Mulefat Scrublands, and Willow Riparian Woodland.

Disturbed Roadsides/Agricultural Fields

The greatest acreage impacts would be to disturbed roadsides and agricultural fields with a loss of 14.0 acres. Biologically, this impact would lead to the reduced use of the area by congregating birds including gulls, European starlings, ravens, blackbirds, and mourning doves. The loss of these areas would not directly impact any sensitive plants or animals. Impacts to this area are not considered to be significant.

Diegan Sage Scrub

The project would lead to the loss of 1.2 acres of Diegan Sage Scrub. In general, the habitat impacted occurs down-slope of the existing roadway and is of poor quality with a high incidence of debris and weedy species. This area does, however, support a minimal number of Orange-throated Whiptails and is likely to provide refuge to more typical wetland-associated species during high river flows. No sensitive plant species were observed within the sage scrub areas to be impacted. The small size of the area to be impacted, combined with the low density of the sensitive whiptail and the high abundance of refuge areas throughout the river valley, makes the expected impacts to this area insignificant.

Tamarisk/Mulefat Scrubland

The project would lead to the loss of 2.6 acres of Tamarisk/Mulefat Scrubland. This wetland vegetation type supports reduced numbers of individuals and species from both upland habitats and higher quality wetland habitats. Several sensitive riparian birds are known to utilize this habitat. Further, the sensitive Orange-throated Whiptail was observed in low abundance within this habitat and is expected to occur within the proposed alignment area. Impacts to this habitat would eliminate a large number of sensitive San Diego Marsh-Elder. While this area has been severely degraded by the invasion of non-native Tamarisk and other weedy species, its wetland character, value to riparian species, and its potential for restoration to higher quality riparian habitat make its loss a significant biological impact of the project.

Willow Riparian Woodland/Freshwater Marsh

The project would eliminate 0.2 acre of Willow Riparian Woodland, which is dominated by Arroyo Willow, and 0.2 acre of Freshwater Marsh. San Diego Marsh-Elder is a dominant understory element in this area and would be lost under the proposed project design.

These habitats are utilized by an abundance of sensitive birds, including sensitive Yellow-breasted Chats and the Yellow Warbler. Elsewhere in the river bottom, willow riparian habitat is occupied by the endangered Least Bell's Vireo and the Willow Flycatcher. The sensitive Two-striped Garter Snake occurs within the marsh areas of the river valley and could potentially occur within the proposed alignment.

The quality of the riparian habitat alongside the current roadway is considered marginal owing to the high incidence of Tamarisk, historical dumping of rubbish, and paucity of diverse wetland understory. This area is peripheral to much higher quality habitat, dominated by willows, which occurs well south of the 200' corridor utilized for this survey. The tremendous past reduction in these limited wetland habitats and the extreme biological value makes loss of these areas significant.

In addition to these losses, the construction of the proposed roadway would utilize an additional 20 foot wide corridor along the base of the roadway slopes. This area would include 1.1 acres of Tamarisk/Mulefat Scrubland, 0.2 acres of Diegan Sage Scrub, and 0.8 acres of Disturbed Roadside vegetation. The disturbance of the 1.1 acre Tamarisk/Mulefat vegetation is considered to be significant.

<u>**Indirect Impacts**</u>

No other direct impacts to biological resources are expected to occur as a result of the proposed project. The most significant plant resources occur on the slopes north of the existing roadway at the eastern end of the project which are to be preserved. The sensitive Least Bell's Vireo and Willow Flycatcher occur in willow woodlands almost 300 feet from the nearest construction activity area and would not be impacted by the construction activities. The sensitive California Gnatcatcher, like the most sensitive plants, occurs on the slopes above the roadway and would not be impacted.

Indirect impacts to biological resources include the likely future extension of the roadway upstream of the project site which would increase the impacts to native plant and animal resources. Further occupation of the eastern areas by residential development could lead to significant impacts to resources. The roadway expansion would eliminate a portion of the degraded buffer that currently exists between high quality habitats within the river bottom and the existing Otay Valley Road. Potentially, the roadsides of the new roadway could receive the same abuse which has historically plagued the area. The expansion of the roadway is expected to lead to a higher incidence of road-kills, particularly among nocturnal mammals travelling between the uplands to the north and the river bottom. These indirect impacts, taken cumulatively, are considered to be significant and adverse.

ALTERNATIVE 1

This alternative reduces the right-of-way from 128 feet to 100 feet while retaining the same general road alignment as the proposed project. Impacts of this alternative would generally parallel those of the proposed project with only a slight reduction in magnitude. Loss of wetlands would total approximately 1.23 acres with proportionally fewer San Diego Marsh-Elder impacted. Loss of habitat for riparian bird species would still be considered significant. Reducing the right-of-way to 84 feet would lower the wetland impacts to 0.60 acre still leading to significant adverse wetlands impacts. Under either the proposed project or the reduced widths of Alternative 1, wetland impacts and impacts to the sensitive San Diego Marsh-Elder are considered significant but mitigable through creation of replacement wetland habitats including the heavy utilization of marsh elder in the plantings.

The adverse impacts to the degraded Diegan Sage Scrub, disturbed roadsides, and agricultural fields would be considered insignificant.

ALTERNATIVE 2

This alternative would hold the southern boundary of the roadway constant and widen to the north to achieve a 128-foot right-of -way. Under this alternative all direct adverse impacts to the wetland habitats would be eliminated. However, due to the extensive slope cutting required, an extensive loss of quality Diegan Sage Scrub habitat and a wide array of sensitive plants and animals occurring on these hillsides would be severely impacted by this proposed alternative. The biological impacts of this loss would be extremely significant.

The only known, large population of Greene's Ground Cherry would be lost. Such a loss is considered unmitigable. Also eliminated will be the dense stands of Coast Cholla and the Fishhook Cactus population. The latter occurs in densities seldom seen in San Diego County; moreover, the average size of specimens far surpasses other known substantial populations. Also heavily impacted will be the State-listed endangered Otay Tarweed population, along with significant colonies of Coast Barrel Cactus and Cleveland's Golden Stars.

One pair of California Gnatcatchers would probably be lost from the slopes under this alternative. The Orange-throated Whiptail population would also be impacted. The Diegan Sage Scrub slopes which would be impacted are considered excellent gnatcatcher habitat.

Analysis of Proposed Project and Alternative Impacts

In a biological sense, impacts from Alternative 2 would far exceed those of either the proposed project or Alternative 1.

The impacts of Alternative 1, when compared with the proposed project, do not differ tremendously in either area or severity. The potential for creating higher quality wetland habitats than those being lost and further creating replacement wetlands at a greater than 1:1 acreage replacement ratio as a mitigation measure for the wetland impacts favors the proposed project as the best biological option. On the other hand, the loss of existing wetlands and wetland fringe/floodplain areas reduces the width of the wetland corridor and the potential for ever restoring the wetlands to these areas. For this reason, wetland preservation is generally favored over mitigation by resource agencies (a bird in the hand...).

Because of the highly degraded nature of the wetlands along the roadway impact area and the extremely high potential that mitigation within the river valley will lead to both a net increase in total wetland acreage and value, the proposed project is biologically preferred over either Alternatives 1 or 2. This analysis holds true, however, only if such mitigation is, in fact, included as part of the project and is completed as discussed below.

RECOMMENDATIONS TO REDUCE IMPACTS TO BIOLOGICAL RESOURCES

Proposed Project

In order to minimize impacts of the project and mitigate impacts to a level of non-significance, the following measures are recommended.

1. Losses of wetland habitats including Tamarisk/Mulefat Scrubland, Willow Riparian Woodland, and Freshwater Marsh totalling 3.0 acres should be mitigated by the creation of new wetland areas within the river valley. Any such mitigation should include the extensive revegetation with willow woodland and the use of San Diego marsh-elder to maximize value to wildlife and mitigate for the loss to this sensitive plant species. Appropriate mitigation would be a 2:1 acreage replacement ratio for wetlands lost.

2. The roadsides should be designed in a manner that would inhibit the potential for vehicle access or illegal dumping into the river bottom or onto the slopes.

3. The roadway slopes should be revegetated with native plant materials indigenous to the area or which complement the existing native communities, such as sage scrub or sycamore woodland species.

4. Where construction activities are to occur in or adjacent to native vegetational communities, work should be restricted to the delineated project footprint by the placement of temporary construction fences or flagging along both sides of the street.

5. If work site brushing occurs between April 1 and September 15, the project site should be carefully examined by a qualified biologist prior to clearing. Should the site be found to support nesting birds including Least Bell's Vireo, Willow Flycatcher, or Yellow-breasted Chat, work within 300 feet of the nest site should be delayed until nesting has been completed.

6. Following construction, the 20-foot wide construction corridor should be recontoured to natural or lower levels and revegetated with native vegetation favoring Willow and Mulefat Riparian Scrub with minor elements of Diegan Sage Scrub.

Incorporation of these recommendations into the proposed project would substantially off-set adverse impacts and would mitigate these impacts to a level of non-significance.

In addition to these items, it should be recognized that the project, as proposed, falls under the regulatory jurisdiction and permit authority of the U. S. Army Corps of Engineers pursuant to the Corps' Regulatory Program (33 CFR 320-330). The project is also within the regulatory authority of the California Department of Fish and Game (§1601 of the Fish and Game Code). Both of these agencies are expected to require mitigation of wetland impacts by way of creation of new wetlands within the Otay River Valley.

Alternative 1

Impacts under this alternative would be mitigable in a manner similar to that for the proposed project.

Alternative 2

Impacts under this alternative would not be as readily mitigable as either of the other options. Several aspects of this alternative are considered to have significant unmitigable biological impacts.

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TABLE 1. FLORAL CHECKLIST OF THE PROPOSED OTAY VALLEY ROAD CORRIDOR.

HABITAT D = Diegan Sage Scrub | M = Freshwater Marsh
R = Roadside/Disturbed | W Tamarisk/Willow Wetland

	HABITAT
CRYPTOGAMS	
SPIKE-MOSSES	
Selaginellaceae	
Selaginella bigelovii Underw. Spike-Moss	D
Selaginella cinerascens A.A. Eat. Mesa Spike-Moss	D
DICOTYLEDONS	
Adoxaceae - Adoxus Family	
Sambucus mexicana Presl ex D.C. Desert Elderberry	R,W
Aizoaceae - Carpet-weed Family	
* *Carpobrotus edulis* (L.)Bolus Hottentot-Fig	R
* *Mesembryanthemum nodiflorum* L. Little Ice Plant	R
Anacardiaceae - Sumac Family	
Malosma laurina (Nutt.)Nutt. ex Abrams. Laurel-Leaf Sumac	D
Rhus integrifolia (Nutt.)Benth.& Hook. Lemonade Berry	D
Toxicodendron radicans (L.)Kuntze ssp. *diversilobum* (T.& G.)Thorne.	W
Apiaceae - Carrot Family	
Daucus pusillus Michx. Rattlesnake Weed	D
Asteraceae - Sunflower Family	
Ambrosia confertiflora DC.	D,W
Ambrosia psilostachya var. *californica* (Rydb.)Blake. Ragweed	W
Artemisia californica Less. California Sagebrush	R,D
Baccharis salicifolia (R.P.)Pers. Mule-fat	W
Baccharis sarothroides Gray. Broom Baccharis	D,R,W
* *Centaurea melitensis* L. Tocalote	D,R
* *Chrysanthemum coronarium* L. Garland Chrysanthemum	R
Conyza coulteri Gray.	R
Corethrogyne filaginifolia var. *virgata* (Benth.)Gray. Sand-Aster	R
Encelia californica Nutt. California Encelia	D
Gnaphalium bicolor Bioletti. Bicolor Cudweed	W
Gnaphalium californicum D.C. California Everlasting	D,W
Gnaphalium palustre Nutt.	W
Gnaphalium straminium H.B.K. Cotton-Batting Plant	W
* *Helianthus annuus* ssp. *lenticularis* (Dougl.)Ckll. Sunflower	R
Hemizonia conjugens Keck. Otay Tarweed	D
Hemizonia fasciculata (D.C.)T.& G. Tarweed	D
Heterotheca grandiflora Nutt. Telegraph Weed	R
Hymenoclea monogyra T. & G. ex Gray. Desert Fragrance	W
* *Hypochoeris glabra* L. Smooth Cat's-ears	D,R,W
Iva hayesiana Gray. San Diego Poverty Weed	W
* *Lactuca serriola* L. Prickly Lettuce	R
* *Picris echioides* L. Bristly Ox-tongue	D,W
* *Silybum marianum* (L.)Gaertn. Milk-thistle	R
* *Sonchus asper* (L.)Hill. Spiny-Leaf Sow-Thistle	D,R
Stephanomeria diegensis Gottlieb. San Diego Wreath-Plant	R
Viguiera laciniata Gray. San Diego Sunflower	D,R
* *Xanthium strumarium* var. *canadense* (Mill.)T.& G. Cocklebur	R,W

TABLE 1. FLORAL CHECKLIST OF THE PROPOSED OTAY VALLEY ROAD CORRIDOR (CONTINUED).

Species	HABITAT
Boraginaceae - Borage Family	
Heliotropium curvassavicum var. *oculatum* (Heller)Jtn. Salt Heliotrope	R,W
Plagiobothrys californicus (Gray)Greene var. *californicus* California Popcornflower	D
Plagiobothrys nothofulvus (Gray)Gray. Rusty Popcornflower	
Brassicaceae - Mustard Family	
* *Brassica geniculata* (Desf.)J. Ball. Short-pod Mustard	R
Lepidium lasiocarpum Nutt. ex T.& G. var. *lasiocarpum* Sand Peppergrass	D
* *Sisymbrium irio* L. London Rocket	D
Cactaceae - Cactus Family	
Ferocactus viridescens (Nutt.)Britton & Rose. Coast Barrel Cactus	D
Mammillaria dioica K. Bdg. Fish-hook Cactus	D
Opuntia littoralis (Engelm.)Ckll.var. *littoralis* Coast Prickly-Pear	D
Opuntia prolifera Engelm. Coast Cholla	D
Capparaceae - Caper Family	
Cleome isomeris Greene. Bladderpod	D
Caryophyllaceae - Pink Family	
Polycarpon depressum Nutt. in T. & G. California Polycarp	D
* *Spergularia marina* (L.)Griseb. Salt Marsh Sand-Spurry	W
Chenopodiaceae - Goosefoot Family	
Atriplex pacifica A. Nels. Pacific Saltbush	D
* *Atriplex semibaccata* R. Br. Australian Saltbush	D
* *Chenopodium murale* L. Nettle-Leaf Goosefoot	R
* *Salsola australis* R. Br. Russian-thistle	R
Convolvulaceae - Morning-Glory Family	
Calystegia macrostegia ssp. *tenuifolia* (Abrams)Brummitt. Narrow-leaf Morning-Glory	D,R
Crassulaceae - Stonecrop Family	
Crassula aquatica (L.)Schoenl. in Engl. & Prantl. Stonecrop	D
Dudleya edulis (Nutt.)Moran. Ladies-Fingers	D
Dudleya pulverulenta (Nutt.)Britt.& Rose. Chalk-lettuce	D
Euphorbiaceae - Spurge Family	
* *Chamaesyce maculata* (L.)Small. Spotted Spurge	R
Chamaesyce polycarpa (Benth.)Millsp. in Parish var. *hirtella* (Boiss.)Millsp. Desert Sandmat	D
* *Ricinus communis* L. Castor-Bean	W
Fabaceae - Pea Family	
Astragalus trichopodus ssp. *leucopsis* (T.& G.)Thorne. Locoweed	W
* *Melilotus indicus* (L.)All. Indian Sweet Clover	R
Gentianaceae - Gentian Family	
Centaurium venustum (Gray)Rob. Canchalagua	D
Geraniaceae - Geranium Family	
* *Erodium cicutarium* (L.)L'Her. Red-stem Filaree	D,R
* *Erodium moschatum* (L.)L'Her. White-stem Filaree	D,R
Hydrophyllaceae - Waterleaf Family	
Phacelia cicutaria ssp. *hispida* (Gray)Beauch. Caterpillar Phacelia	D

TABLE 1. FLORAL CHECKLIST OF THE PROPOSED OTAY VALLEY ROAD CORRIDOR (CONTINUED).

	HABITAT
Lamiaceae - Mint Family	
* *Marrubium vulgare* L. Horehound	R
Salvia apiana Jeps. White Sage	D
Malvaceae - Mallow Family	
Malacothamnus densiflorus var. *viscidus* (Abrams)Kearn. San Diego Bushmallow	D
* *Malva parviflora* L. Cheeseweed	R
Myoporaceae - Myoporum Family	
* *Myoporum laetum* Forst. f. Ngaio	W
Nyctaginaceae - Four-O'Clock Family	
Mirabilis californica Gray. Wishbone Plant	D
Oleaceae - Olive Family	
* *Olea europea* L. Mission Olive	W
Platanaceae - Sycamore Family	
Platanus racemosa Nutt. Western Sycamore	W
Polemoniaceae - Phlox Family	
Eriastrum filifolium (Nutt.)Woot. & Standl. Thread-leaf Woolly-Star	D
Navarretia atractyloides (Benth.)Greene. Holly-leaf Skunkweed	D
Polygonaceae - Buckwheat Family	
Chorizanthe fimbriata Nutt. Fringed Turkish Rugging	D
Eriogonum fasciculatum Benth. ssp. *fasciculatum* Flat-top Buckwheat	D
* *Rumex crispus* L. Curly Dock	W
Primulaceae - Primrose Family	
* *Anagallis arvensis* L. Scarlet Pimpernel	D,W
Resedaceae - Mignonette Family	
Oligomeris linifolia (Vahl.)Macbr. Narrowleaf Oligomeris	D
Rosaceae - Rose Family	
Heteromeles arbutifolia M. Roem. Hollywood, Toyon	D
Salicaceae - Willow Family	
Salix gooddingii var. *variabilis* Ball. Black Willow	W
Salix lasiolepis Benth. var. *lasiolepis*. Arroyo Willow	W
Simmondsiaceae - Jojoba Family	
Simmondsia chinensis (Link)C.K. Schneid. Jojoba	D
Solanaceae - Nightshade Family	
Datura wrightii Regel. Western Jimsonweed	R
Lycium andersonii Gray. Waterjacket	D
Lycium californicum Nutt. California Desert Thorn	D
* *Nicotiana glauca* Grah. Tree Tobacco	R
Physalis greenei Vasey & Rose. Greene's Ground-Cherry	D
Solanum douglasii Dunal in D.C. Douglas' Nightshade	D
Tamaricaceae - Tamarisk Family	
* *Tamarix chinensis* Louriero. Tamarisk	W

TABLE 1. FLORAL CHECKLIST OF THE PROPOSED OTAY VALLEY ROAD CORRIDOR (CONTINUED).

	HABITAT
Verbenaceae - Verbena Family	
Verbena menthaefolia Benth. Mint-leaf Vervain	W
MONOCOTYLEDONS	
Agavaceae - Agave Family	
Yucca schidigera Roezl ex Ortgies. Mojave Yucca	D
Alliaceae - Onion Family	
Muilla clevelandii (Wats.)Hoover. Cleveland's Golden-Stars	D
Cyperaceae - Sedge Family	
Eleocharis montevidensis Kunth. Dombey's Spike-Sedge	W
Scirpus californicus (C.A.Mey.)Steudel. California Bulrush	M
Juncaceae - Rush Family	
Juncus acutus L. ssp. *leopoldii* Engelm. Southwestern Spiny Rush	M,W
Liliaceae - Lily Family	
Calochortus splendens Dougl. ex Benth. Splendid Mariposa-Lily	D
Poaceae - Grass Family	
**Avena barbata* L. Slender Oat	D,R,W
Bothriochloa barbinodis (Lag.)Herter. Plumed Beardgrass	D
**Bromus mollis* L. Soft Chess	D,R
**Bromus rubens* L. Red Brome	D,R,W
**Cortaderia dioica* (Spreng.)Speg. Selloa Pampas-Grass	R
Distichlis spicata (L.)Greene. Coastal Salt Grass	W
**Hordeum murinum* L. ssp. *leporinum* (Link)Arcang. Hare Barley	W
**Lamarckia aurea* (L.)Moench. Goldentop	R
**Lolium perenne* L. English Ryegrass	D,R,W
Muhlenbergia microsperma (D.C.)Kunth. Little-seed Muhly	D
**Pennisetum setaceum* (Forsk.)Chiov. Fountain Grass	R
**Phalaris paradoxa* L. var. *praemorsa* (Lam.)Coss. & Dur. Paradox Canary Grass	D
**Schismus barbatus* (L.)Thell. Mediterranean Schismus	D,W
Stipa lepida Hitchc. Foothill Needlegrass	D
Stipa pulchra Hitchc. Purple Needlegrass	D
Typhaceae - Cat-Tail Family	
Typha latifolia L. Soft Flag	W

* - Denotes non-native plant taxa

Table 2. Animals Observed or Detected on the Proposed Otay Valley Road Corridor.

Habitat

A = Agricultural Fields/Disturbed Areas
M = Freshwater Marsh/Open Water
W = Willow Riparian Woodland
D = Diegan Sage Scrub
R = Tamarisk/Mulefat
F = Flying Over

Common Name	Scientific Name	Number/Means of Detection	Habitat
Amphibians			
Bufonidae (True Toads)			
Yosemite Toad	*Bufo canorus*	Observed	M
Hylidae (Treefrogs and Relatives)			
California Treefrog	*Hyla cadaverina*	Observed	M
Reptiles			
Iguanidae (Iguanids)			
Western Fence Lizard	*Sceloporus occidentalis*	Observed	A,D,R
Teiidae (Whiptails and Relatives)			
Orange-throated Whiptail	*Cnemidophorus hyperythrus*	Observed	D
Western Whiptail	*Cnemidophorus tigris*	Observed	R
Colubridae (Colubrids)			
Two-striped Garter Snake	*Thamnophis couchi hammondi*	Observed	M
Viperidae (Vipers)			
Red Diamond Rattlesnake	*Crotalus ruber*	Observed	R
Birds			
Ardeidae (Herons and Bitterns)			
Great Blue Heron	*Ardea herodias*	2	M
Great Egret	*Casmerodius albus*	2	F
Green-backed Heron	*Butorides striatus*	1	M,R
Anatidae (Swans, Geese, and Ducks)			
Mallard	*Anas platyrhynchos*	3	F,M
Cinnamon Teal	*Anas cyanoptera*	2	F,M
Accipitridae (Hawks, Old World Vultures, and Harriers)			
Black-shouldered Kite	*Elanus caeruleus*	3	R
Northern Harrier	*Circus cyaneus*	2	F,R
Sharp-shinned Hawk	*Accipiter striatus*	1	R
Red-tailed Hawk	*Buteo jamaicensis*	1	F
Falconidae (Caracaras and Falcons)			
American Kestrel	*Falco sparverius*	1	F
Rallidae (Rails, Gallinules, and Coots)			
American Coot	*Fulica americana*	5	M
Charadriidae (Plovers and Relatives)			
Killdeer	*Charadrius vociferus*	2	M

TABLE 2. ANIMALS OBSERVED OR DETECTED ON THE PROPOSED OTAY VALLEY ROAD CORRIDOR (CONTINUED).

COMMON NAME	SCIENTIFIC NAME	NUMBER/MEANS OF DETECTION	HABITAT
BIRDS (continued)			
Laridae (Gulls and Terns)			
Ring-billed Gull	*Larus delawarensis*	Mixed flock	F
California Gull	*Larus californicus*	Mixed flock	F
Western Gull	*Larus occidentalis*	Mixed flock	F
Columbidae (Pigeons and Doves)			
Mourning Dove	*Zenaida macroura*	Numerous	A,D,F,R,W
Cuculidae (Typical Cuckoos)			
Greater Roadrunner	*Geococcyx californianus*	1	R
Apodidae (Swifts)			
Vaux's Swift	*Chaetura vauxi*	1	F
Trochilidae (Hummingbirds)			
Anna's Hummingbird	*Calypte anna*	5+	D,R,W
Costa's Hummingbird	*Calypte costae*	3-5	A
Tyrannidae (Tyrant Flycatchers)			
Willow Flycatcher	*Empidonax traillii*	1	W
Hirundinidae (Swallows)			
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	5+	F
Cliff Swallow	*Hirundo pyrrhonota*	10	F
Corvidae (Jays, Magpies, and Crows)			
Common Raven	*Corvus corax*	10+	A,R
Aegithalidae (Bushtit)			
Bushtit	*Psaltriparus minimus*	Flock	R,W
Mimidae (Mockingbirds and Thrashers)			
Northern Mockingbird	*Mimus polyglottos*	2	D,R
California Thrasher	*Toxostoma redivivum*	2	R
Laniidae (Shrikes)			
Loggerhead Shrike	*Lanius ludovicianus*	1	D
Sturnidae (Starlings)			
European Starling	*Sturnus vulgaris*	Numerous	A,R
Vireonidae (Typical Vireos)			
Least Bell's Vireo	*Vireo bellii pusillus*	1	W

TABLE 2. ANIMALS OBSERVED OR DETECTED ON THE PROPOSED OTAY VALLEY ROAD CORRIDOR (CONTINUED).

COMMON NAME	SCIENTIFIC NAME	NUMBER/MEANS OF DETECTION	HABITAT
BIRDS (continued)			
Emberizidae (Warblers, Sparrows, Blackbirds and Relatives)			
Orange-crowned Warbler	*Vermivora celata*	2	R
Yellow Warbler	*Dendroica petechia*	2	W
Common Yellowthroat	*Geothlypis trichas*	4	M
Wilson's Warbler	*Wilsonia pusilla*	5+	W
Yellow-breasted Chat	*Icteria virens*	2	W
Black-headed Grosbeak	*Pheucticus melanocephalus*	1	W
Brown Towhee	*Pipilo fuscus*	5+	W
Song Sparrow	*Melospiza melodia*	10+	D,R,W
Red-winged Blackbird	*Agelaius phoeniceus*	10+	M,R
Brown-headed Cowbird	*Molothrus ater*	2	A,R
Bullock's Oriole	*Icterus galbula bullockii*	4	R,W
Fringillidae (Finches)			
House Finch	*Carpodacus mexicanus*	Numerous	A,D,F,R,W
Lesser Goldfinch	*Carduelis psaltria*	5+	R,W
American Goldfinch	*Carduelis tristis*	10+	F,R,W
MAMMALS			
Leporidae (Rabbits and Hares)			
Desert Cottontail	*Sylvilagus audubonii*	Observed	D,R
Black-tailed Hare	*Lepus californicus*	Observed	R
Geomyidae (Pocket Gophers)			
Botta's Pocket Gopher	*Thomomys bottae*	Burrows	D,R
Muridae (Rats, mice, and voles)			
Mouse	*Peromyscus* sp.	Observed	R
Woodrat	*Neotoma* sp.	Nest	R
Canidae (Foxes, Wolves, and Relatives)			
Coyote	*Canis latrans*	Observed	R,W
Gray Fox	*Urocyon cinereoargenteus*	Observed	R
Procyonidae (Raccoons and Relatives)			
Raccoon	*Procyon lotor*	Tracks	M

TABLE 3. SENSITIVE ANIMAL SPECIES OBSERVED OR DETECTED ON THE PROPOSED OTAY VALLEY ROAD CORRIDOR.

COMMON NAME (*Scientific Name*)	OFFICIAL STATUS*	STATUS IN SAN DIEGO COUNTY AND ON-SITE#
REPTILES		
San Diego Horned Lizard (*Phrynosomacoronatumblainvillei*)	Bury - P(D) SDNGWS - SC USFWS - Category II IUCN - D SDHS - E Stewart - D CDFG - PR, S Ashton - Threatened CITES - Category II	Depleted due to pet collection and habitat destruction. Not observed in the study area; however, limited habitat for the species is present and a small population is possible.
Orange-throated Whiptail (*Cnemidophorus hyperythrus beldingi*)	CITES - Category II IUCN - Rare USFWS - Category II SDHS - Threatened Stewart - E Bury - P(R) CDFG - PR, S SDNGWS - SC Ashton - T	Limited distribution; found only in western San Diego County and Baja California. Found in the study area (see text).
Hammond Two-striped Garter Snake (*Thamnophis hammondi hammondi*)	CDFG - S IUCN - D SDHS - Threatened Stewart - D Ashton - Threatened IUCN - D Bury - P(D) CITES -	Generally restricted to areas of surface water; subject to collection pressures. Found in study area (see text).
BIRDS		
Green-backed Heron (*Butorides striatus*)	Everett - D	Destruction of riparian and freshwater marsh habitat could reduce local breeding population to critical level. Possible infrequent visitor to the area.
Black-crowned Night Heron (*Nycticorax nycticorax*)	Everett - S	Relatively common; colonial nesting areas highly sensitive to disturbance. Likely visitor to the area.
Turkey Vulture (*Cathartes aura*)	Everett - D, SC	Loss of habitat for foraging and nesting has reduced this species' numbers. Likely an occasional visitor to the area.
Black-shouldered Kite (*Elanus caeruleus*)	CDFG - FP	Frequents the area; would likely be affected very little by the proposed project.

TABLE 3. SENSITIVE ANIMAL SPECIES OBSERVED OR DETECTED ON THE PROPOSED OTAY VALLEY ROAD CORRIDOR (CONTINUED).

COMMON NAME (*Scientific Name*)	OFFICIAL STATUS*	STATUS IN SAN DIEGO COUNTY AND ON-SITE#
BIRDS (continued)		
Northern Harrier (*Circus cyaneus*)	CITES - Priority II SDNGWS - SC Audubon - Blue List Everett - D Remsen - Priority II	Uncommon breeding species; has suffered serious population decline due to loss of forage and nesting habitat. Present in the area; would suffer a very minor loss of foraging habitat due to the project.
Cooper's Hawk (*Accipiter cooperii*)	Audubon - Blue List Everett - D Remsen - Priority III SDNGWS - SC	This species has decreased in county-wide population size and distribution with a concurrent increase in the population of Red-shouldered Hawks. The species likely frequents the area and would be subject to a minor loss of foraging habitat due to the proposed project.
Red-shouldered Hawk (*Buteo lineatus*)	Audubon - Blue List SDNGWS	This species has been on the increase in recent years and would likely be moderately assisted by the proposed project's cumulative impacts.
Ferruginous Hawk (*Buteo regalis*)	Audubon - SC USFWS - Category II SDNGWS - SC	Uncommon but regular visitor to mountain areas and to coastal fields. Species would likely be unaffected by the proposed project.
Golden Eagle (*Aquila chrysaetos*)	Bald Eagle Act CDFG - FP SDNGWS - SC CITES - Priority II Remsen - Priority III	Population declining in nearly all areas of county; once a common breeding bird. This species is known from the area and would likely be insignificantly impacted by a minor loss of foraging habitat due to the project.
American Kestrel (*Falco sparverius*)		Common breeding species; relatively resistant to disturbance. Present in the project area; would likely be unaffected by the proposed project.
Willow Flycatcher (*Empidonax traillii*)	Everett - D Remsen - Priority I Audubon - SC	Seriously declining species; may no longer breed in County. Observed in the survey corridor (see text).

TABLE 3. SENSITIVE ANIMAL SPECIES OBSERVED OR DETECTED ON THE PROPOSED OTAY VALLEY ROAD CORRIDOR (CONTINUED).

COMMON NAME (*Scientific Name*)	OFFICIAL STATUS*	STATUS IN SAN DIEGO COUNTY AND ON-SITE#
BIRDS (continued)		
California Gnatcatcher (*Polioptila californica*)	Remsen - Priority II Everett - D USFWS - Category II	Coastal species seriously declining due to loss of habitat. Permanent resident. United States population estimated 1200 pairs (Atwood 1980). San Diego County most important United States region. One pair observed in study area (see text).
Loggerhead Shrike (*Lanius ludovicianus*)	Audubon - Blue List	Relatively common breeding species. Occurs in the study area.
Least Bell's Vireo (*Vireo bellii pusillus*)	CDFG - E SDNGWS - SC USFWS - E Remsen - Priority I Everett - T	Rare breeding species. Reduction of riparian woodland and cowbird parasitism have brought this species to the brink of extinction. Present in and near the study corridor (see text).
Yellow Warbler (*Dendroica petechia*)	Everett - Declining Remsen - Priority II Audubon - SC SDNGWS - SC	Uncommon breeding species; migrates through mountains. Present in the study area (see text).
Yellow-breasted Chat (*Icteria virens*)	Everett - D Remsen - Priority II	Uncommon breeding species; found along major rivers in lowland areas; highly localized population. Present in the study area (see text).
MAMMALS		
Bobcat (*Lynx rufus*)	Currently under review by CDFG - may receive protected status.	Increased trapping may cause decline. Known to occur upstream of the study are and may infrequently hunt in the vicinity of the roadway. This species would not be expected to be significantly impacted by the proposed project.

EXPECTED LOCAL STATUS

Many of these determinations are conjectural and require further field study of verification. All refer to a species' occurrence in its preferred habitat and proper season of occurrence. May vary greatly in density between localities due to habitat condition.

*SENSITIVITY STATUS

ABL =	AUDUBON BLUE LIST FOR 1986 (TATE 1986) * = Blue List species SC = Special Concern Bird Species
ASHTON =	THE SOCIETY FOR THE STUDY OF AMPHIBIANS AND REPTILES R = Rare T = Threatened E = Endangered
BALD EAGLE ACT =	1940 ACT PROTECTS BALD AND GOLDEN EAGLE NESTS FROM PERTURBATION.
BURY (1971) =	P = Proposed for classification as protected/listed amphibian/reptile N = Species needing to be considered for protection/listing R = Rare E = Endangered S = Status Undetermined FP = Fully Protected
CDFG =	CALIFORNIA DEPARTMENT OF FISH AND GAME T = Threatened E = Endangered FP = Fully Protected PA/PR/PF = Protected Amphibian/Reptiles/Furbearer
CITES =	CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA (1976) Appendix I = Threatened Species Appendix II = Could become threatened in future
EVERETT (1979) =	S = Sensitive D = Declining T = Threatened Birds
IUCN =	INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE AND NATURAL RESOURCES, RED DATA BOOK D = Depleted R = Rare E = Endangered
REMSEN (1978) =	SPECIES OF SPECIAL CONCERN Priority I, II, or III in decreasing order of sensitivity for birds
SDHS =	SAN DIEGO HERPETOLOGICAL SOCIETY (1980A, 1980B) S = Stable U = Undetermined T = Threatened E = Endangered Amphibians/Reptiles
SDNGWS =	SAN DIEGO NON-GAME WILDLIFE SUBCOMMITTEE SC = Species of Local Concern -- Animals
STEWART (1971) =	ED = Could easily be depleted SD = May soon be depleted D = Depleted R = Rare E = Endangered Amphibian/Reptiles
USFWS =	U.S. FISH AND WILDLIFE SERVICE (1986) Category I, II, or III T = Threatened E = Endangered
WILLIAMS (1986) =	MAMMALS OF SPECIAL CONCERN Priority I, II, or III in decreasing order of sensitivity
MISCELLANEOUS =	Soon to be proposed as USFWS/Proposed listed species (REA 1986) = R

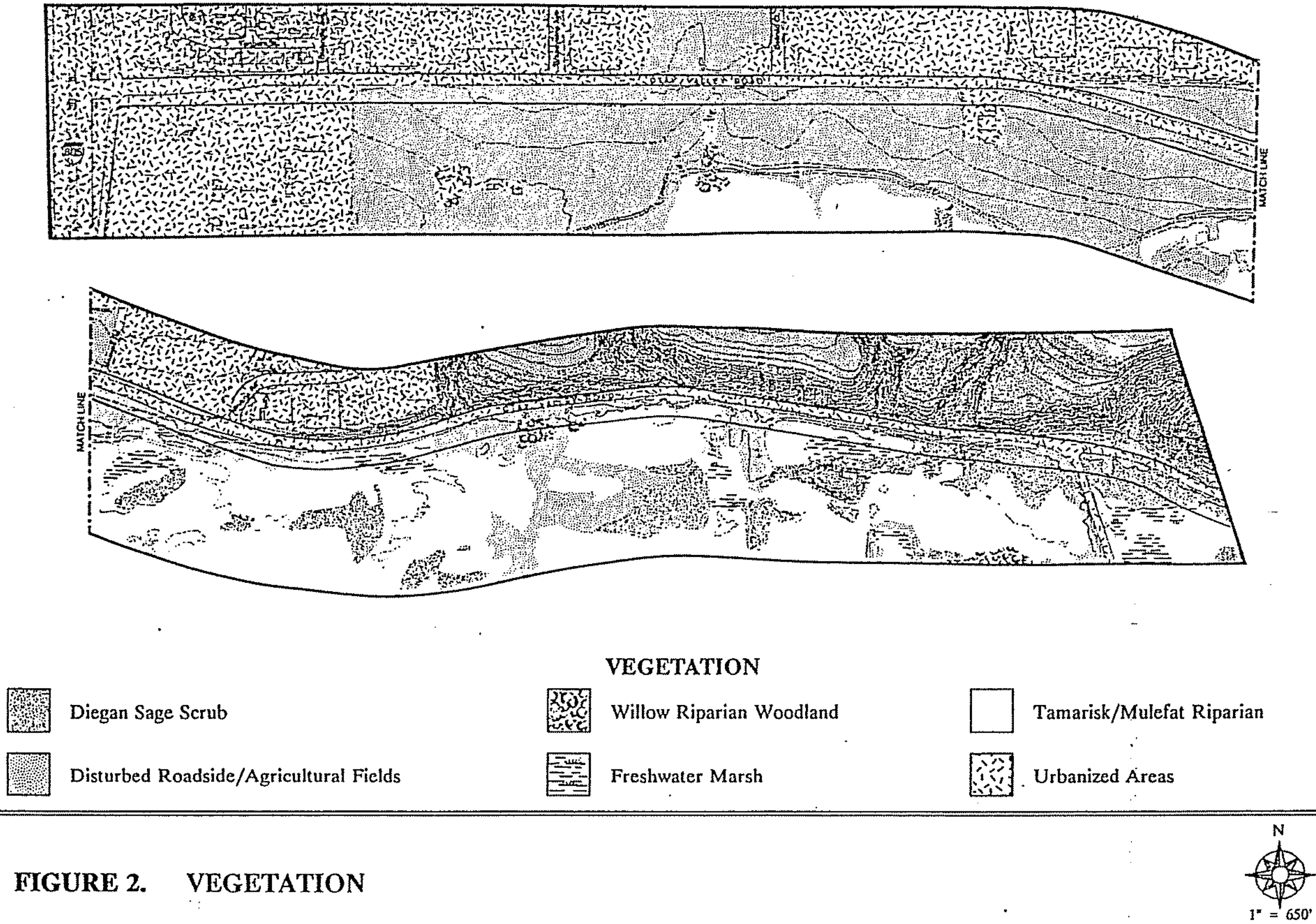

FIGURE 2. VEGETATION

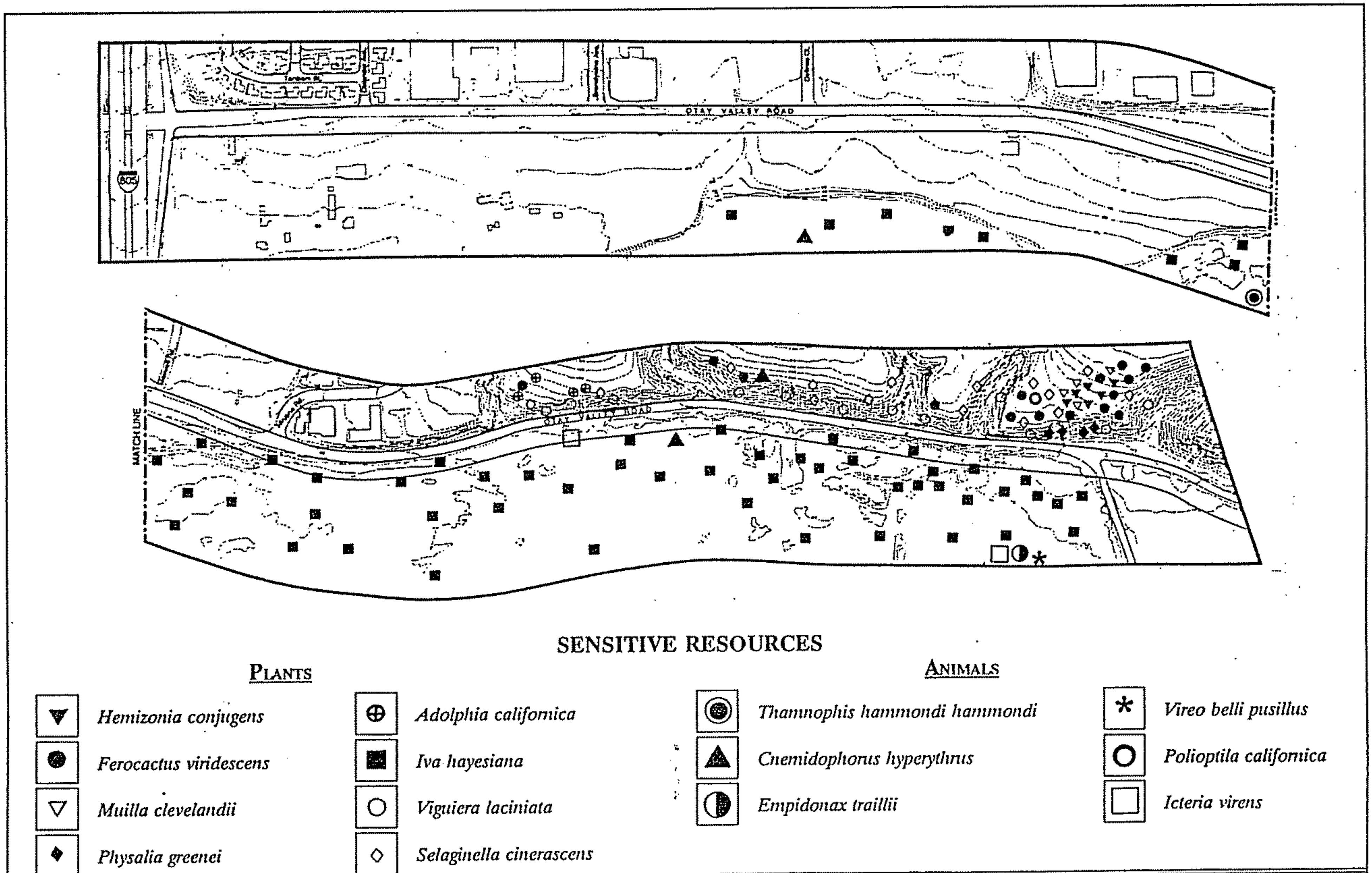

FIGURE 3. SENSITIVE RESOURCES

APPENDIX I

Rare Plant Sensitivity Listings

1) California Native Plant Society R-E-D Code

R (Rarity)

1 - Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.

2 - Occurrence confined to several populations or to one extended population.

3 - Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

E (Endangerment)

1 - Not endangered

2 - Endangered in a portion of its range

3 - Endangered throughout its range

D (Distribution)

1 - More or less widespread outside California

2 - Rare outside California

3 - Endemic to California

2) California Department of Fish and Game Listed Plants

CE = State listed, endangered

CR = State listed, rare

3) Federal Candidates and Federally Listed Plants

FE = Federally listed, endangered

FT = Federally listed, threatened

C1 = Enough data are on file to support the federal listing

C1* = Enough data are on file to support federal listing, but the plant is presumed extinct

C2 = Threat and/or distribution data are insufficient to support federal listing

C2* = Threat and/or distribution data are insufficient to support federal listing; plant presumed extinct

C3a = Extinct

C3b = Taxonomically invalid

C3c = Too widespread and/or not threatened

APPENDIX II

Animal Sensitivity Listings

1) Local Sensitivity Listings (San Diego County)

San Diego Herpetological Society (SDHS)

Threatened - Species or subspecies which have dramatically declined and could potentially reach the level of endangered.

Endangered - Species which are in immediate danger or extirpation in all or major parts of their range.

San Diego Non-Game Wildlife Subcommittee (SDNGWS)

Sensitive Species - Species warranting special concern and protection; may be recommended for further study.

Everett (1979), Threatened Declining and Sensitive Bird Species in San Diego County (Audubon Sketches)

Threatened - Species or subspecies which have undergone dramatic non-cyclical, long-term declines throughout their range.

Declining - Species whose local breeding populations have been steadily reduced or extirpated.

Sensitive - Species whose populations are of high concern for various reasons.

2) State Level Sensitivity (California)

Society for the Study of Amphibians and Reptiles (Ashton, 1976)

Endangered - Species or subspecies which has been reduced throughout their range to such an extent that breeding populations are small or vulnerable to extirpation within the next 10 to 25 years.

Threatened - Species which are present in a small portion of their former range.

California Department of Fish and Game (Remsen, 1980)

Birds of Special Concern - Species whose California breeding populations have severely declined or are in vulnerable positions.

California Department of Fish and Game Listed Animals

SE = State listed endangered species

SR = State listed rare species

CP = California fully protected species

3) National Level Sensitivity

BL = Species listed in Audubon's Blue List (Tate, 1986) whose populations have suffered dramatic declines in portions of their national range.

4) Federal Level Sensitivity

BS = Bureau of Land Management Sensitive Species

FS = U.S. Forest Service Sensitive Species

Federal Candidates and Federally Listed Animals (USFWS)

FE = Federally listed, endangered

FT = Federally listed, threatened

C1 = Enough data are on file to support the federal listing

C1*= Enough data are on file to support federal listing, but the species is presumed extinct

C2 = Threat and/or distribution data are insufficient to support federal listing

C2*= Threat and/or distribution data are insufficient to support federal listing; species presumed extinct

C3a= Extinct

C3b= Taxonomically invalid

C3c= Too widespread and/or not threatened

APPENDIX B

TRAFFIC STUDY

FOR

OTAY VALLEY ROAD WIDENING PROJECT EIR
City of Chula Vista Redevelopment Agency

Prepared for:

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TRAFFIC STUDY
FOR
OTAY VALLEY ROAD WIDENING PROJECT EIR
CITY OF CHULA VISTA REDEVELOPMENT AGENCY

INTRODUCTION

The EIR is being prepared for the City of Chula Vista Redevelopment Agency for the widening of Otay Valley Road to six lanes between Interstate 805 (I-805) and the Chula Vista City Limit (CVCL). This study addresses the existing conditions within the study area and makes recommendations for future lane configurations at the intersections along Otay Valley Road between its I-805 interchange and its intersection with Nirvana Avenue. The intersection configuration for the future intersection of Otay Valley Road and Paseo Ranchero will be addressed in an Environmental Impact Report (EIR) for Paseo Ranchero and has not been addressed herein.

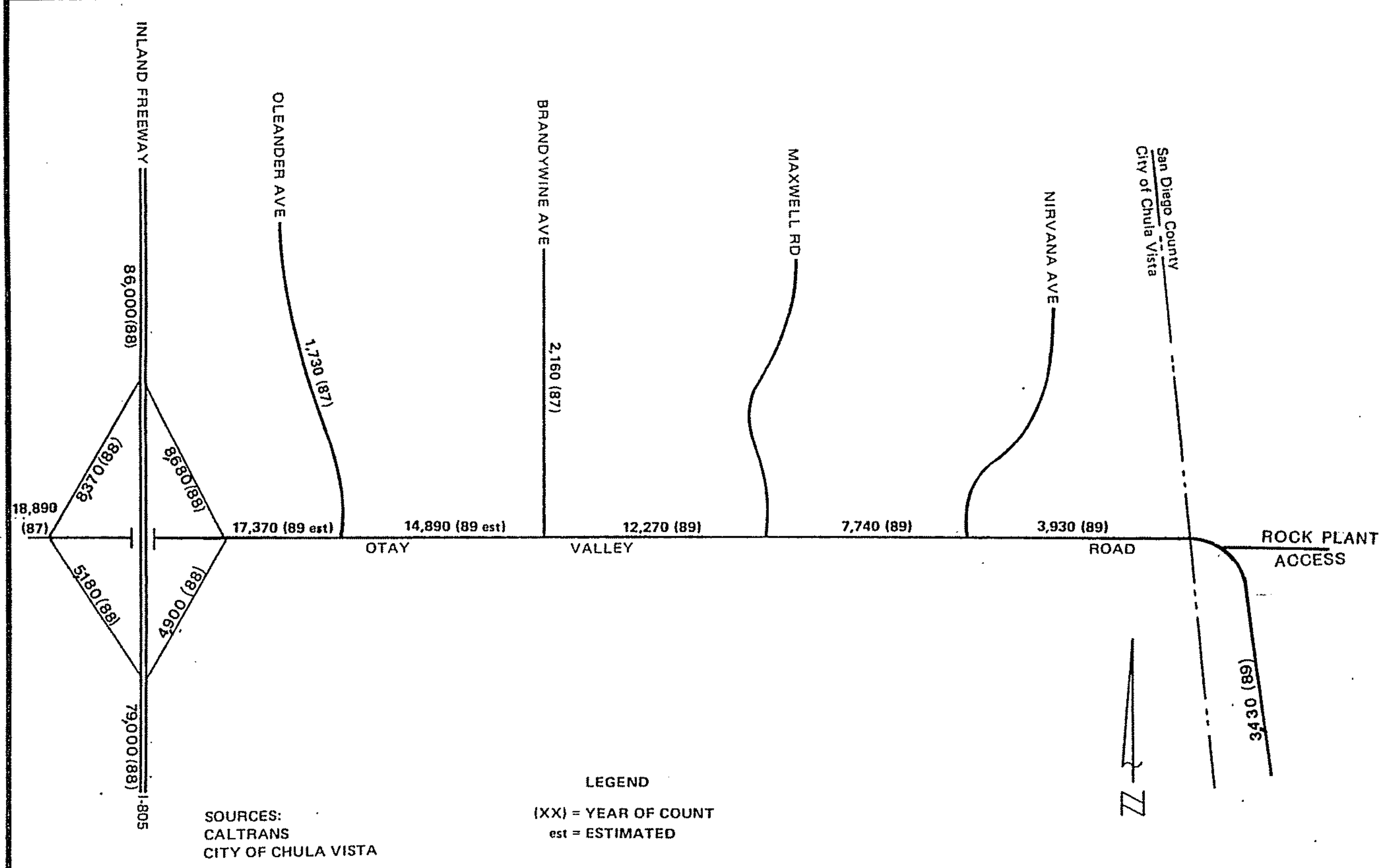
EXISTING TRAFFIC VOLUMES AND ROADWAY CHARACTERISTICS

This section documents the existing conditions and characteristics of the roadways including existing daily traffic volumes. Figure 1 presents the existing daily traffic volumes available from the City and Caltrans, and a discussion of the existing roadway characteristics is presented below.

Otay Valley Road

Otay Valley Road runs easterly from I-805 for approximately two miles, then it curves in a southerly direction to its junction with Heritage Road. West of I-805, Otay Valley Road merges with Main Street which traverses the City of Chula Vista. Between I-805 and Melrose Avenue (west of I-805), Otay Valley Road is a four lane roadway with two travel lanes in each direction and a center two-way left turn lane. The most recent count was taken in 1987 when this segment carried 18,890 vpd.

Between I-805 and Oleander Avenue, Otay Valley Road is currently a four lane roadway with two travel lanes in each direction. Left turn pockets are provided at major intersections. In 1987, this segment of Otay Valley Road was carrying 12,460 vehicles per day (vpd). Based on more recent counts further east, the existing traffic volume on this segment of Otay Valley Road was estimated to be 17,370 vpd.



BASMACIYAN-DARNELL, INC.

FIGURE 1
EXISTING DAILY TRAFFIC VOLUMES

Between Oleander Avenue and Brandywine Avenue, Otay Valley Road is currently a three lane roadway with two westbound lanes and one eastbound lane. This segment also includes a center two-way left turn lane. The last count, taken in 1987, showed this segment of Otay Valley Road carrying 9,980 vpd; based on more recent counts further east, the existing traffic volume on this segment of Otay Valley Road was estimated to be 14,890 vpd.

Between Brandywine Avenue and Maxwell Road, Otay Valley Road is a two lane roadway with one travel lane in each direction and a center two-way left turn lane. The 1989 traffic count showed this segment of Otay Valley Road to be carrying 12,270 vpd.

Between Maxwell Road and Nirvana Avenue, Otay Valley Road is a two lane roadway with one travel lane in each direction. The most recent 1989 traffic count indicates that this segment carries 7,740 vpd.

Between Nirvana Avenue and the Chula Vista City Limit, Otay Valley Road is a two lane roadway with one travel lane in each direction. The most recent 1989 counts indicate that this segment of the road is carrying 3,930 vpd.

South of the Fenton Rock Plant access driveway, Otay Valley Road is a two lane roadway with one travel lane in each direction. The most recent traffic counts, taken in 1989, indicate that this segment of the roadway is carrying 3,430 vpd.

Oleander Avenue

Oleander Avenue is a Class II two lane collector which carries 1,730 vpd just north of Otay Valley Road. It is controlled by a stop sign at its T-intersection with Otay Valley Road, and some on-street parking is allowed.

Brandywine Avenue

Brandywine Avenue is a Class III three lane collector carrying approximately 2,160 vpd just north of Otay Valley Road. It is controlled by a stop sign at its T-intersection with Otay Valley Road, and on-street parking is allowed.

Maxwell Road

Maxwell Road is a Class II three lane collector with two northbound lanes and one southbound lane. It is controlled by a a stop sign at its T-intersection with Otay Valley Road, and on-street parking is not allowed.

Nirvana Avenue

Nirvana Avenue is a Class III two lane collector roadway with on-street parking on both sides. It is controlled by a stop sign at its T-intersection with Otay Valley Road.

Evaluation of Existing Daily Traffic Volumes

Table 1 presents a comparison of the existing traffic volumes shown on Figure 1 and the City's recommended daily traffic volumes for the roadways (per functional classification). Excerpts from the City of Chula Vista's Draft Circulation Element are included in Appendix A.

From Table 1, it is evident that some of the roadway segments within the study area are carrying daily traffic volumes which exceed the City's recommended maximums for their classifications. This is true for the segments between Oleander Avenue and Nirvana Avenue.

The City of Chula Vista staff noted some concern about the I-805 ramp terminals, both southbound and northbound, possibly needing signalization under existing conditions. In examining the existing traffic volumes on the I-805 ramps and Otay Valley Road, it was determined that these intersections likely warrant signalization. The Caltrans Figure 9-1C signal warrant worksheets for the ramp terminal intersections are included in Appendix B.

FUTURE CONDITIONS

Future daily traffic volumes were provided by the most recent run of the City's Scenario 4 General Plan Update forecast (SANDAG 11/88). This forecast represents build-out of the City's planned land uses and Circulation Element as presented in the General Plan Update, and no specific year is associated with it. SANDAG Series 7 (Year 2010) population information was used in the forecast for regional inputs. Figure 2 presents the daily traffic volumes from the build-out network forecast.

Evaluation of Build-Out Network Forecast Daily Traffic Volumes

Table 2 presents a comparison of the build-out network forecast daily traffic volumes shown on Figure 2 and the City's recommended daily volumes for the roadways (per build-out network functional classification). See Appendix A for the City of Chula Vista's Draft Circulation Element.

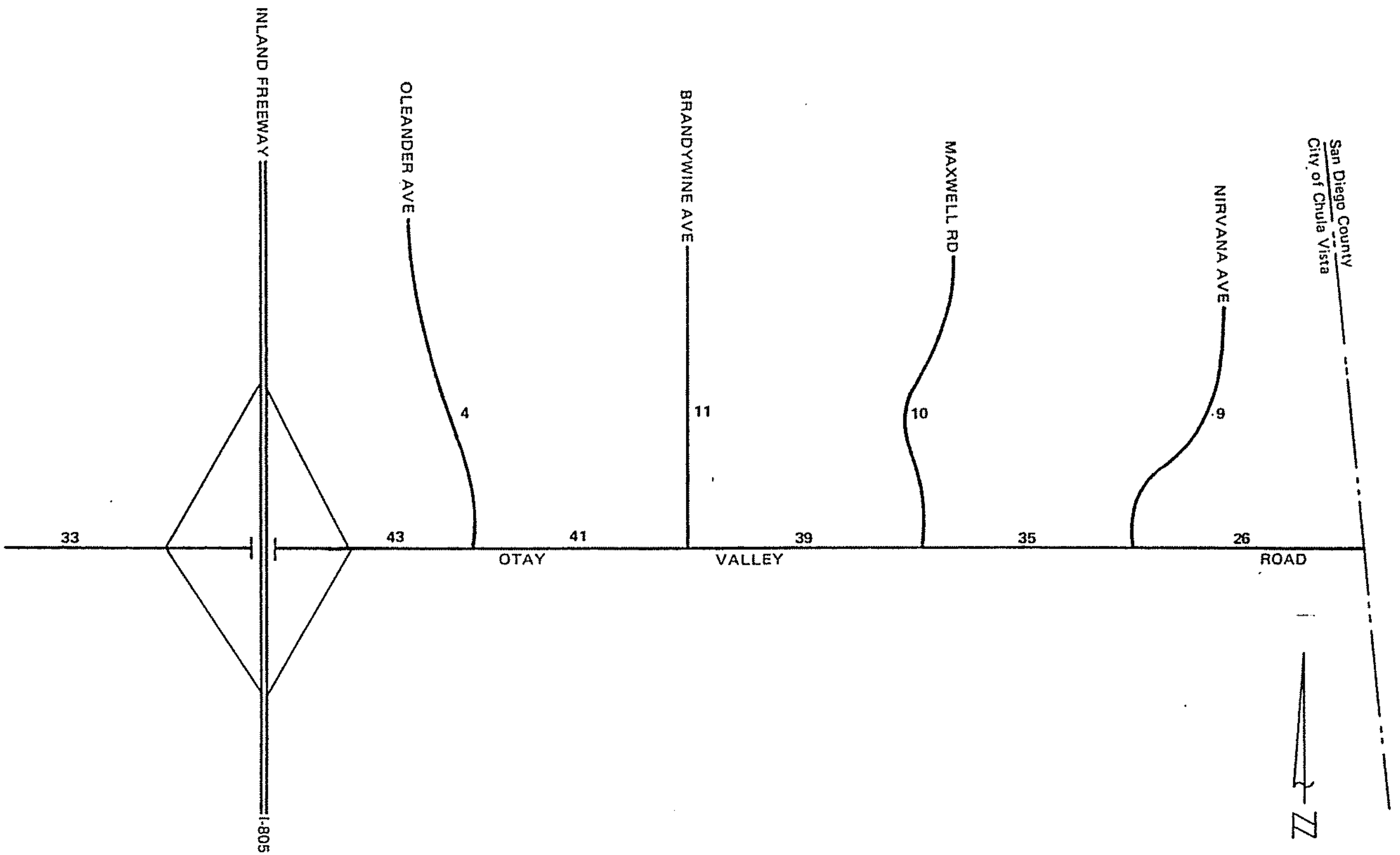
TABLE 1

Comparison of Existing Daily Traffic Volumes
and City's Recommended Maximum
Daily Traffic Volumes

Street Segment	Classification(a)	Existing Daily Vol.	Recommended Approx. LOS C	Exist/ Rec.
Otay Valley Rd: West of I-8Ø5	4M	18,89Ø	3Ø,ØØØ	Ø.63
I-8Ø5 to Oleander Ave	4C (c)	17,37Ø	22,ØØØ	Ø.79
Oleander Ave to Brandywine Ave	3C (d)	14,89Ø	12,ØØØ	1.24
Brandywine Ave to Maxwell Rd	2C (d)	12,27Ø	12,ØØØ	1.Ø2
Maxwell Rd to Nirvana Ave	2C (d)	7,74Ø	7,5ØØ	1.Ø3
Nirvana Ave to CVCL	2C (e)	3,93Ø	7,5ØØ	Ø.52
S of Rock Plant Access	2C (e)	3,43Ø	7,5ØØ	Ø.46
Brandywine Ave: N of Otay Valley Rd	3C (e)	2,16Ø	7,5ØØ	Ø.29
Oleander Ave: N of Otay Valley Rd	2C (e)	1,73Ø	7,5ØØ	Ø.23

CVCL = Chulka Vista City Limit

(a) # = Denotes number of lanes
M = Major road
C = Collector
(b) Approximate LOS C volumes from Table 2-1 of the City of Chula Vista's Draft Circulation Element (11/88) (See Appendix A)
(c) Class III Collector
(d) Class II Collector
(e) Class I Collector



SOURCE: CITY OF CHULA VISTA

BASMACIYAN-DARNELL, INC.

FIGURE 2

BUILD-OUT NETWORK FORECAST DAILY TRAFFIC VOLUMES

From Table 2, it is evident that Otay Valley Road will be carrying daily traffic volumes exceeding the City's recommended maximum for its classification between its I-805 interchange and Brandywine Avenue. It should also be noted that build-out volumes on Otay Valley Road would be very close to the recommended maximum for its classification between Brandywine Avenue and Maxwell Road.

In addition, Nirvana Avenue is projected as carrying daily traffic volumes exceeding the City's recommended maximum for its classification just north of Otay Valley Road.

Alternative Under Consideration

East of Nirvana Avenue, the City is considering changing the classification of Otay Valley Road to a four lane major street (instead of six lanes). The City's recommended maximum for a four lane major street is 30,000 vpd. Since the forecast volume at build-out is 26,000 vpd east of Nirvana Avenue, the alternative of a four lane classification would be adequate. However, such a classification may require an amendment of the General Plan Circulation Element if it is adopted as is. Such an amendment will likely occur in the near future since the General Plan Circulation Element now shows that at some point between Brandywine Avenue and Paseo Ranchero, Otay Valley Road changes classification from a six lane major to a six lane primary arterial. In a telephone conversation with the City Traffic Engineer, he indicated that the plan is for Otay Valley Road to be a six lane major classification, not a primary arterial. In that same conversation, he stated that such inconsistencies would be dealt with during an amendment process in the near future.

Signal Warrant Analyses

The intersections of Oleander Avenue/Otay Valley Road, Brandywine Avenue/Otay Valley Road, Maxwell Road/Otay Valley Road, and Nirvana Avenue/Otay Valley Road were analyzed to determine if signals would likely be warranted at these locations with build-out forecast traffic volumes. The Caltrans Figure 9-1C Traffic Signal Warrants (Based on Estimated Average Daily Traffic) were used for the warrant analyses. Copies of the signal warrant worksheets for these intersections are included in Appendix C, which show that signals are likely to be warranted at all of these intersections under build-out forecast conditions.

During the design phases of the widening project, it was determined that a line of sight problem would exist at the intersection of Otay Valley Road/Nirvana Avenue if the

TABLE 2

Comparison of Build-Out Network Forecast
Daily Traffic Volumes
and City's Recommended Maximum
Daily Traffic Volumes

Street Segment	Classification(a)	Year 2005 Daily Vol.	Recommended Max. (b)	Exist/ Rec.
Otay Valley Rd: West of I-805	4M	33,000	30,000	1.10
I-805 to Oleander Ave	6M	43,000	40,000	1.08
Oleander Ave to Brandywine Ave	6M	41,000	40,000	1.03
Brandywine Ave to Maxwell Rd	6M	39,000	40,000	0.98
Maxwell Rd to Nirvana Ave	6M	35,000	40,000	0.88
Nirvana Ave to CVCL	6M	26,000	40,000	0.65
Nirvana Ave: N of Otay Valley Rd	2C (c)	9,000	7,500	1.20
Maxwell Rd: N of Otay Valley Rd	3C (d)	10,000	12,000	0.83
Brandywine Ave: N of Otay Valley Rd	4C	11,000	22,000	0.50
Oleander Ave: N of Otay Valley Rd	2C (c)	4,000	7,500	0.53

CVCL = Chula Vista City Limit

(a) # = Denotes number of lanes
M = Major road
C = Collector

(b) Approximate LOS C volumes from Table 2-1 of the City of Chula Vista's Draft Circulation Element (11/88) (See Appendix A)

(c) Class III Collector

(d) Class II Collector

intersection were to remain uncontrolled by a traffic signal. Since the signal was shown to be warranted under future traffic conditions, the signal at this location will be installed when the widening project is constructed so that the line of sight problem is corrected.

The rest of the signals shown to be warranted with build-out traffic volumes will be installed when the City Engineer has determined that they meet operational warrants and are appropriate.

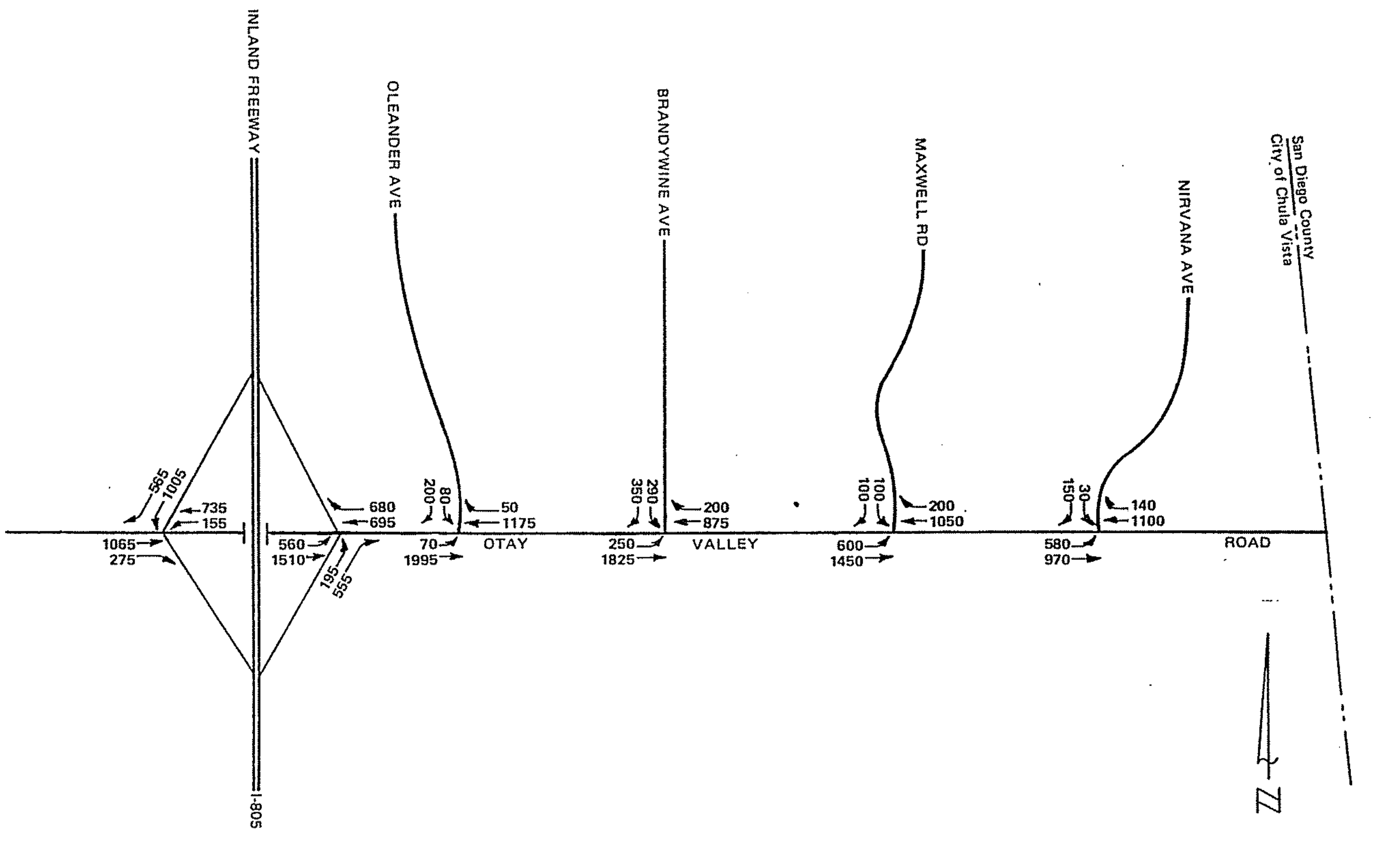
Evaluation of Build-Out Forecast Peak Hour Traffic at Key Intersections

Further analyses of the key intersections were conducted because the following intersections warranted signalization with build-out traffic volumes:

I-8Ø5 Southbound Ramp Terminal/Otay Valley Road
I-8Ø5 Northbound Ramp Terminal/Otay Valley Road
Oleander Avenue/Otay Valley Road
Brandywine Avenue/Otay Valley Road
Maxwell Road/Otay Valley Road
Nirvana Avenue/Otay Valley Road

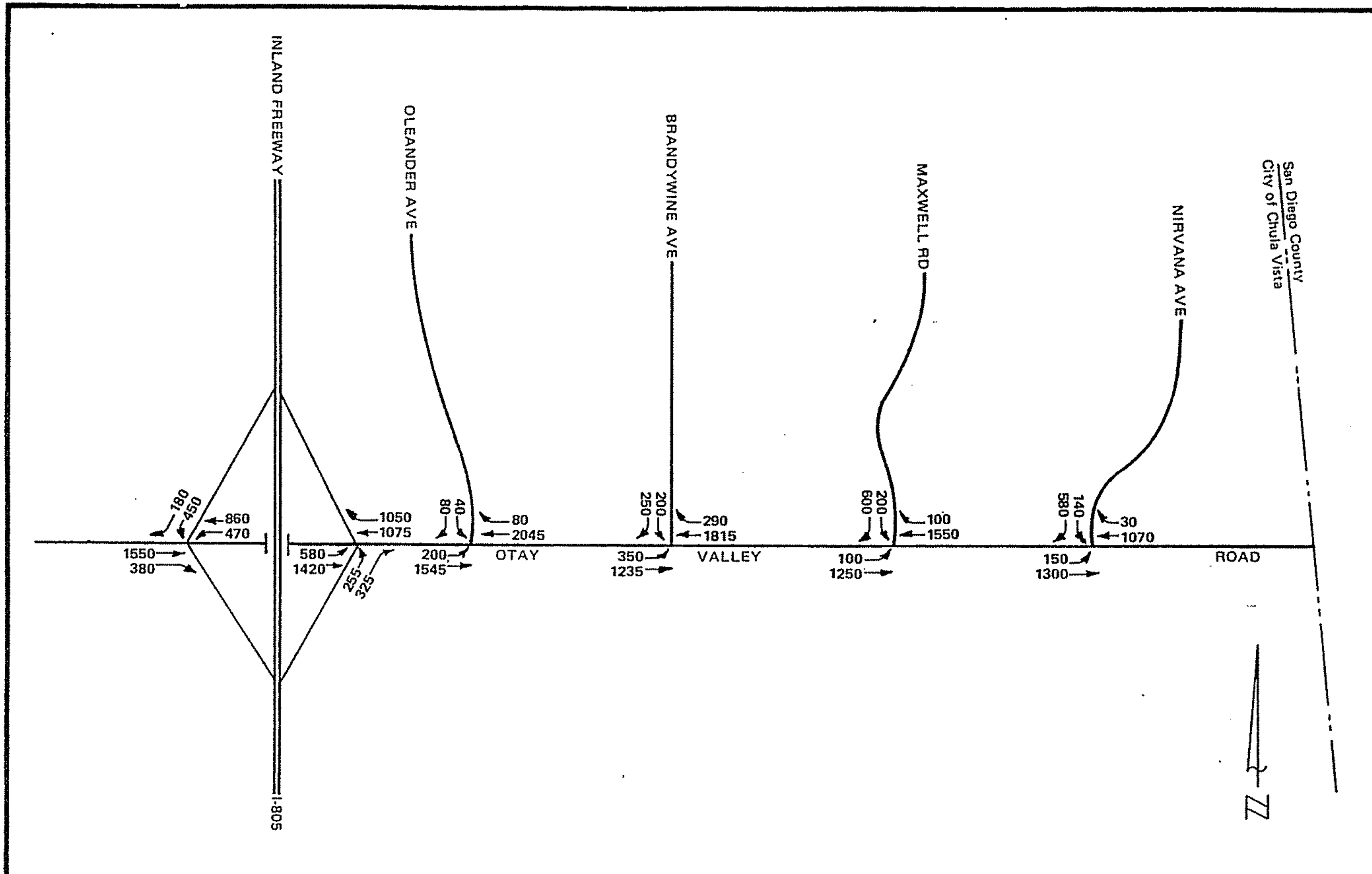
The analyses of these signalized intersections were performed utilizing the Intersection Capacity Utilization methodology, lane capacities of 1,5ØØ and 1,7ØØ (for turn lanes and through lanes, respectively), and Ø.1Ø as the minimum V/C (volume/capacity) value for the through or left turn movements. The ICU value relates to the driving conditions using a graded scale for level of service (A through F). A table which relates ICU value to level of service (LOS) and driving conditions is included in Appendix D.

In order to evaluate the future peak hour conditions at the intersections, future peak hour turning movements were estimated based on the build-out network forecast daily volumes (shown on Figure 2) provided by the City of Chula Vista staff, taken from the Scenario 4 General Plan Forecast Update (SANDAG, 11/88). The afternoon peak hour volumes were assumed to represent approximately 9% of the daily volume, and the morning peak hour volumes to represent approximately 8% of the daily volume on Otay Valley Road. For the cross streets, the morning and afternoon peak hour volumes represent approximately 1Ø% of the daily volume. Figures 3 and 4, respectively, present the estimated build-out forecast morning and afternoon peak hour turning movements.



BASMACIYAN-DARNELL, INC.

FIGURE 3
BUILD-OUT NETWORK FORECAST
MORNING PEAK HOUR TURNING MOVEMENTS



BASMACIYAN-DARNELL, INC.

FIGURE 4

BUILD-OUT NETWORK FORECAST
AFTERNOON PEAK HOUR TURNING MOVEMENTS

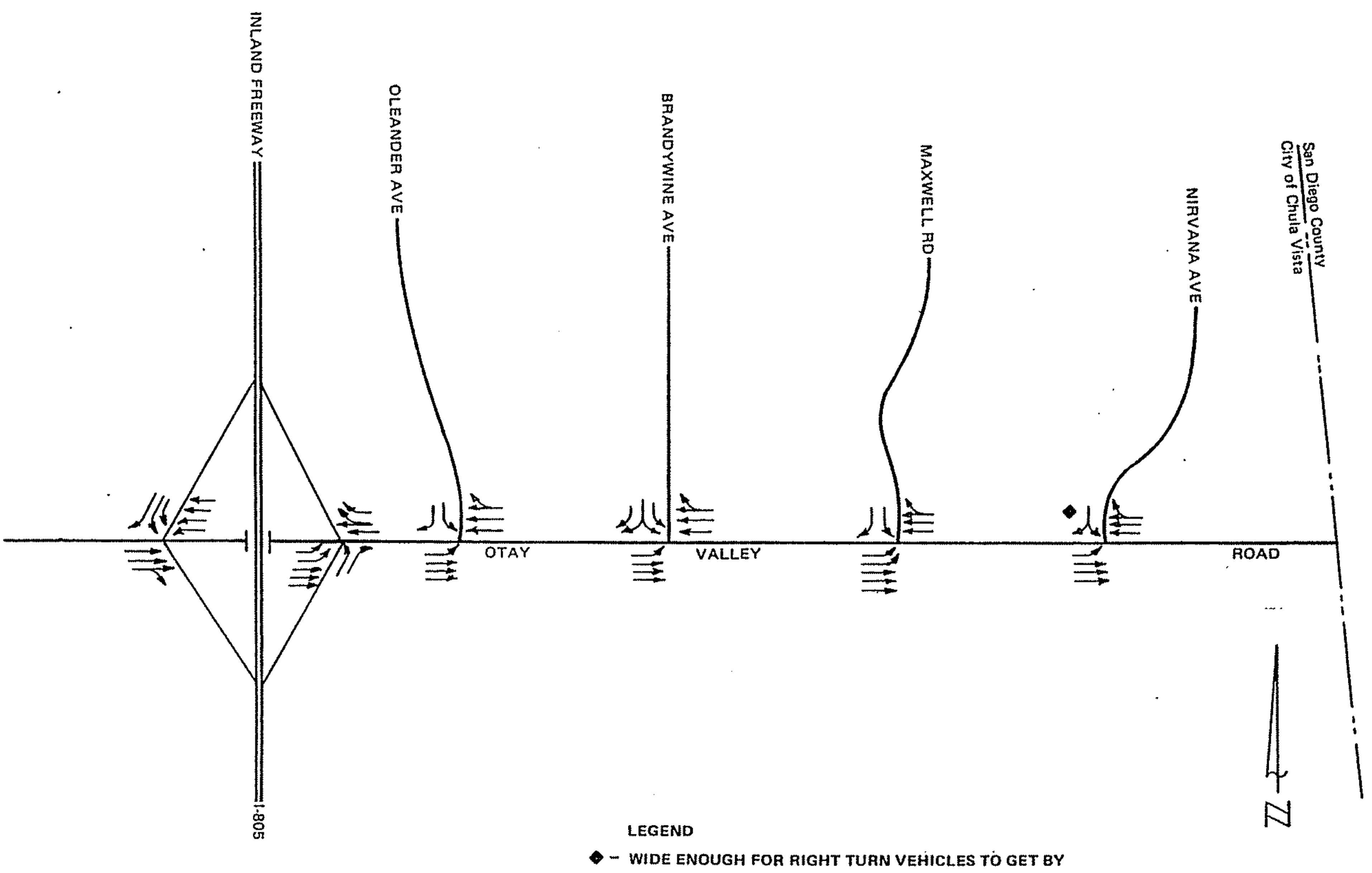
It should be noted that a median break is planned at Delniso Court, which is between Brandywine Avenue and Marwell Road. At this location, left turns would be allowed from eastbound Otay Valley Road to northbound Delniso Court, but southbound left turns from Delniso Court to eastbound Otay Valley Road would be precluded by median channelization. At this location, capacity analyses do not apply and the intersection would not be signalized. Therefore, no further analysis of this median break is included herein.

Figure 5 illustrates the lane configurations assumed for the intersections and used in the ICU calculations. These lane assumptions are based on the classifications of the roadways and the turn lanes necessary to achieve future levels of service (LOS) of C or better at intersections of city streets and LOS D or better at freeway ramp terminals. The ICU analysis worksheets are included in Appendix D, and a summary of the results are included in Table 3.

From Table 3, it is apparent that acceptable levels of service can be achieved during both morning and afternoon peak hours at all intersections assuming the lane configurations on Figure 5 are implemented.

INTERIM CONDITIONS WITH PHASE 1 CONSTRUCTION

The Phase 1 construction will widen Otay Valley Road from I-805 east to a point just past Nirvana Avenue. Traffic volumes along Otay Valley Road build moving westerly, or toward the freeway, and it is along the segments between Nirvana Avenue and Oleander Avenue that current daily traffic volumes exceed what the City considers acceptable (LOS C), as reported in the Existing Conditions section of this report. The decision was made to widen Otay Valley Road to its ultimate classification as a six lane roadway as far east as possible and then transition it back to the existing two lane roadway in advance of the curve where Otay Valley Road turns to a north/south alignment. Primary reasons for this include the fact that the Chula Vista City Limit (CVCL) is just west of the curve. Also, the configuration and alignment of the future intersection of Otay Valley Road and Paseo Ranchero (or Heritage Road as it is called in the City of San Diego) is being negotiated amongst the three jurisdictions involved (City of Chula Vista, City of San Diego, and County of San Diego) and the Phase 1 improvements should not preclude the decided upon configuration/alignment of the future intersection. As mentioned earlier, the intersection of Paseo Ranchero/Otay Valley Road will be included in a subsequent EIR (for Paseo Ranchero).



BASMACIYAN-DARNELL, INC.

FIGURE 5

LANE CONFIGURATIONS ASSUMED FOR BUILD-OUT NETWORK FORECAST ICU CALCULATIONS

TABLE 3

Build-Out Network Forecast
Intersection Peak Hour Levels of Service

INTERSECTION	AM PEAK ICU	AM PEAK LOS (a)	PM PEAK ICU	PM PEAK LOS (a)
Otay Valley Rd/ I-805 SB Ramp	0.70	B	0.69	B
Otay Valley Rd/ I-805 NB Ramp	0.71	C	0.81	D
Otay Valley Rd/ Oleander Ave	0.49	A	0.65	B
Otay Valley Rd/ Brandywine Ave	0.51	A	0.75	C
Otay Valley Rd/ Maxwell Rd	0.55	A	0.73	C
Otay Valley Rd/ Nirvana Ave	0.73	C	0.59	A

(a) See Appendix D.

The purpose of this section of the report is to comment upon the period of time that the two lane section of Otay Valley Road east of Nirvana Avenue could function at reasonable levels of service to indicate when further improvements would be needed. Certain characteristics of the roadway and its usage are pertinent to the way in which the estimates have been made for this analysis. Such considerations include the following:

- At the curve, there is a private road (runs east/west) which intersects Otay Valley Road and forms the east leg of the intersection. There is a stop sign control for vehicles westbound on the access road at Otay Valley Road. This private road accesses the Fenton Materials rock plant and contributes a number of heavy trucks to Otay Valley Road to/from the west as well as to/from the south.

- In addition, there are several auto dismantling yards to the south along Otay Valley Road/Heritage Road which also contribute heavy trucks.

- Both of these types of uses are likely to contribute different amounts of traffic on any given day (they are difficult to predict in terms of traffic generation). Also, the rock plant's distribution of hauling may be changeable dependent upon area-wide locations of construction sites.

- Daily traffic counts (road tube machine counts) were taken by the City in March of this year. The total vehicles counted by the road tube is inflated due to the fairly large number of heavy trucks. This is because road tubes count axles and divide by two per vehicle, so that multi-axle trucks count as more than one vehicle.

- BDI took turning movement counts (counting heavy trucks separately) at the intersection of Otay Valley Road/rock plant access road between the hours of 6:30 AM and 5:30 PM. The morning and afternoon counts were taken in March and the mid-day counts were taken in April of this year.

- During the turning movement data collection, field personnel noted a large number of vehicles on Otay Valley Road in this section had Mexican license plates. Although it would seem more expedient for vehicles travelling between Mexico and the U.S.A. using the Otay Mesa border crossing to use area freeways, some apparently chose to use Otay Valley Road instead. This too may be variable daily or seasonally.

- In examining the road tube counts, it is evident that traffic on Otay Valley Road between Nirvana Avenue and the CVCL is fairly evenly distributed beginning about 10:30 AM to about 3:30 PM (in terms of the number of vehicles in each 15 minute period) and it is during this period that hourly traffic is between nine and ten percent of the total daily. Only about five percent of the daily traffic occurs during the morning peak hour that falls within the "commuter peak period", generally considered to be between 7:00 and 9:00 AM. About eight percent of the daily traffic occurs during the afternoon peak hour that falls within the commuter peak period between 4:00 and 6:00 PM.

  Truck traffic, as a percentage of the total traffic on the roadway segment, varies from three percent to nearly thirty percent. During the morning commuter peak hour (occurs from 8:00 to 9:00 AM), twenty-seven percent of the vehicles are heavy trucks. During the afternoon commuter peak hour (occurs from 4:00 to 5:00 PM), four percent of the vehicles are heavy trucks. During the peak hour of traffic on the street (highest hour of the day; from 11:00 AM to 12:00 PM), six percent of the vehicles are heavy trucks. All three of these time periods were evaluated in this analysis.

<u>Estimated Interim Traffic Conditions - Segment East of Nirvana Avenue</u>

In estimating the short term future traffic on Otay Valley Road east of Nirvana Avenue, the following assumptions were used:

- Yearly growth in traffic on the segment would be similar to that which occurred between the last count made for the segment (March 1987) and the latest count made for the segment (March 1989). Both machine counts gave fifteen minute traffic information so that several time periods could be compared.

  The growth assumption used was a 22 percent per year rate of increase. Daily, morning and afternoon commuter peak hours and the "peak of the street" traffic volume increases were considered in arriving at the rate of increase (calculations are included in Appendix E).

- The traffic volumes used were those given by the machine counts so that the total vehicles, as noted previously, are overstated.

In analyzing the peak hour conditions and estimating the time period for which the two lane segment would be operating satisfactorily, the following criteria and assumptions were used:

- Existing directional splits and peak hour factors for the traffic would apply to the short term future traffic as well.

- Existing truck percentages would apply to the short term future traffic. This is a conservative approach since presumably as traffic increases, the percentage that is trucks would decrease.

- Level of service (LOS) D is acceptable for peak hour conditions on the roadway segment.

- The 1985 Highway Capacity Manual (HCM) two lane rural highway analysis was used to evaluate the existing conditions for the two lane section east of Nirvana Avenue and to test increased amounts of traffic (to not exceed LOS D). This methodology uses peak hour traffic and essentially is based on the lower speeds and delay which occur when vehicles wishing to travel at posted speeds can not pass slower traveling vehicles (affected by no-passing zones, truck traffic, and grades).

This analysis showed that peak hourly traffic can be accommodated on the two lane section east of Nirvana Avenue without exceeding LOS D for approximately six years (peak hourly volume of approximately 1,300 vehicles). The HCM calculation worksheets are included in Appendix E.

Estimated Interim Traffic Conditions - Intersection of Otay Valley Road/Rock Plant Access Road

Another consideration is the intersection conditions where the road turns south and the rock plant access road intersects Otay Valley Road. Short term improvements suggested for this intersection to coincide with Phase 1 are shown schematically on Figure 6.

This unsignalized intersection was analyzed using the NCAP Intersection Capacity Analysis Package (based on Transportation Research Board procedures) and assuming short term future peak hourly traffic volumes consistent with those estimated for the west leg (segment east of Nirvana Avenue) in the segment analysis. It was also assumed that growth in traffic to/from the rock plant would be at a lesser rate than the overall growth assumption used. Therefore, existing turning movements to/from

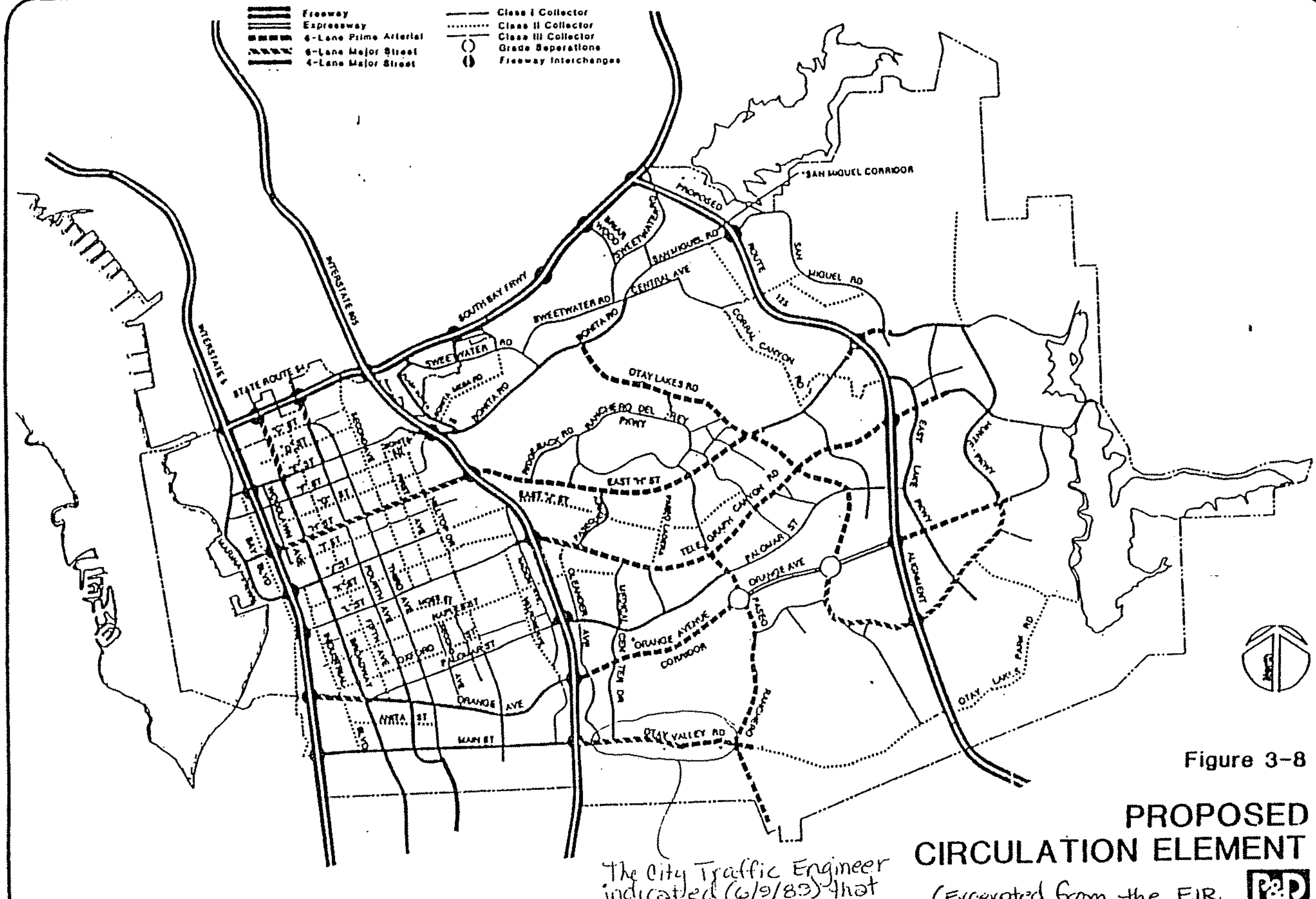


Figure 3-8

PROPOSED CIRCULATION ELEMENT

(Excerpted from the EIR for the General Plan)

The City Traffic Engineer indicated (6/9/89) that this should be 6 lane major along length.

*Alignment of this facility is tentative and subject to further traffic, land use and environmental analysis.

APPENDIX B

Signal Warrant Worksheets for I-805/Otay Valley Road Ramp Terminals in Existing Conditions

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ____XX________ RURAL ______________

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied ___X___ Not Satisfied ______

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) – Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) – Urban	Rural
1	1	8,000	5,600	2,400	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more . 17,370 ...	2 or more .. 4,900	9,600 sat.	6,720	3,200 sat	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied ___X___ Not Satisfied ______

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) – Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) – Urban	Rural
1	1	12,000	8,400	1,200	850
2 or more	1	14,400	10,080	1,200	850
2 or more . 17,370 ..	2 or more . 4,900	14,400 sat.	10.080	1,600 sat	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied ______ Not Satisfied ______

No one warrant satisfied but following warrants fulfilled 80% or more ____ ______ 1 ______ 2

2 Warrants	2 Warrants

BASMACIYAN-DARNELL, INC.

EXISTING CONDITIONS
NORTHBOUND RAMP TERMINAL
I-805/OTAY VALLEY RD

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic — See Note 2)

URBAN ____XX____ RURAL ________

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied ___X___ Not Satisfied ______

Number of lanes for moving traffic on each approach: Major Street	Minor Street	Vehicles per day on major street (total of both approaches): Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only): Urban	Rural
1	1	8,000	5,600	2,400	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more 18,890	2 or more 8,370	9,600 sat.	6,720	3,200 sat	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied ___X___ Not Satisfied ______

Number of lanes for moving traffic on each approach: Major Street	Minor Street	Vehicles per day on major street (total of both approaches): Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only): Urban	Rural
1	1	12,000	8,400	1,200	850
2 or more	1	14,400	10,080	1,200	850
2 or more 18,890	2 or more 8,370	14,400 sat.	10,080	1,600 sat	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied ______ Not Satisfied ______

No one warrant satisfied but following warrants fulfilled 80% or more.... ___1___ ___2___

2 Warrants | 2 Warrants

BASMACIYAN-DARNELL, INC.

EXISTING CONDITIONS
SOUTHBOUND RAMP TERMINAL
I-805/OTAY VALLEY RD

APPENDIX C

Signal Warrant Worksheets for Key Intersections on Otay Valley Road at Build-Out Network

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic — See Note 2)

URBAN ______________ RURAL XX ______________

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied X Not Satisfied ______

Number of lanes for moving traffic on each approach: Major Street	Minor Street	Vehicles per day on major street (total of both approaches): Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only): Urban	Rural
1	1	8,000	5,600	2,400	1,680
2 or more 42000	1 4000/2=2000	9,600	6,720 sat	2,400	1,680 sat
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied X Not Satisfied ______

Number of lanes for moving traffic on each approach: Major Street	Minor Street	Vehicles per day on major street (total of both approaches): Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only): Urban	Rural
1	1	12,000	8,400	1,200	850
2 or more 42000	1 4000/2=2000	14,400	10,080 sat	1,200	850 sat
2 or more	2 or more	14,400	10.080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied ______ Not Satisfied ______

No one warrant satisfied but following warrants fulfilled 80% or more ___ ______ 1 ______ 2

	Vehicles per day on major street	Vehicles per day on higher-volume minor-street approach
3. Combination	2 Warrants	2 Warrants

BDI
BASMACIYAN-DARNELL, INC.

Build-Out Network
Oleander Avenue/Otay Valley Road
Signal Warrant Worksheet

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ________________ RURAL ___XX_______

	Minimum Requirements EADT			
1. Minimum Vehicular Satisfied ___X___ Not Satisfied ______	Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Number of lanes for moving traffic on each approach Major Street / Minor Street	Urban	Rural	Urban	Rural
1 . . . . / 1	8,000	5,600	2,400	1,680
2 or more . . . . / 1	9,600	6,720	2,400	1,680
2 or more 40000 . . / 2 or more 1100/2=5000	9,600	6,720 sat	3,200	2,240 sat
1 . . . . / 2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic Satisfied ___X___ Not Satisfied ______	Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Number of lanes for moving traffic on each approach Major Street / Minor Street	Urban	Rural	Urban	Rural
1 . . . . / 1	12,000	8,400	1,200	850
2 or more . . . . / 1	14,400	10,080	1,200	850
2 or more . 40000 . . / 2 or more 1100/2=5500	14,400	10,080 sat	1,600	1,120 sat
1 . . . . / 2 or more	12,000	8,400	1,600	1,120

3. Combination Satisfied ________ Not Satisfied ________ No one warrant satisfied but following warrants fulfilled 80% or more.... ______ 1 ______ 2	2 Warrants	2 Warrants

BASMACIYAN-DARNELL, INC.

Build-out Network
Brandywine Avenue/Otay Valley Road
Signal Warrant Worksheet

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ______ RURAL XX	Minimum Requirements EADT			
1. Minimum Vehicular Satisfied X Not Satisfied ____	Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 .... / 1	8,000	5,600	2,400	1,680
2 or more .... / 1	9,600	6,720	2,400	1,680
2 or more 37000 ... / 2 or more 10000/2=5000	9,600	6,720 sat	3,200	2,240 sat
1 .... / 2 or more	8,000	5,600	3,200	2,240
2. Interruption of Continuous Traffic Satisfied X Not Satisfied ____	Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 .... / 1	12,000	8,400	1,200	850
2 or more .... / 1	14,400	10,080	1,200	850
2 or more 37000 ... / 2 or more 10000/2=5000	14,400	10.080 sat	1,600	1,120 sat
1 .... / 2 or more	12,000	8,400	1,600	1,120
3. Combination Satisfied ____ Not Satisfied ____ No one warrant satisfied but following warrants fulfilled 80% or more ____ 1 ____ 2	2 Warrants		2 Warrants	

BASMACIYAN-DARNELL, INC.

Build-Out Network
Maxwell Road/Otay Valley Road
Signal Warrant Worksheet

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ______ RURAL __XX__	Minimum Requirements EADT			
1. Minimum Vehicular Satisfied __X__ Not Satisfied ____	Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Number of lanes for moving traffic on each approach	Urban	Rural	Urban	Rural
Major Street 1 . . . . / Minor Street 1	8,000	5,600	2,400	1,680
Major Street 2 or more 30500. . . / Minor Street 1 9000/2=4500	9,600	6,720 sat	2,400	1,680 sat
Major Street 2 or more . . . . / Minor Street 2 or more	9,600	6,720	3,200	2,240
Major Street 1 . . . . / Minor Street 2 or more	8,000	5,600	3,200	2,240
2. Interruption of Continuous Traffic Satisfied __X__ Not Satisfied ____	Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Number of lanes for moving traffic on each approach	Urban	Rural	Urban	Rural
Major Street 1 . . . . / Minor Street 1	12,000	8,400	1,200	850
Major Street 2 or more 30500. . . / Minor Street 1 9000/2=4500	14,400	10,080 sat	1,200	850 sat
Major Street 2 or more . . . . / Minor Street 2 or more	14,400	10.080	1,600	1,120
Major Street 1 . . . . / Minor Street 2 or more	12,000	8,400	1,600	1,120
3. Combination Satisfied ____ Not Satisfied ____ No one warrant satisfied but following warrants fulfilled 80% or more ___ ____ 1 ____ 2	2 Warrants		2 Warrants	

BASMACIYAN-DARNELL, INC.

Build-Out Network
Nirvana Avenue/Otay Valley Road
Signal Warrant Worksheet

APPENDIX D

Criteria for Signalized Intersections

ICU Worksheets Signal Warrant Worksheets

TABLE C-1

INTERSECTION LEVELS OF SERVICE-RANGES

ICU Range	LOS
0.00-0.60	A
0.61-0.70	B
0.71-0.80	C
0.81-0.90	D
0.91-1.00	E
1.01+	F

TABLE C-2

DESCRIPTIONS OF CONDITIONS FOR INTERSECTION LEVELS OF SERVICE

LOS A: There are no loaded traffic signal cycles and few are even close to being considered loaded at this LOS. No intersection approach phase is fully utilized and no vehicles must wait longer than one red indication. Typically, the approach appears quite open, turns are made easily; most drivers find freedom of operation.

LOS B: This LOS represents stable operation when occasional approach phases of the traffic signal are fully utilized and a substantial number are approaching full utilization. Many drivers begin to feel restricted within platoons of approaching vehicles.

LOS C: This LOS represents stable operating conditions. Loading of each signal phase is still intermittent, but more frequent than LOS B. Occasionally drivers may have to wait through more than one signal cycle and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but it is not too objectionable.

LOS D: This LOS encompasses a zone of increasing restrictions approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak period, but with enough signal cycles with lower demand occurring to permit periodic clearance of developing vehicle queues thus preventing excessive backups.

LOS E: Intersection capacity is reached at this LOS. It represents the most vehicles that any particular intersection approach can accomodate. Further utilization of every signal cycle is seldom attained, no matter how great the demand, unless the street is highly friction free.

INTERSECTION: OTAY VALLEY RD/I-805 SB
DATE:
TIME: AM PEAK

(OTAY805S)

Movemnt	No. Lanes	Cap.	Vol.	HORIZON YEAR AM Peak V/C	Crit. Mvmt.
NL	NA	NA	0	0.00	0
NR	NA	NA	0	0.00	0
NT	NA	NA	0	0.00	1
SL	2	3000	1005	0.34	1
SR	1	1500	565	0.38	0
ST	NA	NA	0	0.00	0
EL	NA	NA	0	0.00	0
ER	NA	NA	275	NA	0
ET	3	5100	1065	0.26	1
WL	2	3000	155	0.10	1
WR	NA	NA	0	0.00	0
WT	2	3400	735	0.22	0

N/S component	0.34
E/W component	0.36
Rt.Tn. component	0.00
ICU	0.70

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION: OTAY VALLEY RD/I-805 SB
DATE:
TIME: PM PEAK

(OTAY805S)

			HORIZON YEAR		
Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	Crit. Mvmt.
NL	NA	NA	0	0.00	0
NR	NA	NA	0	0.00	0
NT	NA	NA	0	0.00	1
SL	2	3000	450	0.15	1
SR	1	1500	180	0.12	0
ST	NA	NA	0	0.00	0
EL	NA	NA	0	0.00	0
ER	NA	NA	380	NA	0
ET	3	5100	1550	0.38	1
WL	2	3000	470	0.16	1
WR	NA	NA	0	0.00	0
WT	2	3400	860	0.25	0

N/S component	0.15
E/W component	0.54
Rt.Tn. component	0.00
ICU	0.69

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION: OTAY VALLEY RD/I-805 NB
DATE:
TIME: AM PEAK

(OTAY805N)

			HORIZON YEAR		
Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	Crit. Mvmt.
NL	NA	NA	195	NA	0
NR	2	3000	555	0.25	1
NT	NA	NA	0	0.00	0
SL	NA	NA	0	NA	0
SR	NA	NA	0	0.00	0
ST	NA	NA	0	0.00	0
EL	2	3000	560	0.19	1
ER	NA	NA	0	0.00	0
ET	3	5100	1510	0.30	0
WL	NA	NA	0	0.00	0
WR	1.5	2250	680	0.30	0
WT	1.5	2550	695	0.27	1

N/S component	0.00
E/W component	0.46
Rt.Tn. component	0.25
ICU	0.71

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION: OTAY VALLEY RD/I-805 NB
DATE:
TIME: PM PEAK

(OTAY805N)

Movemnt	No. Lanes	Cap.	Vol.	HORIZON YEAR PM Peak V/C	Crit. Mvmt.
NL	NA	NA	255	NA	0
NR	2	3000	325	0.19	1
NT	NA	NA	0	0.00	0
SL	NA	NA	0	NA	0
SR	NA	NA	0	0.00	0
ST	NA	NA	0	0.00	0
EL	2	3000	580	0.19	1
ER	NA	NA	0	0.00	0
ET	3	5100	1420	0.28	0
WL	NA	NA	0	0.00	0
WR	1.5	2250	1050	0.47	0
WT	1.5	2550	1075	0.42	1

N/S component	0.00
E/W component	0.61
Rt.Tn. component	0.19
ICU	0.81

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION: OTAY VALLEY RD/OLEANDER AVE
DATE:
TIME: AM PEAK

(OTAYOLEA)

Movemnt	No. Lanes	Cap.	Vol.	HORIZON YEAR AM Peak V/C	Crit. Mvmt.
NL	NA	NA	0	NA	0
NR	NA	NA	0	NA	0
NT	NA	NA	0	0.00	1
SL	1	1500	80	0.10	1
SR	1	1500	200	0.13	0
ST	NA	NA	0	0.00	0
EL	1	1500	70	0.10	0
ER	NA	NA	0	NA	0
ET	3	5100	1995	0.39	1
WL	NA	NA	0	NA	1
WR	NA	NA	50	NA	0
WT	3	5100	1175	0.24	0

N/S component	0.10
E/W component	0.39
Rt.Tn. component	0.00
ICU	0.49

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

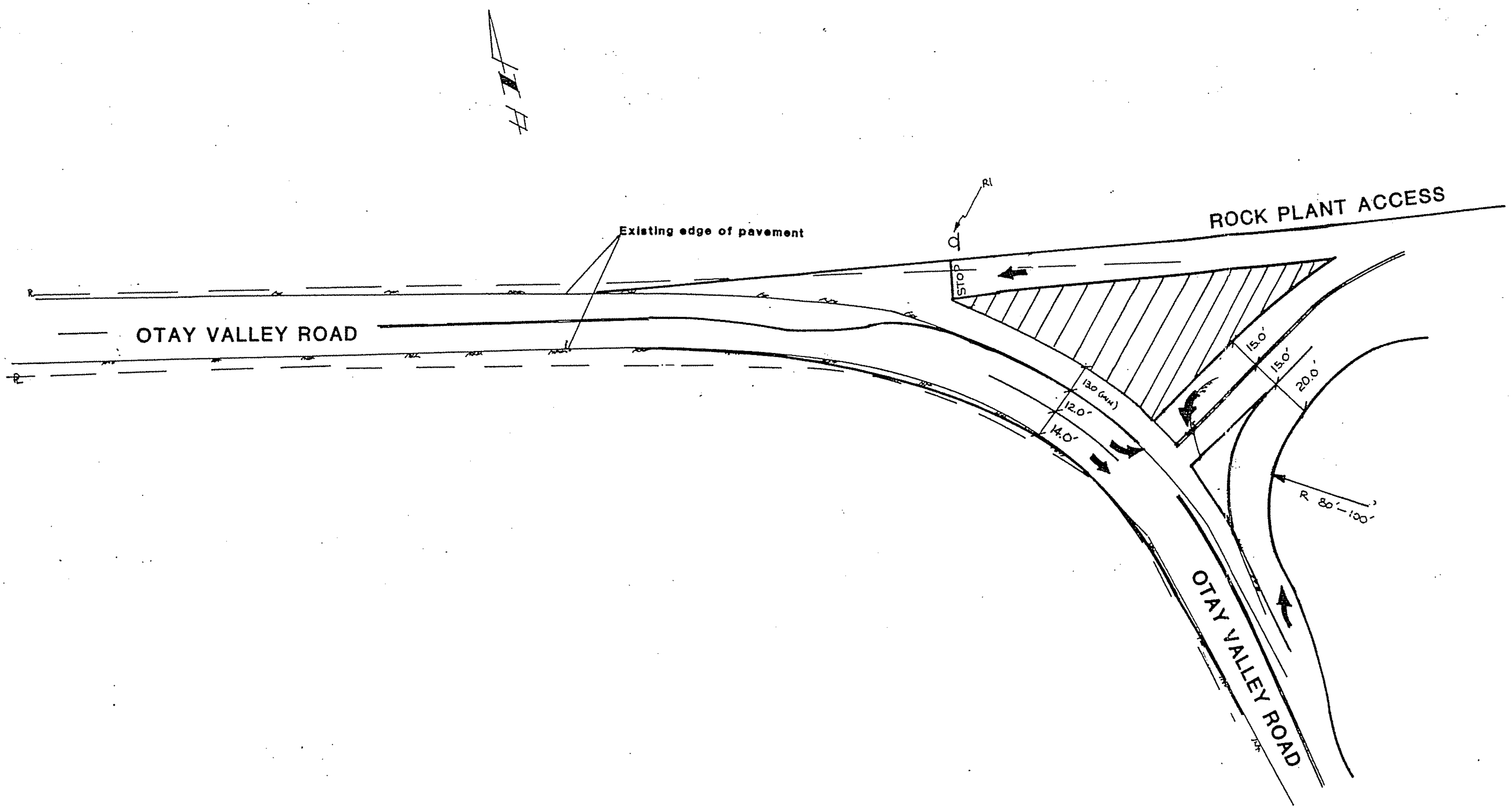


FIGURE 6

SCHEMATIC OF SUGGESTED SHORT TERM INTERSECTION IMPROVEMENTS
OTAY VALLEY ROAD/ROCK PLANT ACCESS

the rock plant were increased using a five percent per year rate of increase. The NCAP worksheets are also included in Appendix E which indicate that under the assumption of six years' growth, the level of service for the vehicles leaving the rock plant would be LOS E during the "peak of the street". For a five year growth assumption, the level of service for the vehicles leaving the rock plant would be LOS D during the "peak of the street", which would be acceptable.

The morning and afternoon commuter peak hour analyses of the intersection showed that six years' growth in traffic could be accommodated. The segment analysis similarly indicated that six years' growth could be accommodated. However, the overall constraint would be "the peak of the street" conditions at the intersection which indicate that five years' growth could be accommodated before the intersection would need to be improved further. Such improvements would likely involve resolution of the intersection alignment in conjunction with further widening efforts (especially the future alignment of Paseo Ranchero).

The five year peak hourly volume on the segment between Nirvana Avenue and the rock plant access driveway would be approximately 1,100 vehicles. The daily volume in five years, at the assumed growth rate of twenty-two percent per year, would be approximately 10,600 vpd.

City Thresholds/Standards for Intersections

The City of Chula Vista has adopted Thresholds/Standards which include goals and policies concerning traffic conditions on the City street system. The intent of the City's policy is to preclude development from preceding roadway improvements beyond which the street system would be significantly impacted. The policy is not specific in its application, so some interpretation is necessary. The method by which the Threshold/Standards requires the level of service to be assessed for an intersection is Intersection Capacity Utilization (ICU). The method implies that only signalized intersections are required to meet the policy goals.

For the analysis of interim conditions at the unsignalized intersection of Otay Valley Road/Rock Plant Access, it is assumed that the Thresholds/Standards do not directly apply. However, the policy guidelines were considered in the analysis since a criterion was used that the peak hour level of service be LOS D or better. It should be remembered that this level of service was for the minor street movements and not the movements on Otay Valley Road.

Recommendations for Monitoring

There are drawbacks to using a yearly rate of increase in that specific projects may cause a rate of increase in any one particular year to exceed that of the average. On the other hand, the rate of increase based on two data points may be too high. Also, due to the rock plant and the auto dismantling businesses, there is likely to be daily variation in the traffic present on the street.

Based on these considerations, the estimates of traffic and the time period before another phase of construction should be implemented on Otay Valley Road should be monitored on a yearly basis and judgments made based on more than one sample. Such monitoring might also include studies of travel time the degree to which such travel time is reduced over the time period. At the discretion of the City Traffic Engineer, an acceptable travel time may be the criterion by which the time period before further improvements should be implemented is judged.

CONCLUSIONS AND RECOMMENDATIONS

- Under the existing conditions, the ramp terminals at I-805 and Otay Valley Road were found to likely warrant signals (at this time).

- The build-out network forecast shows daily traffic volumes on Otay Valley Road west of I-805, Otay Valley Road between I-805 and Brandywine Avenue, and Nirvana Avenue just north of Otay Valley Road which exceed the City's recommended maximum daily traffic for their circulation element classifications.

- The City is considering changing the classification of Otay Valley Road to a four lane major street east of Nirvana Avenue (instead of six lanes). This classification would accommodate the build-out forecast volume of 26,000 vpd east of Nirvana Avenue. Such a classification change would require an amendment to the Circulation Element (if it is adopted as it is now proposed).

- Signal warrant analyses were performed for the intersections of Otay Valley Road/Oleander Avenue, Otay Valley Road/Brandywine Avenue, Otay Valley Road/Maxwell Road, and Otay Valley Road/Nirvana Avenue. All four intersections will likely warrant signalization with build-out network forecast daily traffic volumes. With signalization and the lane assumptions shown on Figure 5, all intersections would be expected at acceptable LOS.

- The signal at Otay Valley Road/Nirvana Avenue (shown to likely warrant signalization for future traffic volumes) will likely be installed when the widening project is constructed to correct a line of sight constraint at the intersection.

- Maxwell Road will require improvement at its intersection with Otay Valley Road in order to maintain LOS C for future peak hour traffic. Maxwell Road would need to provide a southbound left turn lane at the intersection with Otay Valley Road.

- The Phase 1 construction will widen Otay Valley Road from I-805 east to a point just past Nirvana Avenue where it would remain a two lane road in the interim. Estimates made in this traffic study suggest that with some improvements to the intersection of Otay Valley Road/Rock Plant Access (depicted on Figure 6), the two lane roadway would need to be improved after about five years. Such estimates are fallible, and it is recommended that the traffic conditions be monitored to implement improvements at an appropriate time. Further improvements to Otay Valley Road east of Nirvana Avenue will likely require the resolution of the intersection realignment and improvement of the south leg of the intersection as well. The south leg is currently Otay Valley Road. Upon realignment it will be the future Paseo Ranchero.

APPENDIX A

Excerpts from City of Chula Vista Draft Circulation Element acceptable Level of Service, referred to as grade C, occurs when the demand volume on the facility reaches 80% of the capacity of the facility. This table identifies only those facilities which comprise the local circulation system. Thus, the capacity levels for the freeways serving Chula Vista are excluded. The circulation plan developed for this element utilized Level of Service C as the guideline for determining the functional class of individual facilities, based on forecasted ADT volumes resulting from the proposed general plan land uses.

TABLE 2-1

ROADWAY CAPACITY STANDARDS

Facility Type	# of Lanes	Approx. LOS C ADT
Expressway	6	70,000
Six-Lane Prime Arterial	6	50,000
Six-Lane Major Street	6	40,000
Four-Lane Major Street	4	30,000
Class I Collector	4	22,000
Class II Collector	2	12,000
Class III Collector	2	7,500

A city policy entitled "Threshold/Standards and Growth Management Oversight Committee" (November 17, 1987) requires that all intersections throughout the city maintain operating conditions of Level of Service C or better, with the exception that Level of Service D may occur at signalized intersections for a period not to exceed a total of two hours per day. This policy requires the periodic review of intersection operations and changing volume levels. As

INTERSECTION: OTAY VALLEY RD/OLEANDER AVE
DATE:
TIME: PM PEAK

(OTAYOLEA)

Movemnt	No. Lanes	Cap.	HORIZON YEAR Vol.	PM Peak V/C	Crit. Mvmt.
NL	NA	NA	0	NA	0
NR	NA	NA	0	NA	0
NT	NA	NA	0	0.00	1
SL	1	1500	40	0.10	1
SR	1	1500	80	0.05	0
ST	NA	NA	0	0.00	0
EL	1	1500	200	0.13	1
ER	NA	NA	0	0.00	0
ET	3	5100	1545	0.30	0
WL	NA	NA	0	NA	0
WR	NA	NA	80	NA	0
WT	3	5100	2045	0.42	1

N/S component	0.10
E/W component	0.55
Rt.Tn. component	0.00
ICU	0.65

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION: OTAY VALLEY RD/BRANDYWINE AVE
DATE:
TIME: AM PEAK

(OTAYBRAN)

Movemnt	No. Lanes	Cap.	HORIZON YEAR Vol.	AM Peak V/C	Crit. Mvmt.
NL	NA	NA	0	NA	0
NR	NA	NA	0	NA	0
NT	NA	NA	0	0.00	1
SL	1.5	2250	290	0.13	1
SR	1.5	2250	350	0.16	0
ST	NA	NA	0	0.00	0
EL	1	1500	250	0.17	1
ER	NA	NA	0	0.00	0
ET	3	5100	1825	0.36	0
WL	NA	NA	0	NA	0
WR	NA	NA	200	NA	0
WT	3	5100	875	0.21	1

N/S component	0.13
E/W component	0.38
Rt.Tn. component	0.00
ICU	0.51

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION: OTAY VALLEY RD/BRANDYWINE AVE
DATE:
TIME: PM PEAK

(OTAYBRAN)

Movemnt	No. Lanes	Cap.	HORIZON YEAR Vol.	PM Peak V/C	Crit. Mvmt.
NL	NA	NA	0	NA	0
NR	NA	NA	0	NA	0
NT	NA	NA	0	0.00	1
SL	1.5	2250	200	0.10	1
SR	1.5	2250	250	0.11	0
ST	NA	NA	0	0.00	0
EL	1	1500	350	0.23	1
ER	NA	NA	0	0.00	0
ET	3	5100	1235	0.24	0
WL	NA	NA	0	NA	0
WR	NA	NA	290	NA	0
WT	3	5100	1815	0.41	1

N/S component	0.10
E/W component	0.65
Rt.Tn. component	0.00
ICU	0.75

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION: OTAY VALLEY RD/MAXWELL RD
DATE:
TIME: AM PEAK

(OTAYMAX)

Movemnt	No. Lanes	Cap.	HORIZON YEAR Vol.	AM Peak V/C	Crit. Mvmt.
NL	NA	NA	0	NA	0
NR	NA	NA	0	NA	0
NT	NA	NA	0	0.00	0
SL	1	1500	100	0.10	1
SR	1	1500	100	0.07	0
ST	NA	NA	0	0.00	0
EL	2	3000	600	0.20	1
ER	NA	NA	0	NA	0
ET	3	5100	1450	0.28	0
WL	NA	NA	0	NA	0
WR	NA	NA	200	NA	0
WT	3	5100	1050	0.25	1

N/S component	0.10
E/W component	0.45
Rt.Tn. component	0.00
ICU	0.55

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION: OTAY VALLEY RD/MAXWELL RD
DATE:
TIME: PM PEAK

(OTAYMAX)

Movemnt	No. Lanes	Cap.	Vol.	HORIZON YEAR PM Peak V/C	Crit. Mvmt.
NL	NA	NA	0	NA	0
NR	NA	NA	0	NA	0
NT	NA	NA	0	0.00	1
SL	1	1500	200	0.13	1
SR	1	1500	600	0.40	1
ST	NA	NA	0	0.00	0
EL	2	3000	100	0.10	1
ER	NA	NA	0	NA	0
ET	3	5100	1250	0.25	0
WL	NA	NA	0	NA	0
WR	NA	NA	100	NA	0
WT	3	5100	1555	0.32	1

N/S component	0.13
E/W component	0.42
Rt.Tn. component	0.17
ICU	0.73

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION: OTAY VALLEY RD/NIRVANA AVE
DATE:
TIME: AM PEAK

(OTAYNIR)

Movemnt	No. Lanes	Cap.	Vol.	HORIZON YEAR AM Peak V/C	Crit. Mvmt.
NL	NA	NA	0	NA	0
NR	NA	NA	0	NA	0
NT	NA	NA	0	0.00	1
SL	1	1500	30	0.10	1
SR	1	1500	150	0.10	0
ST	NA	NA	0	0.00	0
EL	1	1500	580	0.39	1
ER	NA	NA	0	NA	0
ET	3	5100	970	0.19	0
WL	NA	NA	0	NA	0
WR	NA	NA	140	NA	0
WT	3	5100	1100	0.24	1

N/S component	0.10
E/W component	0.63
Rt.Tn. component	0.00
ICU	0.73

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION: OTAY VALLEY RD/NIRVANA AVE
DATE:
TIME: PM PEAK

(OTAYNIR)

Movemnt	No. Lanes	Cap.	HORIZON YEAR Vol.	PM Peak V/C	Crit. Mvmt.
NL	NA	NA	0	NA	0
NR	NA	NA	0	NA	0
NT	NA	NA	0	0.00	1
SL	1	1500	140	0.10	1
SR	1	1500	580	0.39	1
ST	NA	NA	0	0.00	0
EL	1	1500	150	0.10	1
ER	NA	NA	0	NA	0
ET	3	5100	1300	0.25	0
WL	NA	NA	0	NA	0
WR	NA	NA	30	NA	0
WT	3	5100	1070	0.22	1

N/S component	0.10
E/W component	0.32
Rt.Tn. component	0.17
ICU	0.59

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

APPENDIX E

Interim (Phase I) Conditions East of Nirvana Avenue

Otay Valley Road East of Nirvana Avenue
Rate of Increase for Traffic Volumes
1987 to 1989

Daily Basis

% increase per year
3930 = 2620(y)   y = 1.22 [22% per year] rate of increase

Peak Hourly Basis (Because street fairly evenly used throughout the day)

AM Peak 1987 = 147   206 = 147y
AM Peak 1989 = 206   1.18 = y (fairly consistent w/daily increase)

Peak of Street 1987 = 291   404 = 291y
Peak of Street 1989 = 404   1.18 = y (fairly consistent w/daily increase)

PM Peak 1987 = 206   331 = 206y
PM Peak 1989 = 331   1.27 = y (okay)

So overall 22% per year is reasonable.

1985 HCM:TWO-LANE HIGHWAYS
##

FACILITY LOCATION.... OTAY VALLEY RD.
ANALYST.............. S.H.
TIME OF ANALYSIS..... 6-YRS FUTURE AM PK
DATE OF ANALYSIS..... 5/5/89
OTHER INFORMATION.... SEGMENT: NIRVANA TO CVCL

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS......................	27
PERCENTAGE OF BUSES.......................	0
PERCENTAGE OF RECREATIONAL VEHICLES........	0
DESIGN SPEED (MPH)........................	50
PEAK HOUR FACTOR..........................	.77
DIRECTIONAL DISTRIBUTION (UP/DOWN).........	38 / 62
LANE WIDTH (FT)...........................	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES..................	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_v	f_d	f_{HV}
A	2	1.8	2.2	1	.93	.79
B	2.2	2	2.5	1	.93	.76
C	2.2	2	2.5	1	.93	.76
D	2	1.6	1.6	1	.93	.79
E	2	1.6	1.6	1	.93	.79

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 680
ACTUAL FLOW RATE: 883

LOS	SERVICE FLOW RATE	V/C
A	82	.04
B	315	.16
C	629	.32
D	1169	.57
E	2050	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
##

FACILITY LOCATION.... OTAY VALLEY RD.
ANALYST.............. S.H.
TIME OF ANALYSIS..... 6-YRS FUTURE PM PK
DATE OF ANALYSIS..... 5/5/89
OTHER INFORMATION.... SEGMENT: NIRVANA TO CVCL

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.......................	4
PERCENTAGE OF BUSES........................	0
PERCENTAGE OF RECREATIONAL VEHICLES........	0
DESIGN SPEED (MPH).........................	50
PEAK HOUR FACTOR...........................	.84
DIRECTIONAL DISTRIBUTION (UP/DOWN).........	47 / 53
LANE WIDTH (FT)............................	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)...	6
PERCENT NO PASSING ZONES...................	100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.98	.96
B	2.2	2	2.5	1	.98	.95
C	2.2	2	2.5	1	.98	.95
D	2	1.6	1.6	1	.98	.96
E	2	1.6	1.6	1	.98	.96

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1090
ACTUAL FLOW RATE: 1298

LOS	SERVICE FLOW RATE	V/C
A	106	.04
B	419	.16
C	838	.32
D	1504	.57
E	2638	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... OTAY VALLEY RD.
ANALYST.............. S.H.
TIME OF ANALYSIS..... 6-YRS FUTURE STR. PK
DATE OF ANALYSIS..... 5/5/89
OTHER INFORMATION.... SEGMENT: NIRVANA TO CVCL

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS....................... 6
PERCENTAGE OF BUSES........................ 0
PERCENTAGE OF RECREATIONAL VEHICLES......... 0
DESIGN SPEED (MPH)......................... 50
PEAK HOUR FACTOR........................... .94
DIRECTIONAL DISTRIBUTION (UP/DOWN).......... 54 / 46
LANE WIDTH (FT)............................ 12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)... 6
PERCENT NO PASSING ZONES................... 100

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E_T	E_B	E_R	f_w	f_d	f_{HV}
A	2	1.8	2.2	1	.98	.94
B	2.2	2	2.5	1	.98	.93
C	2.2	2	2.5	1	.98	.93
D	2	1.6	1.6	1	.98	.94
E	2	1.6	1.6	1	.98	.94

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1332
ACTUAL FLOW RATE: 1417

LOS	SERVICE FLOW RATE	V/C
A	103	.04
B	408	.16
C	816	.32
D	1470	.57
E	2578	1

LOS FOR GIVEN CONDITIONS: D

LOCATION:OTAY VALLEY RD/ROCK PLANT DRI. |NAME:SIX YRS FUTURE (AM Commuter Peak Hour)

HOURLY VOLUMES | VOLUMES IN PCPH

N

Major street:OTAY VALLEAY RD

```
N= 2                           <---V5---  395 |                               <---V5---
Grade    228---V2--->          v---V4---   27 |        ---V2--->              v---V4---    30
  0%      31---V3---v                    N= 2 |        ---V3---v
================   <|      |>  ========== | ================  <|    |>  ========
Date of Counts: |    |      |    |            |                 |   |    |    |
                |   V7     V9    | X STOP     |                 |  V7   V9    |
Time Period:    |    |      |    |   YIELD    |                 |   |    |    |
AM COMM.PEAK    |   30     30    |            |                 |  60   60    |
Approach Speed:  Minor Street:   Grade        |
40 MPH          ROCK PLANT DRIV    0%         |
PHF: .77            N= 1
Population:
```

VOLUME ADJUSTMENTS

Movement no.	2	3	4	5	7	9
Volume (vph)	228	31	27	395	30	30
Vol(pcph),see Table 10.1	XXXXXXXX	XXXXXXXX	30	XXXXXXXX	60	60

STEP 1 : RT From Minor Street | /-> V9

Conflicting Flows, Vc	1/2 V3+V2= 0 + 228 = 228 vph(Vc9)
Critical Gap, Tc	Tc= 5.5 secs (Tab.10.2)
Potential Capacity, Cp	Cp9= 861 pcph (Fig.10.3)
Actual Capacity, Cm	Cm9=Cp9= 861 pcph

STEP 2 : LT From Major Street | v-- V4

Conflicting Flows, Vc	V3+V2= 0 + 228 = 228 vph(Vc4)
Critical Gap, Tc	Tc= 5 secs (Tab.10.2)
Potential Capacity, Cp	Cp4= 953 pcph (Fig.10.3)
% of Cp utilized and Impedance Factor	(V4/Cp4)x100= 3.1% P4= .98
Actual Capacity, Cm (Fig.10.5)	Cm4=Cp4= 953 pcph

STEP 3 : LT From Minor Street | <-\ V7

Conflicting Flows, Vc	1/2 V3+V2+V5+V4= 0 + 228 + 395 + 27 = 650 vph(Vc7)
Critical Gap, Tc	Tc= 6.5 secs (Tab.10.2)
Potential Capacity, Cp	Cp7= 393 pcph (Fig.10.3)
Actual Capacity, Cm	Cm7=Cp7xP4= 393 x .98 = 385 pcph

SHARED LANE CAPACITY SH = (V7+V9)/((V7/Cm7)+(V9/Cm9)) if lane is shared

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	60	385	532	325	412	B	A
9	60	861	532	801	412	A	A
4	30	953		923		A	

```
LOCATION:OTAY VALLEY RD/ROCK PLANT DRI.  |NAME:SIX YRS FUTURE (PM Commuter Peak Hour)
---------------------------------------------------------------------------------------
HOURLY VOLUMES                              | VOLUMES IN PCPH
                                 N          |
 Major street:OTAY VALLEAY RD               |
=========================================== | =========================================
N= 2                      <---V5---  573    |                         <---V5---
Grade    505---V2--->     v---V4---    5    |        ---V2--->        v---V4---      5
  0%       1---V3---v              N= 2     |        ---V3---v
=================  <|     |>  ==========    | =================   <|    |>  =========
Date of Counts:  |  |     |   |             |                  |   |    |   |
                 |  V7    V9  | X STOP      |                  |   V7   V9  |
Time Period:     |  |     |   |   YIELD     |                  |   |    |   |
PM COMM. PEAK    |   4      7|              |                  |    4     7|
Approach Speed:   Minor Street:    Grade    |
[illegible]0 MPH          ROCK PLANT DRIV     0%      |
PHF: .84              N= 1
Population:
```

VOLUME ADJUSTMENTS

Movement no.	2	3	4	5	7	9
Volume (vph)	505	1	5	573	4	7
Vol(pcph),see Table 10.1	XXXXXXXX	XXXXXXXX	5	XXXXXXXX	4	7

STEP 1 : RT From Minor Street | /-> V9

```
Conflicting Flows, Vc          | 1/2 V3+V2= 0 + 505 = 505 vph(Vc9)
Critical Gap, Tc               | Tc=  5.5 secs (Tab.10.2)
Potential Capacity, Cp         | Cp9=  621 pcph (Fig.10.3)
Actual Capacity, Cm            | Cm9=Cp9=  621 pcph
```

STEP 2 : LT From Major Street | v-- V4

```
Conflicting Flows, Vc                      | V3+V2= 0 + 505 = 505 vph(Vc4)
Critical Gap, Tc                           | Tc=    5 secs (Tab.10.2)
Potential Capacity, Cp                     | Cp4=  706 pcph (Fig.10.3)
% of Cp utilized and Impedance Factor      | (V4/Cp4)x100=   .7% P4=   1
Actual Capacity, Cm          (Fig.10.5)    | Cm4=Cp4=  706 pcph
```

STEP 3 : LT From Minor Street | <-\ V7

```
Conflicting Flows, Vc          | 1/2 V3+V2+V5+V4=
                               | 0 + 505 + 573 + 5 = 1083 vph(Vc7)
Critical Gap, Tc               | Tc=  6.5 secs (Tab.10.2)
Potential Capacity, Cp         | Cp7=  205 pcph (Fig.10.3)
Actual Capacity, Cm            | Cm7=Cp7xP4= 205 x 1 = 205 pcph
```

SHARED LANE CAPACITY   SH = (V7+V9)/((V7/Cm7)+(V9/Cm9)) if lane is shared

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	4	205	357	201	346	C	B
9	7	621	357	614	346	A	B
4	5	706		701		A	

LOCATION:OTAY VALLEY RD/ROCK PLANT DRI. |NAME:SIX YRS FUTURE (Peak of Street)

```
HOURLY VOLUMES                                | VOLUMES IN PCPH
                                          N   |
 Major street:OTAY VALLEAY RD                 |
==========================================    | ==========================================
N= 2                     <---V5---   704      |                              <---V5---
Grade    563---V2--->    v---V4---    15      |         ---V2--->            v---V4---   15
  0%      47---V3---v                N= 2     |         ---V3---v
=================  <|      |>   ==========    | =================  <|   |>   =========
Date of Counts: |   |      |    |             |                 |   |    |    |
                |   V7     V9   | X STOP      |                 |   V7   V9   |
Time Period:    |   |      |    |   YIELD     |                 |   |    |    |
PK OF STREET    |   56     50|                |                 |   88   79|
Approach Speed:  Minor Street:    Grade       |
40 MPH          ROCK PLANT DRIV    0%         |
PHF: .94             N= 1
Population:
```

VOLUME ADJUSTMENTS

Movement no.	2	3	4	5	7	9
Volume (vph)	563	47	15	704	56	50
Vol(pcph),see Table 10.1	XXXXXXXX	XXXXXXXX	15	XXXXXXXX	88	79

```
STEP 1 : RT From Minor Street              |           /-> V9
==========================================================================
Conflicting Flows, Vc                      | 1/2 V3+V2= 0 + 563 = 563 vph(Vc9)
Critical Gap, Tc                           | Tc=  5.5 secs (Tab.10.2)
Potential Capacity, Cp                     | Cp9=  578 pcph (Fig.10.3)
Actual Capacity, Cm                        | Cm9=Cp9=  578 pcph
==========================================================================
STEP 2 : LT From Major Street              |           v-- V4
==========================================================================
Conflicting Flows, Vc                      | V3+V2= 0 + 563 = 563 vph(Vc4)
Critical Gap, Tc                           | Tc=    5 secs (Tab.10.2)
Potential Capacity, Cp                     | Cp4=  660 pcph (Fig.10.3)
% of Cp utilized and Impedance Factor      | (V4/Cp4)x100=  2.3% P4= .99
Actual Capacity, Cm          (Fig.10.5)    | Cm4=Cp4=  660 pcph
==========================================================================
STEP 3 : LT From Minor Street              |           <-\ V7
==========================================================================
Conflicting Flows, Vc                      | 1/2 V3+V2+V5+V4=
                                           | 0 + 563 + 704 + 15 = 1282 vph(Vc7)
Critical Gap, Tc                           | Tc=  6.5 secs (Tab.10.2)
Potential Capacity, Cp                     | Cp7=  150 pcph (Fig.10.3)
Actual Capacity, Cm                        | Cm7=Cp7xP4= 150 x .99 = 149 pcph
==========================================================================
SHARED LANE CAPACITY    SH = (V7+V9)/((V7/Cm7)+(V9/Cm9)) if lane is shared
```

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	88	149	230	61	63	E	E
9	79	578	230	499	63	A	E
4	15	660		645		A	

LOCATION:OTAY VALLEY RD/ROCK PLANT DRI. ¦NAME:FIVE YRS FUTURE (Peak of Street

```
IOURLY VOLUMES                                   ¦ VOLUMES IN PCPH
                                          N      ¦
 Major street:OTAY VALLEAY RD                    ¦
=============================================    ¦ ==========================================
|= 2                       <---V5---   577       ¦                              <---V5---
Grade    457---V2--->      v---V4---    14       ¦           ---V2--->          v---V4---    14
  0%      45---V3---v               N= 2         ¦           ---V3---v
================  <¦     ¦>  ==========          ¦ ================  <¦    ¦>  ========
Date of Counts: ¦    ¦     ¦    ¦                ¦                 ¦   ¦    ¦    ¦
                ¦   V7     V9   ¦ X STOP         ¦                 ¦   V7   V9   ¦
'ime Period:    ¦    ¦     ¦    ¦   YIELD        ¦                 ¦   ¦    ¦    ¦
.K OF STREET    ¦   54      47¦                  ¦                 ¦   85    74¦
Approach Speed:  Minor Street:   Grade           ¦
IO MPH         ROCK PLANT DRIV     0%            ¦
'HF: .94           N= 1
Population:
```

/OLUME ADJUSTMENTS

Movement no.	2	3	4	5	7	9
Volume (vph)	457	45	14	577	54	47
/ol(pcph),see Table 10.1	XXXXXXXX	XXXXXXXX	14	XXXXXXXX	85	74

STEP 1 : RT From Minor Street ¦ /-> V9

:onflicting Flows, Vc	1/2 V3+V2= 0 + 457 = 457 vph(Vc9)
Critical Gap, Tc	Tc= 5.5 secs (Tab.10.2)
Potential Capacity, Cp	Cp9= 657 pcph (Fig.10.3)
ιctual Capacity, Cm	Cm9=Cp9= 657 pcph

STEP 2 : LT From Major Street ¦ v-- V4

:onflicting Flows, Vc	V3+V2= 0 + 457 = 457 vph(Vc4)
Critical Gap, Tc	Tc= 5 secs (Tab.10.2)
'otential Capacity, Cp	Cp4= 749 pcph (Fig.10.3)
: of Cp utilized and Impedance Factor	(V4/Cp4)x100= 1.9% P4= .99
Actual Capacity, Cm (Fig.10.5)	Cm4=Cp4= 749 pcph

STEP 3 : LT From Minor Street ¦ <-\ V7

Conflicting Flows, Vc	1/2 V3+V2+V5+V4= 0 + 457 + 577 + 14 = 1048 vph(Vc7)
:ritical Gap, Tc	Tc= 6.5 secs (Tab.10.2)
Potential Capacity, Cp	Cp7= 216 pcph (Fig.10.3)
ιctual Capacity, Cm	Cm7=Cp7xP4= 216 x .99 = 214 pcph

SHARED LANE CAPACITY SH = (V7+V9)/((V7/Cm7)+(V9/Cm9)) if lane is shared

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	85	214	312	129	153	D	D
9	74	657	312	583	153	A	D
4	14	749		735		A	

APPENDIX C

CULTURAL RESOURCES REPORT

FOR

OTAY VALLEY ROAD WIDENING PROJECT

Prepared for:

Keller Environmental Associates, Inc.

Prepared by:

Brian F. Smith and Associates

June 1989

3.7 ARCHAEOLOGY/HISTORY

3.7.1 PROJECT SETTING

3.7.1.1 Introduction

The subject of this cultural resources survey report is the area of the proposed widening of Otay Valley Road. The project involves the enlargement of the road from the two lanes currently in place to create a six-lane, prime arterial road with a 128-foot-wide right-of-way. The project is planned as one of two alternatives. The difference between the alternatives is focused on the eastern half of the alignment, where the road will either cut northward into the valley terraces or southward into the Otay River flood plain. The project stretches along the current path of Otay Valley Road from Interstate 805 approximately two miles to the eastern boundary of Chula Vista, where Otay Valley Road turns south toward Brown Field.

The scope of work for the cultural resources survey included archaeological site files records searches at the San Diego Museum of Man and the San Diego State University Cultural Resource Center, a field reconnaissance of the present route and possible alternatives to locate any cultural resources within the project, an evaluation of cultural resources present within the right-of-way, and the compilation of a report of findings, including recommendations for future action and mitigation measures. All work included in this study was conducted in accordance with the California Environmental Quality Act (Public Resources Code, Section 21083.2) and the environmental guidelines of the City of Chula Vista.

3.7.1.2 Environmental Setting of the Project

The majority of the project has been previously disturbed by modern uses. These have included the construction of Otay Valley Road and various residential streets, the development of various commercial lots and businesses, cultivation, and flood damage resulting from the collapse of the Otay Dam in 1916. The flood plain has also been impacted by gravel mining, which has changed the river course and altered vegetation patterns. Perhaps the only area which has not been previously disturbed is the bluff which lies to the north of Otay Valley Road at the eastern end of the study area. Because the largest percentage of the project coincides with the present location of Otay Valley Road, the study area holds only minimal potential for the existence of intact cultural resources.

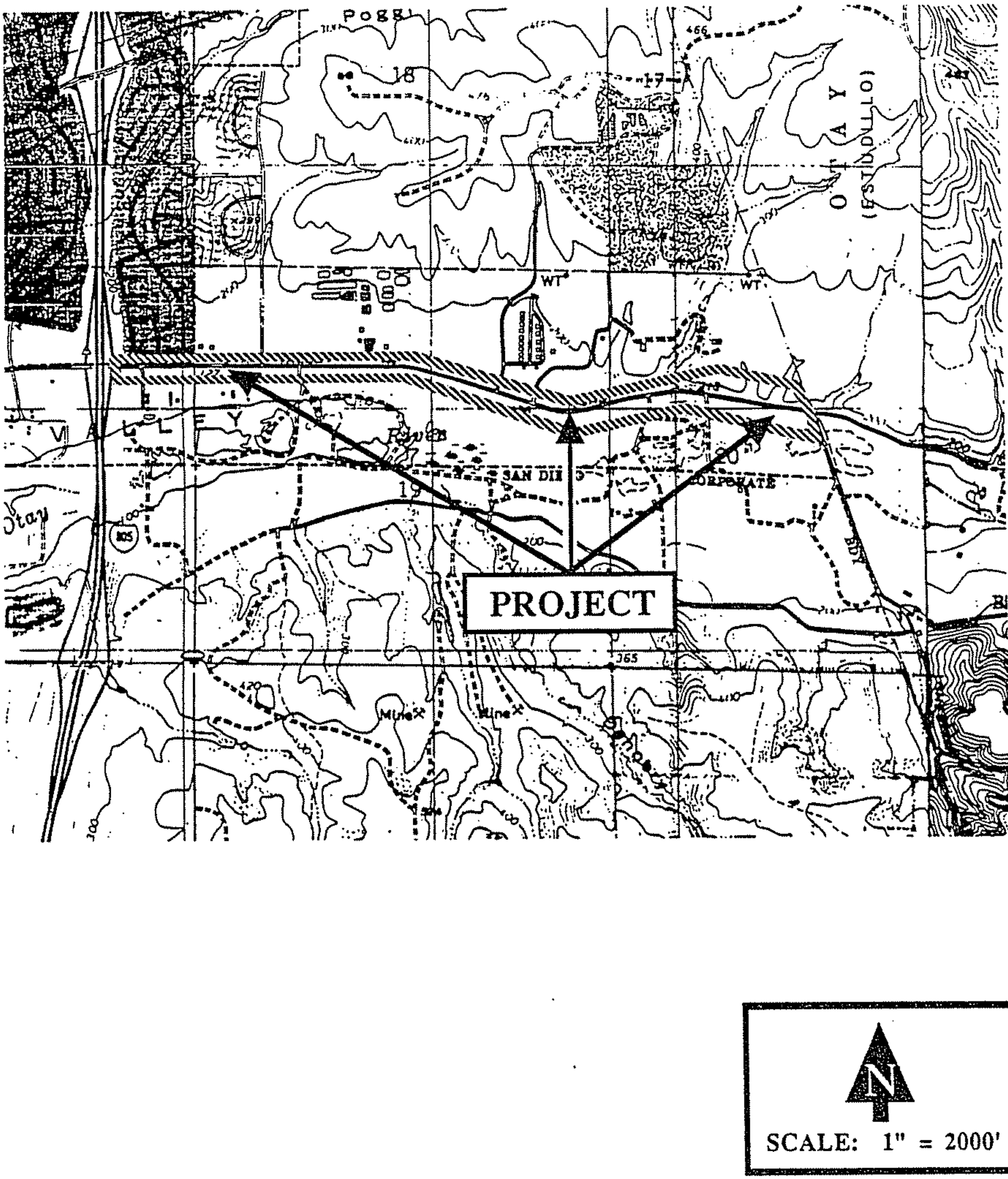
The project setting must also be viewed in terms of the prehistoric occupation of the area. The prehistoric setting of Otay Valley is not difficult to imagine or reconstruct, since several areas within the valley, especially in the eastern area, contain elements of the natural topography with native vegetation. The valley, today as well as in the prehistoric past, is characterized by gentle slopes which parallel the river course, with steeper slopes and terraces along the valley borders. The flood plain must have been very fertile, as several very large sites are found in an almost continuous sequence of occupation locations which are characterized by a wide selection of lithic tools typical of a food collecting subsistence pattern. Perhaps nowhere else in San Diego County does a similar circumstance exist where the prehistoric occupation of a river valley was so intense. The exact nature of the subsistence pattern practiced 2,000 to 6,000 years ago in Otay Valley has not as yet been established by archaeologists; however, the lack of projectile points and other hunting tools suggests that the subsistence pattern of the occupants of the valley was focused upon foraging. The prehistoric occupation of the area was based upon this ideal natural setting, which included a constant source of water and fertile soil to support the growth of lush vegetation.

Geologically, the study area includes a variety of soils and formations. The lower elevations consist of alluvial clays and sands indicative of a flood plain. The eastern portion of the project includes terraces that represent the northern edge of the river valley. The strata exposed along the terraces of the valley included the San Diego Formation, the Otay Formation, and the Sweetwater Formation. Below the river terrace, deposits on the valley floor include sandstone elements of the Mission Valley Formation (Gastil and Higley 1977: 48).

3.7.1.3 Results of Archaeological Site Files Record Searches

As part of the evaluation of the cultural resources located within the Otay Valley Road Widening Project, archaeological site files record searches were conducted at the San Diego Museum of Man and San Diego State University, and a brief literature search was performed. The results of the record searches are provided in an appendix to this report. The searches indicated that several cultural resources are present in the near vicinity of the project. Approximately 40 sites have been recorded within a one-mile radius of the project. These sites, along with general descriptions of the resources, are listed in Table 1.

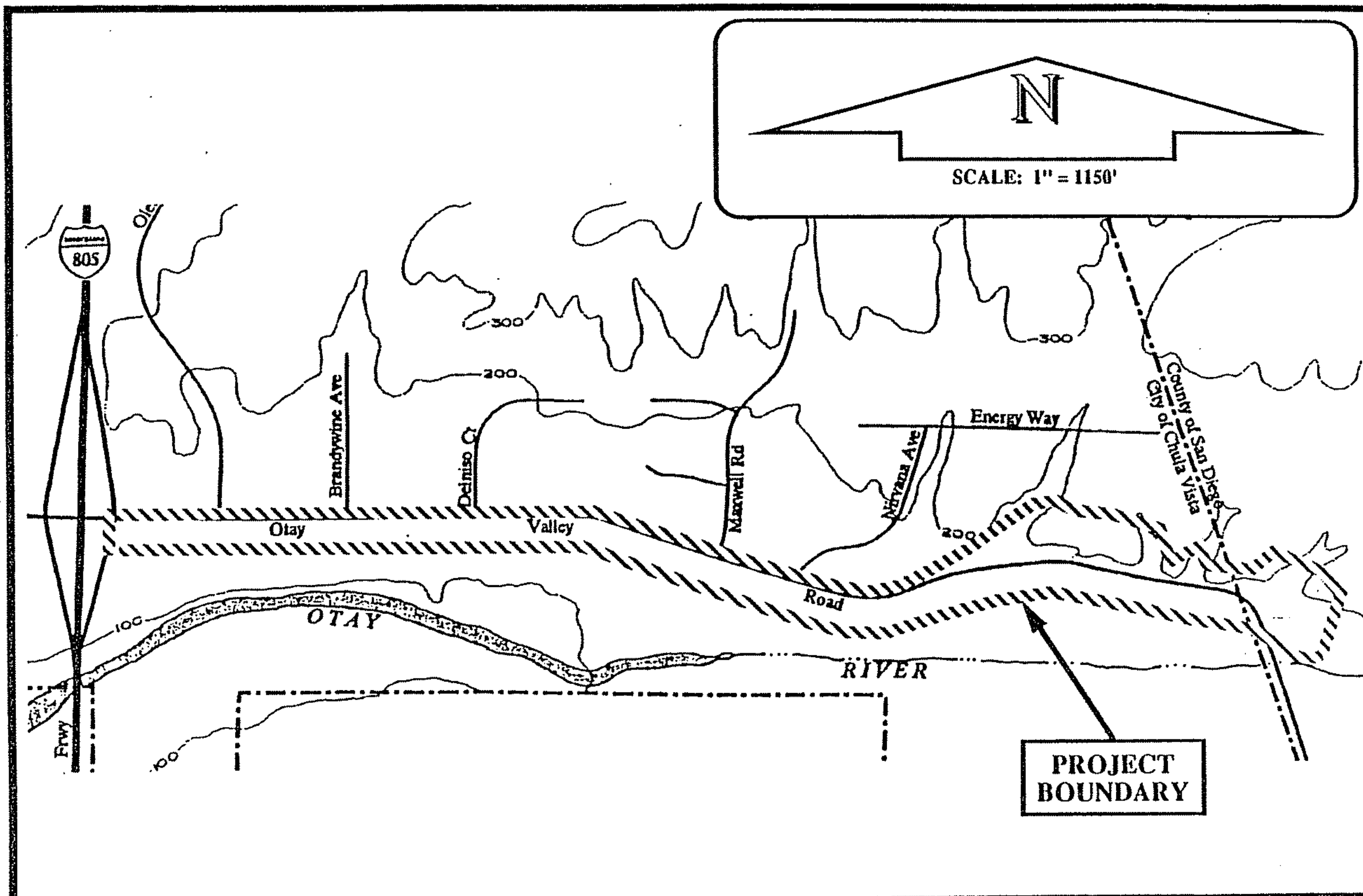
The study of the archaeological record of adjacent sites reveals a number of pertinent trends. First, there are no indications that any of the sites are attributable to the Late Prehistoric component, the Kumeyaay Indians. The absence of pottery (prehistoric ceramics), time-sensitive artifacts (such as small, triangular projectile points of the Kumeyaay Indians), and late period dates at all of the 40 sites located near the project suggests that these sites chronologically are instead attributable to the La Jolla Complex period of occupation, between 6,000 and 3,000 years before the present. It is also noteworthy that none of the site records include descriptions of artifacts which would be conclusively associated with the San Dieguito Complex. Sites SDi-10471 and



TOPOGRAPHIC LOCATION MAP

OTAY VALLEY ROAD WIDENING PROJECT

IMPERIAL BEACH, CALIFORNIA U.S.G.S. QUADRANGLE



PROJECT LOCATION MAP

OTAY VALLEY ROAD WIDENING PROJECT

SDi-10472, which were recorded by Fink in 1973 as sites of the San Dieguito Complex, actually appear to be similar to most of the other sites in the area which have been attributed to the La Jolla Complex.

The sites in the vicinity of the project are unusually similar in characteristics. Nearly all of the sites are widely dispersed scatters of well made scrapers, choppers, cores, utilized/retouched flakes, and associated flakes. Very few projectile points or lanceolate blades (bifaces) have been reported. Occasionally, the scatters were more dense and were associated with midden deposits, reflecting locations of aggregation. The continuity of the settlement/subsistence pattern represented by the sites suggests that this area, and perhaps a much larger one throughout Otay Mesa, was a particularly rich food resource area for the La Jolla Complex. The sparcity of shell further suggests that the area was a focus of vegetative food collecting, probably associated with seasonal shifts in the La Jolla subsistence pattern, as demonstrated by Smith (1987).

Within the actual road alignment, three sites have been previously identified. Two of these are SDi-8065 and SDi-8912, which are recorded as widespread, prehistoric artifact scatters. The third site is a recorded but unregistered historic resource associated with the Deneri Ranch. At the time this site was recorded (PRC Engineering 1980), it was projected to have been the remains of the Deneri Winery. During the present survey of the project, the descriptions of the two prehistoric sites were confirmed, although the designation of the historic remains as the Deneri Winery appeared to have been incorrect.

TABLE 1

Archaeological Sites Located in the Vicinity of the Otay Valley Road Widening Project

Site	Description	Culture
SDi-4738	Artifact scatter.	San Dieguito (?)
SDi-6699	Artifact scatter with possible subsurface deposit.	Not listed
SDi-6941	Temporary camp site, consisting of four loci of artifact concentrations. Milling tools, projectile points, and scrapers were found, as was shell.	San Dieguito/La Jolla
SDi-7604	Large, dispersed site of artifact scatters.	La Jolla
SDi-7983	Large, dispersed scatter of artifacts.	Not listed
SDi-7984	Light scatter of artifacts, including cores, hammerstones, flakes, and scrapers.	Not listed
SDi-8065	A large, light scatter of artifacts, including scraper/planes, manos, and flakes.	La Jolla
SDi-8912	A large, light scatter of artifacts, including manos, hammerstones, choppers, and scrapers.	La Jolla
SDi-10055	A light lithic scatter along a ridge, consisting of flakes, choppers, hammerstones, cores, and scrapers.	Not listed
SDi-10056	A very light lithic scatter.	Not listed
SDi-10057	A large, light lithic scatter of scrapers, flakes, and hammerstones.	Not listed
SDi-10058	A large camp site consisting of ground stone tools, shell, flaked stone tools (scrapers), and flakes. Subsurface deposits noted.	La Jolla
SDi-10059	A very small scatter of artifacts on a ridge.	Not listed
SDi-10060	A small but moderately dense artifact scatter, with shell.	Possibly La Jolla
SDi-10188	A sparse, widely dispersed artifact scatter.	Not listed

Site	Description	Culture
SDi-10189	A large, light scatter of tools and flakes, with some shell.	San Dieguito/ La Jolla
SDi-10190	A large, dispersed scatter of artifacts, including scrapers, cores, and flakes, with some shell.	Not listed
SDi-10191	A light, dispersed lithic scatter which included flakes, cores, and flaked tools.	Not listed
SDi-10192	A small artifact scatter with flakes, cores, scrapers, and choppers.	Not listed
SDi-10193	A very sparse artifact scatter.	Not listed
SDi-10194	A very sparse artifact scatter.	Not listed
SDi-10198	A large lithic scatter of varying densities, with hundreds of flakes, some scrapers, hammerstones, and cores.	Not listed
SDi-10199	A light lithic scatter with a small number of tools.	Not listed
SDi-10201	A light lithic scatter and temporary camp. Artifacts included ground stone tools and scrapers.	Not listed
SDi-10202	A very sparse lithic scatter.	Not listed
SDi-10203	A light lithic scatter, including scrapers and ground stone tools.	Not listed
SDi-10204	A very sparse lithic scatter.	Not listed
SDi-10285	A sparse, dispersed lithic scatter, with scrapers, cores, and flakes.	Not listed
SDi-10286	A sparse, dispersed lithic scatter, with scrapers, cores, and flakes.	Not listed
SDi-10452	A large, dense scatter of artifacts with shell. Camp site several acres in size.	La Jolla
SDi-10471	Extremely large scatter of patinated tools; large camp site.	San Dieguito
SDi-10472	Light lithic scatter.	San Dieguito
SDi-10473	Light lithic scatter.	San Dieguito

Site	Description	Culture
SDi-10489	Light lithic scatter.	Not listed
SDi-10622	Sparse lithic scatter, primarily of flakes.	Not listed
SDi-10649	A small, moderately dense artifact scatter.	Not listed
SDi-10650	A small, moderately dense artifact scatter.	Not listed
SDi-10783	Very large, widely dispersed artifact scatter and occupation site, with quarries and artifact clusters.	La Jolla
W-3513	A light, dispersed scatter of artifacts along the edge of a mesa.	Not listed
W-3514	A small, highly disturbed artifact and shell midden.	La Jolla

The area of the present study was included in the areas covered by three previous EIRs:

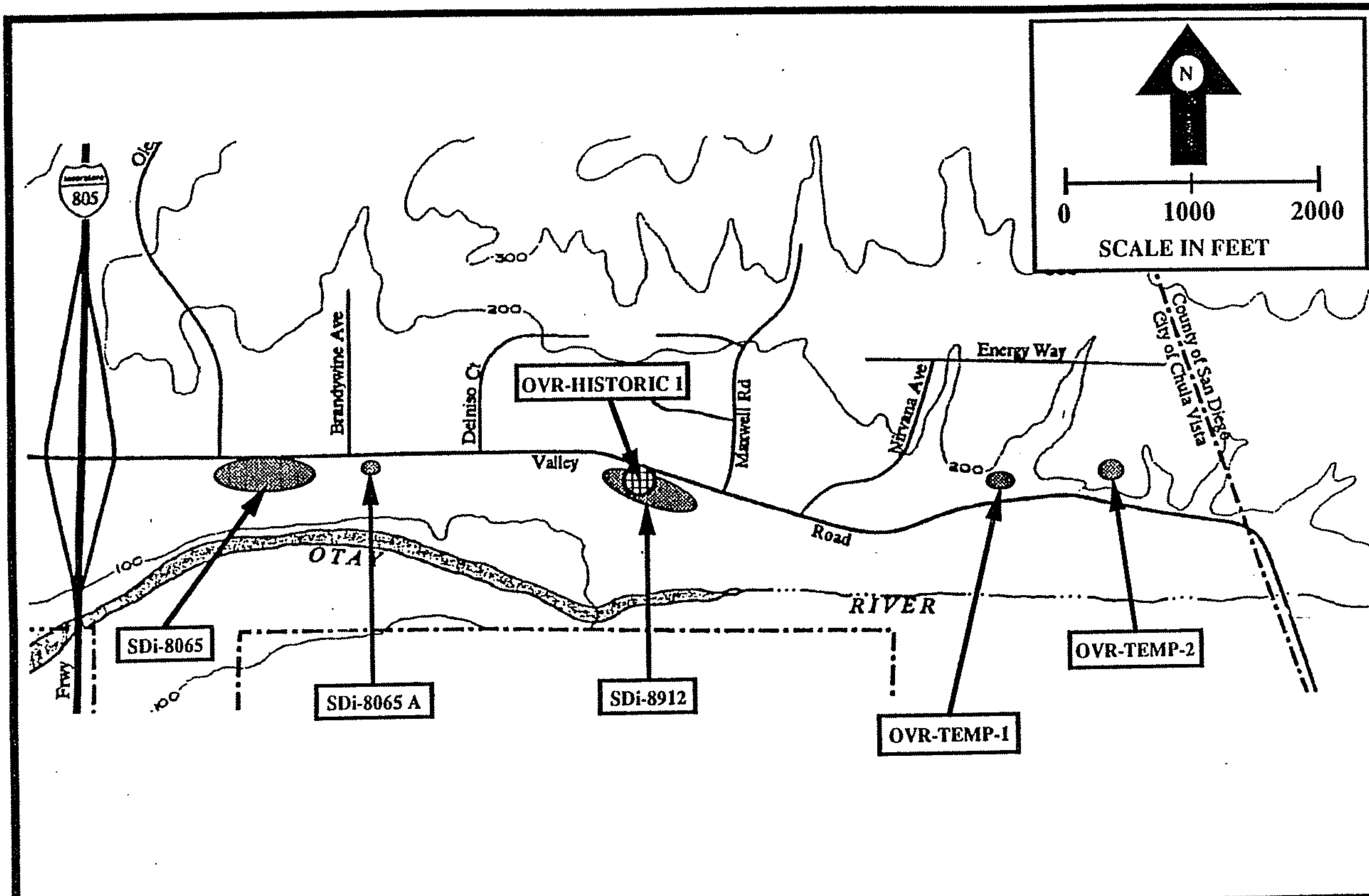
- "Draft Environmental Impact Report — Brandywine Industrial Park" (1980), compiled by PRC Toups Corporation
- "Records and Archival Searches for Cultural Resources Located in the Otay General Plan Amendment Area" (1982), prepared by Susan Hector for RECON
- "Final Environmental Impact Report — Otay Valley Road South General Plan Amendment" (1984), prepared by PRC Engineering, Inc.

The previous EIR documents noted the existence of the three sites within the area of the current road widening project. These documents raised the possibility that the evidence of the two prehistoric sites may actually be associated with imported fill (PRC Engineering, Inc. 1984); however, this assertion could not be verified during the present study. The historic site recorded by Scientific Resources Survey, Inc., for PRC Engineering, Inc., as a portion of the Deneri Winery was considered to be potentially eligible for nomination to the National Register of Historic Places. A search of the area where the proposed alignment crossed the recorded historic ranch did not reveal any features or artifacts associated with the ranch, although several features, including concrete slabs and loading foundations, were observed which are actually part of the gravel mining operation which took place in the river bottom.

3.7.1.4 Results of Survey

The topographic setting at the project was generally level, and the survey was accomplished, for the most part, through the implementation of a linear transect methodology. The survey boundaries corresponded to the general road right-of-way, and included a swath between 210 feet and 250 feet in width, extending from approximately 100 feet north of the center line of Otay Valley Road to approximately 120 to 140 feet south of the center line. Transects, or survey paths, were aligned from east to west at ten-meter intervals parallel to the course of Otay Valley Road. The use of rigidly aligned and spaced survey transects ensured a thorough coverage of the study area. However, in the northeastern third of the project, where the flood plain gave way to the steep slopes of the terraces on the northern edge of Otay Valley, the use of the linear transect technique was impractical. The steepness of the slopes prevented the implementation of a controlled reconnaissance. Therefore, in the areas of steep, rugged terrain, the survey process was altered to consist of an intuitive search of potentially sensitive areas. The use of this intuitive process did not compromise the integrity of the survey, since all of the nearly level and moderate slopes were closely inspected, and only the steepest areas (i.e., 15% to 40% slopes) were avoided.

The survey resulted in the location of five prehistoric sites and one possible historic site. Four of these were portions of previously documented sites, while the other two are new discoveries. These sites are:



CULTURAL RESOURCE LOCATION MAP

OTAY VALLEY ROAD WIDENING PROJECT

(1) SDi-8065 — A widely dispersed scatter of artifacts with a possible subsurface deposit.

(2) SDi-8065A — A small concentration of surface artifacts, with a possible subsurface deposit. Included within SDi-8065 in the record searches, the field survey revealed it to be a separate site.

(3) SDi-8912 — A widely dispersed artifact scatter with occasional clustering of cultural materials.

(4) SDi-11145 — (OVR-Temp 1) A light to moderate surface scatter along a bluff edge.

(5) SDi-11146 — (OVR-Temp 2) A very light surface scatter on bluffs located north of Otay Valley Road.

(6) OVR-Historic 1 — The reported remains of the Deneri Winery (may actually be a false report).

The locations of these sites have been shown on page 10. All of the prehistoric sites conform to the occupation pattern described in the previous section, which noted that the majority of sites in the Otay Valley area are representative of the La Jolla Complex subsistence pattern. Sites typically include widespread scatters of artifacts that correspond to the collection and processing of food materials from plants and trees present along the valley floor.

3.7.1.5 Results of the Cultural Resources Testing Program

The consideration of potential impacts to cultural resources due to the implementation of the widening of Otay Valley Road must be preceded by an evaluation of the significance of the individual archaeological sites. Through such an evaluation, the research value and regional importance of a site is established, and from this information the significance of the impacts from the proposed action may be addressed. This evaluation of archaeological resources is required by CEQA (Public Resources Code, Section 21083.2) as part of an environmental impact analysis.

The level of effort accomplished during the cultural resources survey resulted in the definition of the nature of the archaeological resources present at the project; however, more in-depth information was needed to evaluate the significance of the resources and the potentially adverse impacts which may be represented by the project. For the evaluation program, the following scope of work was completed at each resource:

(1) All surface artifacts and features were mapped and recovered
(2) A subsurface test was conducted through the excavation of one meter square test units;
(3) All recovered materials were returned to the consultant's laboratory for cataloguing and analysis.

The results of the testing program at each of the sites are presented in the following sections.

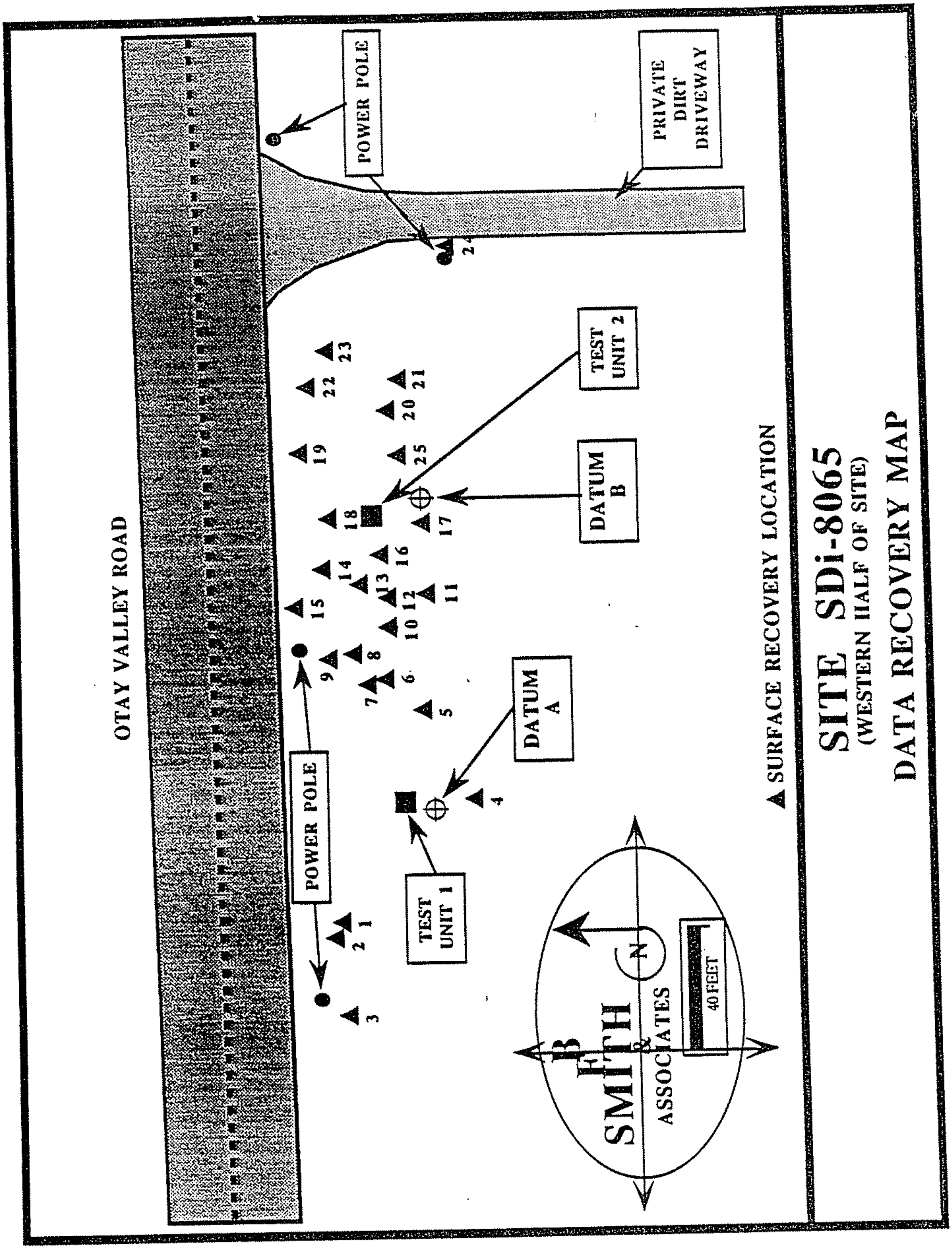
3.7.1.5.1 Site SDi-8065 Test Results

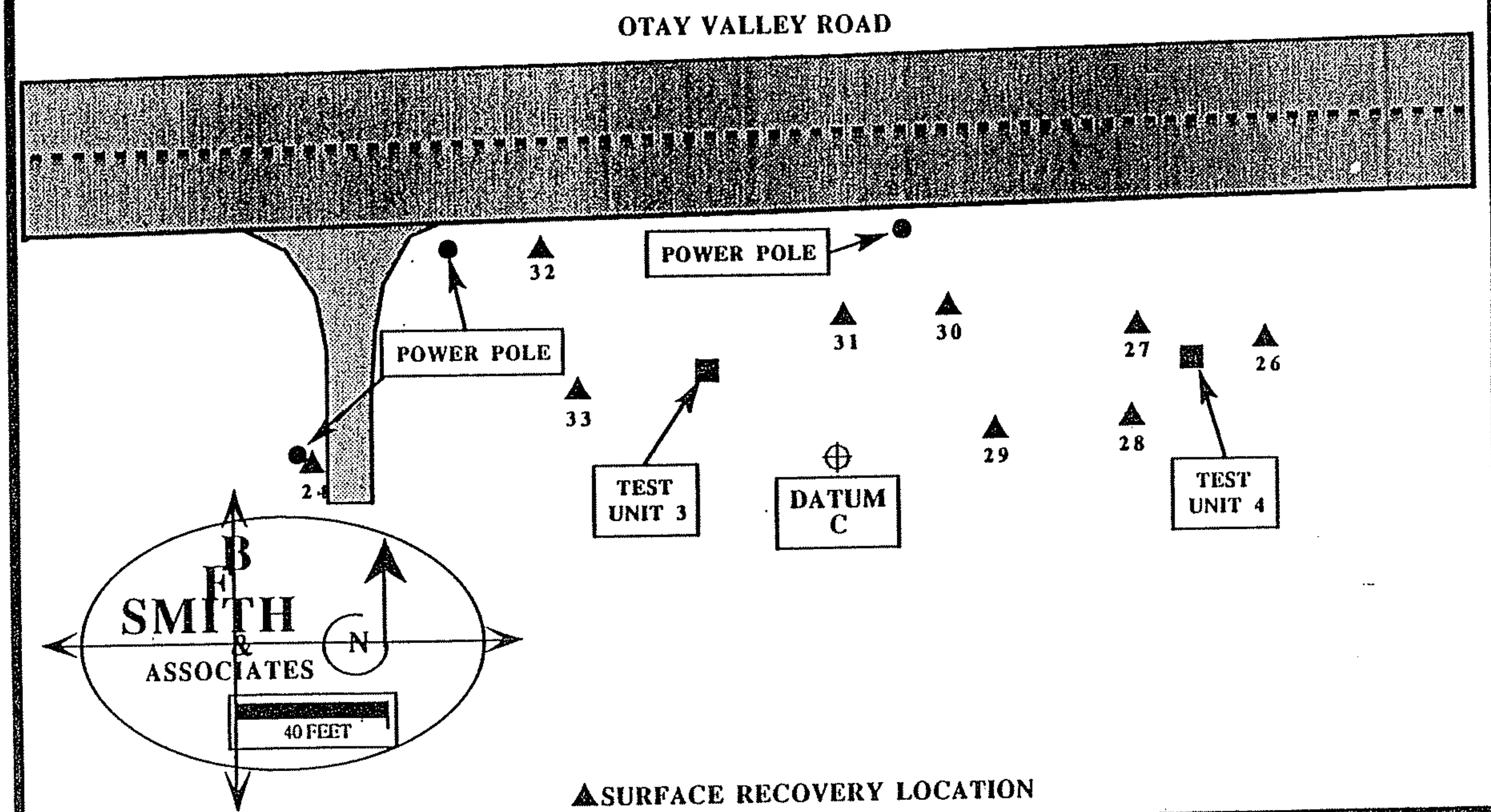
Site SDi-8065 was originally recorded as a widely dispersed scatter of cultural materials in a cultivated field, with the scatter extending from Otay Valley Road to the Otay River. The resource has been moderately impacted by the extensive cultivation of the site area since the late 1800s, and by the grading and construction impacts which resulted from the original installation of Otay Valley Road.

The investigation of SDi-8065 was initiated with the mapping and recovery of surface artifacts, which documented the wide distribution of cultural materials parallel to Otay Valley Road. Maps have been provided on pages 13 and 14 which illustrate the pattern of surface recovery. Additional artifacts associated with SDi-8065 were visible south of the alignment (and therefore out of the study area); however, these were not collected or mapped. The surface artifact recovery (detailed in Table 2, on page 15) included two manos, one metate fragment, four flakes, 12 debitage, two cores, four hammerstones, two scrapers, one scraper plane, and nine fragments of *Chione* shell. Surface artifacts were difficult to detect, because the clayey soil in the field clung to the artifacts, thereby masking cultural traits. The surface artifacts were dispersed without any particular pattern, although the eastern portion of the site had a slightly higher frequency of cultural materials. All of the surface artifacts were identified as components of the La Jolla Complex tool assemblage, dating approximately to the period between 6,000 to 3,000 years before the present.

The subsurface testing of Site SDi-8065 consisted of the excavation of four test units, each measuring one meter square. The units were distributed along the longest axis of the site, with the intent to sample a broad area of the site. The locations of the units have been illustrated on pages 13 and 14. Each unit was excavated to a depth of twenty centimeters to ensure that any masked resources would be identified. The results of the units have been included in Table 3, on page 16. In general, the test units did not reveal any significant cultural deposits. Test Units 1, 2, and 3 produced almost no recovery (only a single piece of debitage and twenty shell fragments). Test Unit 4 produced one scraper, two flakes and 14 shell fragments, also a rather meager recovery; however, it suggests that the eastern side of the site had a greater likelihood of occupation than the western half of the site.

In conclusion, the surface mapping and subsurface testing of Site SDi-8065 within the alignment of the proposed Otay Valley Road widening project documented a widely dispersed site which did not contain any detectable subsurface deposits of any research value or significance. The site may retain a high potential for the existence of significant deposits to the south of the alignment, however this area was not part of the present study and was not evaluated.


OTAY VALLEY ROAD
POWER POLE
PRIVATE DIRT DRIVEWAY
TEST UNIT 2
DATUM B
DATUM A
TEST UNIT 1
POWER POLE
▲ SURFACE RECOVERY LOCATION
SITE SDi-8065
(WESTERN HALF OF SITE)
DATA RECOVERY MAP
B SMITH & ASSOCIATES
N
40 FEET



SITE SDi-8065
(EAST HALF OF SITE)

DATA RECOVERY MAP

TABLE 2

Surface Recovery Data
Site SDi-8065
Otay Valley Road Widening Project

Catalogue Number	Location	Recovery	Material
1	Surface 1	1 Side Scraper	Basalt
2	Surface 2	1 Core	Quartz
3	Surface 3	1 Debitage	Basalt
4	Surface 4	1 Hammerstone	Basalt
5	Surface 5	1 Debitage	Basalt
6	Surface 6	1 Debitage	Basalt
7	Surface 7	1 Flake	Basalt
8	Surface 8	1 Debitage	Basalt
9	Surface 9	1 Marine Shell Fragment	*Chione*
10	Surface 10	1 Hammerstone	Felsite
11	Surface 10	1 Debitage	Basalt
12	Surface 11	1 Flake	Felsite
13	Surface 12	1 Marine Shell Fragment	*Chione*
14	Surface 13	1 1 Flake	Basalt
15	Surface 13	1 1 Flake	Felsite
16	Surface 13	1 Marine Shell Fragment	*Chione*
17	Surface 14	1 Debitage	Basalt
18	Surface 15	1 Metate Fragment	Granite
19	Surface 16	1 Scraper Plane	Basalt
20	Surface 16	1 Hammerstone	Basalt
21	Surface 17	1 Debitage	Basalt
22	Surface 18	1 Marine Shell Fragment	*Chione*
23	Surface 19	1 Debitage	Basalt
24	Surface 20	1 Hammerstone	Basalt
25	Surface 21	1 Marine Shell Fragment	*Chione*
26	Surface 22	1 Core	Basalt
27	Surface 23	1 Side Scraper	Basalt
28	Surface 24	1 Biface Mano	Granite
29	Surface 25	1 Marine Shell Fragment	*Chione*
30	Surface 26	1 Debitage	Basalt
31	Surface 27	1 Marine Shell Fragment	*Chione*
32	Surface 28	1 Marine Shell Fragment	*Chione*
33	Surface 29	1 Biface Mano	Granite
34	Surface 30	1 Debitage	Basalt
35	Surface 31	1 Debitage	Basalt
36	Surface 32	1 Marine Shell Fragment	*Chione*
37	Surface 33	1 Debitage	Basalt

TABLE 3

Test Unit Recovery Data
Site SDi-8065
Otay Valley Road Widening Project

Test Unit	Level	Recovery
1	0-10 cm.	1 Basalt Debitage
	10-20 cm.	No Recovery
2	0-10 cm.	6 Marine Shell Fragments — *Chione*
	10-20 cm.	4 Marine Shell Fragments — *Chione*
3	0-10 cm.	3 Marine Shell Fragments — *Chione*
	10-20 cm.	7 Marine Shell Fragments — *Chione*
4	0-10 cm.	9 Marine Shell Fragments — *Chione* 1 Basalt Flake
	10-20 cm.	5 Marine Shell Fragments — *Chione* 1 Basalt Scraper 1 Basalt Flake

TABLE 4

Artifact Summary Data
Site SDi-8065
Otay Valley Road Widening Project

Recovery Category	Artifact Type	Surface	Test Units	Total
Ground Stone Tools	Manos	2		2
	Metates	1		1
Lithic Production Waste	Flakes	4	2	6
	Debitage	12	1	13
	Cores	2		2
Percussion Tools	Hammerstones	4		4
Precision Tools	Scrapers	2	1	3
	Scraper Planes	1		1
Lithic Totals		28	4	32
Shell	*Chione*	9	34	43

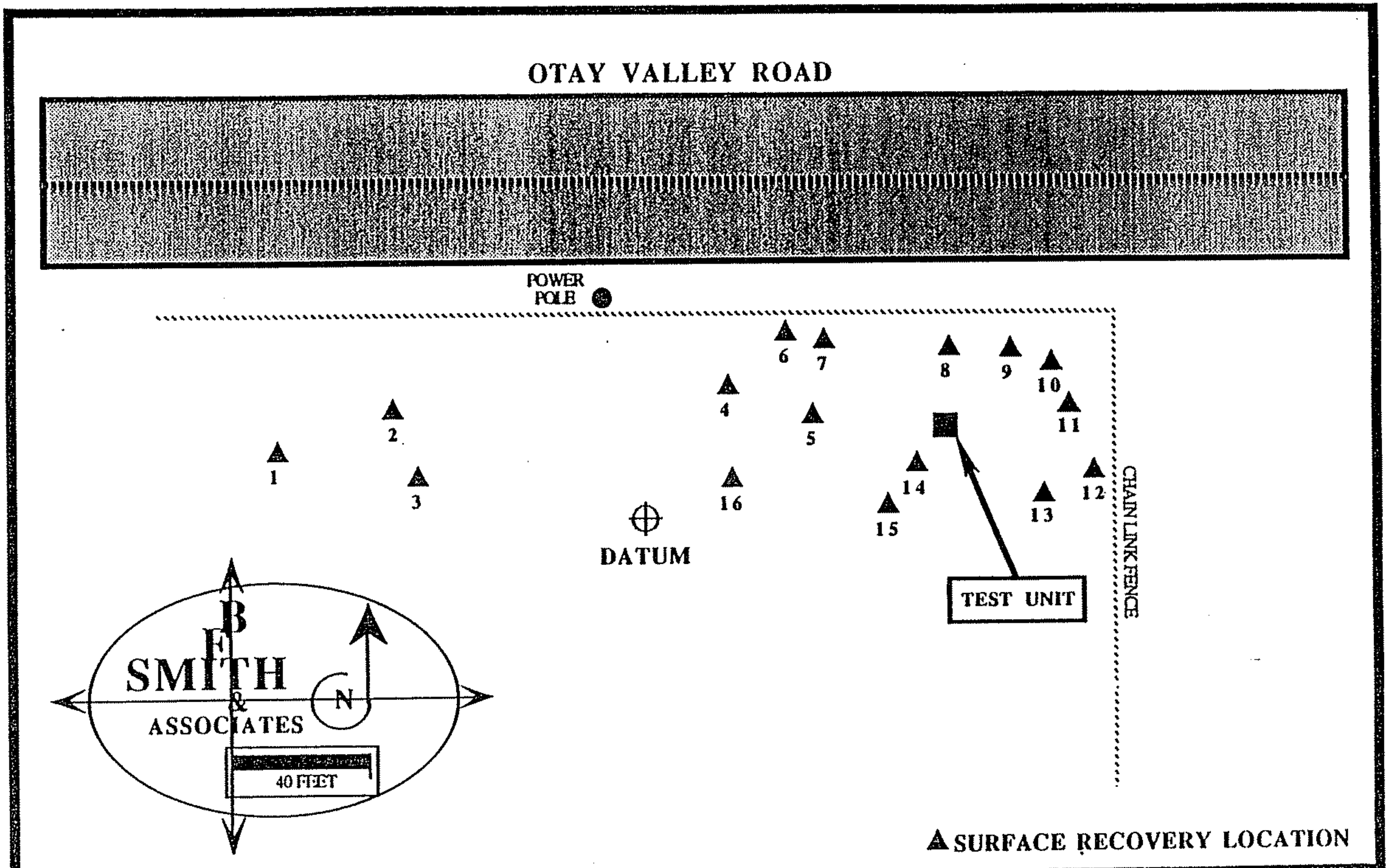
3.7.1.5.2 Site SDi-8065A Test Results

Site SDi-8065A was recorded as a widely dispersed scatter of cultural materials in a cultivated field located just east of SDi-8065. The site is very likely a locus of SDi-8065, and is separated from this site by an artifact-free area of approximately 150 feet. The site has been moderately impacted by the extensive cultivation of the site area since the late 1800s, and by grading/construction impacts from the original installation of Otay Valley Road. The site matches the characteristics of SDi-8065 in all respects, and is considered to be a contemporary occupation site with similar site function.

The investigation of SDi-8065A included a surface artifact mapping and recovery effort, which documented the wide distribution of cultural materials parallel to Otay Valley Road. A map has been provided on page 19 which illustrates the pattern of surface recovery. Other artifacts associated with SDi-8065A were visible to the south of the alignment (and therefore out of the study area); however, these were not collected or mapped. The surface artifact recovery (which has been described in Table 5, on page 20) included three manos, two metate fragments, one flake, eight debitage, two hammerstones, one scraper, two utilized/retouched flakes, one pestle, and one fragment of *Chione* shell. Again, surface artifacts were difficult to detect, because the clayey soil in the fields clung to the artifacts, thereby masking cultural traits. The surface artifacts were dispersed without any particular pattern, and were identified as components of the La Jolla Complex tool assemblage, dating approximately to the period between 6,000 and 3,000 years before the present.

The subsurface testing of Site SDi-8065A consisted of the excavation of one test unit, measuring one meter square. The location of the unit has been illustrated on page 19. The unit was excavated to a depth of twenty centimeters to ensure that any masked resources could be identified. The results of the unit have been included in Table 6, on page 21. In general, the unit did not reveal any significant cultural deposits, and produced only one flake and three shell fragments.

In conclusion, the results of the surface mapping and subsurface testing of Site SDi-8065A within the alignment of the proposed Otay Valley Road widening project documented a widely dispersed site which did not contain any detectable subsurface deposits of any research value or significance. The site may retain a high potential for the existence of significant deposits to the south of the alignment, however this area was not part of the present study and was not evaluated.



SITE SDi-8065A

DATA RECOVERY MAP

TABLE 5

Surface Recovery Data
Site SDi-8065A
Otay Valley Road Widening Project

Catalogue Number	Location	Recovery	Material
1	Surface 1	1 Flake	Basalt
2	Surface 2	1 Side Scraper	Basalt
3	Surface 2	1 Biface Mano	Granite
4	Surface 3	1 Metate Fragment	Granite
5	Surface 4	1 Debitage	Basalt
6	Surface 5	1 Debitage	Basalt
7	Surface 6	1 Retouched Flake	Basalt
8	Surface 7	1 Metate Fragment	Granite
9	Surface 8	1 Debitage	Basalt
10	Surface 9	1 Debitage	Basalt
11	Surface 10	1 Utilized Flake	Basalt
12	Surface 10	1 Pestle	Granite
13	Surface 11	1 Debitage	Basalt
14	Surface 12	1 Hammerstone	Basalt
15	Surface 12	1 Debitage	Basalt
16	Surface 12	1 Marine Shell Fragment	*Chione*
17	Surface 13	1 Biface Mano	Granite
18	Surface 14	1 Hammerstone	Basalt
19	Surface 14	1 Debitage	Basalt
20	Surface 15	1 Uniface Mano	Granite
21	Surface 16	1 Marine Shell Fragment	*Whelk*

TABLE 6

Test Unit Recovery Data
Site SDi-8065A
Otay Valley Road Widening Project

Test Unit	Level	Recovery
1	0-10 cm.	No Recovery
	10-20 cm.	1 Basalt Flake 2 Marine Shell Fragments — *Chione*

TABLE 7

Artifact Summary Data
Site SDi-8065A
Otay Valley Road Widening Project

Recovery Category	Artifact Type	Surface	Test Units	Total
Ground Stone Tools	Manos	3		3
	Metates	2		2
	Pestles	1		1
Lithic Production Waste	Flakes	1	1	2
	Debitage	8		8
Percussion Tools	Hammerstones	2		2
Precision Tools	Scrapers	1		1
	Retouched/Utilized Flakes	2		2
Lithic Totals		20	1	21
Shell	*Chione*	1	2	3
	Whelk		1	1
Shell Totals		1	3	4

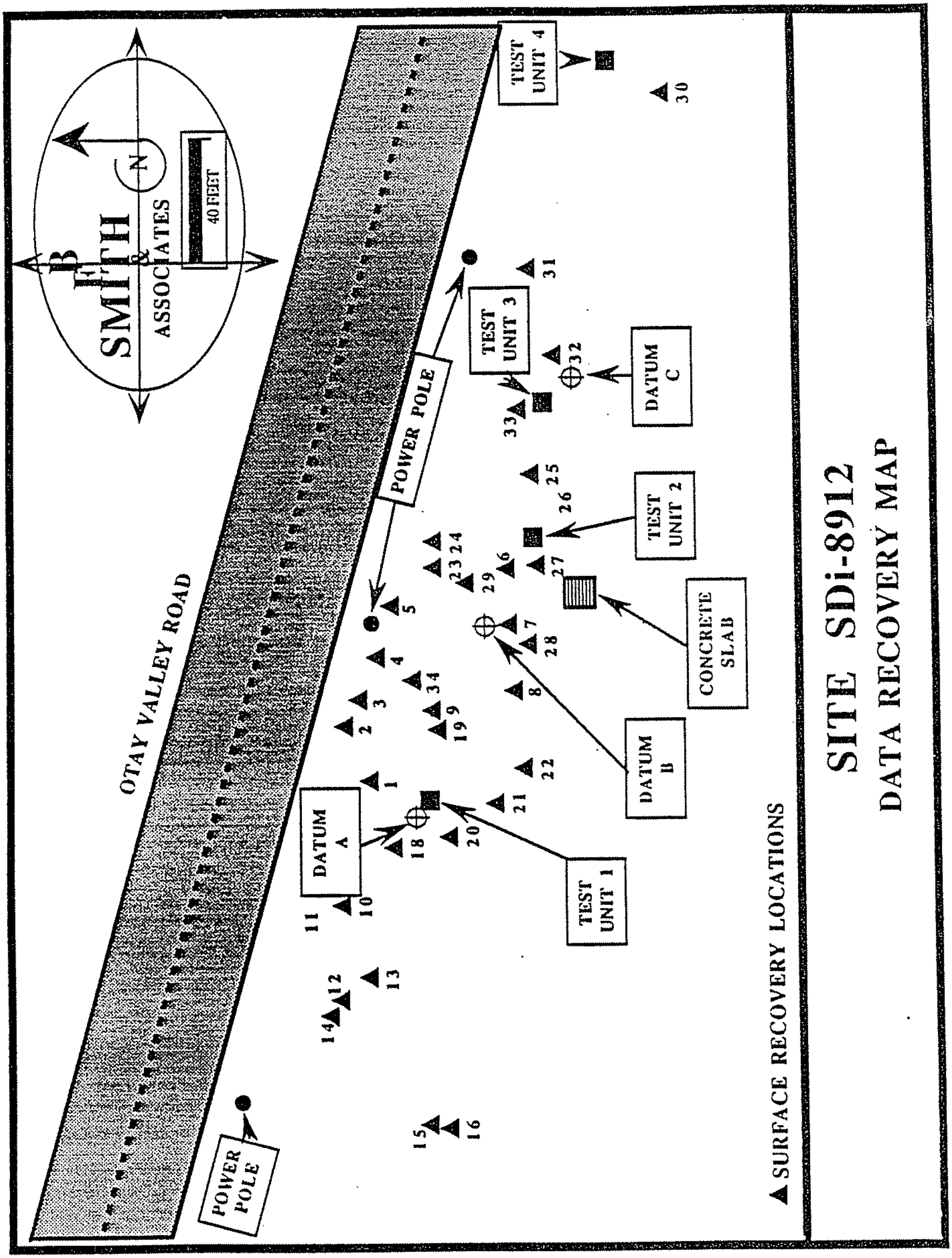
3.7.1.5.3 Site SDi-8912 Test Results

Site SDi-8912 was recorded as a widely dispersed scatter of cultural materials in a cultivated field, with the scatter stretching from Otay Valley Road to the Otay River. The site has been moderately impacted by the extensive cultivation of the site area since the late 1800s, and by grading/construction impacts from the original installation of Otay Valley Road. In many ways, SDi-8912 parallels the characteristics of SDi-8065, being located in the same type of topographic setting, with a surface scatter of materials dispersed without any indication of a central occupation area.

The investigation of SDi-8912 was initiated with a surface artifact mapping and recovery effort which documented the wide distribution of cultural materials parallel to Otay Valley Road. A map has been provided on page 24 which illustrates the pattern of surface recovery. Artifacts associated with SDi-8912 were visible south of the alignment (and therefore out of the study area); however, these were not collected or mapped. The surface artifact recovery (which has been listed in Table 8, on page 25) included 15 flakes, 15 debitage, two hammerstones, three scrapers, three retouched flakes, one drill, and one spokeshave. Surface artifacts were difficult to detect, because the clayey soil clung to the artifacts, thereby masking cultural traits, and the surface ground cover was dense because the field had not been recently disked or planted. The surface artifacts were dispersed without any particular pattern, although the western portion of the site had a slightly higher frequency of cultural materials. All of the surface artifacts were identified as components of the La Jolla Complex tool assemblage, dating approximately to the period between 6,000 and 3,000 years before the present.

The subsurface testing of Site SDi-8912 consisted of the excavation of four test units, each measuring one meter square. The units were distributed along the length of the site, to sample the largest possible area of the resource. The locations of the units have been illustrated on page 24. Each unit was excavated to a depth of twenty centimeters to ensure that any masked resources would be identified. The results of the units have been included in Table 9, on page 26. In general, the test units did not reveal any significant cultural deposits. Test Units 2, 3 and 4 produced only a single retouched flake and one shell fragment. Test Unit 1 produced four flakes, which is still a meager recovery; however, it suggests that the western side of the site had a greater likelihood of occupation than the eastern area of the site.

In conclusion, the results of the surface mapping and subsurface testing of Site SDi-8912 within the alignment of the proposed Otay Valley Road widening project documented a widely dispersed site which did not contain any detectable subsurface deposits of any research value or significance. The site may retain a high potential for significant deposits to the south of the alignment, however this area was not part of the present study and was not evaluated.



SITE SDi-8912
DATA RECOVERY MAP
OTAY VALLEY ROAD
B. F. SMITH & ASSOCIATES
N
40 FEET
POWER POLE
POWER POLE
TEST UNIT 1
TEST UNIT 2
TEST UNIT 3
TEST UNIT 4
DATUM A
DATUM B
DATUM C
CONCRETE SLAB
SURFACE RECOVERY LOCATIONS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34

TABLE 8

Surface Recovery Data
Site SDi-8912
Otay Valley Road Widening Project

Catalogue Number	Location	Recovery	Material
1	Surface 1	1 Hammerstone	Basalt
2	Surface 2	1 Debitage	Basalt
3	Surface 3	1 Flake	Basalt
4	Surface 4	1 Debitage	Basalt
5	Surface 5	1 Drill	Basalt
6	Surface 6	1 Flake	Felsite
7	Surface 7	2 Flakes	Basalt
8	Surface 8	1 Scraper	Felsite
9	Surface 9	1 Hammerstone	Basalt
10	Surface 10	1 Scraper	Basalt
11	Surface 11	1 Debitage	Basalt
12	Surface 12	1 Debitage	Basalt
13	Surface 13	1 Debitage	Basalt
14	Surface 14	2 Flakes	Basalt
15	Surface 15	1 Debitage	Felsite
16	Surface 16	1 Spokeshave	Basalt
17	Surface 17	1 Flake	Basalt
18	Surface 18	1 Debitage	Basalt
19	Surface 19	1 Scraper	Basalt
20	Surface 20	2 Flakes	Basalt
21	Surface 21	1 Retouched Flake	Basalt
22	Surface 21	1 Debitage	Basalt
23	Surface 22	1 Debitage	Basalt
24	Surface 23	1 Flake	Basalt
25	Surface 24	1 Debitage	Basalt
26	Surface 25	1 Debitage	Felsite
27	Surface 26	1 Retouched Flake	Felsite
28	Surface 27	1 Flake	Felsite
29	Surface 28	1 Debitage	Basalt
30	Surface 29	1 Flake	Basalt
31	Surface 29	1 Flake	Felsite
32	Surface 30	1 Flake	Basalt
33	Surface 31	1 Retouched Flake	Basalt
34	Surface 32	1 Flake	Basalt
35	Surface 33	1 Debitage	Basalt
36	Surface 34	1 Debitage	Felsite

TABLE 9

Test Unit Recovery Data
Site SDi-8912
Otay Valley Road Widening Project

Test Unit	Level	Recovery
1	0-10 cm.	4 Basalt Flakes
	10-20 cm.	No Recovery
2	0-10 cm.	No Recovery
	10-20 cm.	No Recovery
3	0-10 cm.	1 Retouched Felsite Flake
	10-20 cm.	No Recovery
4	0-10 cm.	No Recovery
	10-20 cm.	1 Marine Shell Fragment

TABLE 10

Artifact Summary Data
Site SDi-8912
Otay Valley Road Widening Project

Recovery Category	Artifact Type	Surface	Test Unit	Total
Lithic Production Waste	Flakes	15	4	19
	Debitage	15		15
Percussion Tools	Hammerstones	2		2
Precision Tools	Scrapers	3		3
	Spokeshaves	1		1
	Drills	1		1
	Retouched Flakes	3	1	4
Lithic Totals		40	5	45
Shell	Unidentified		1	1

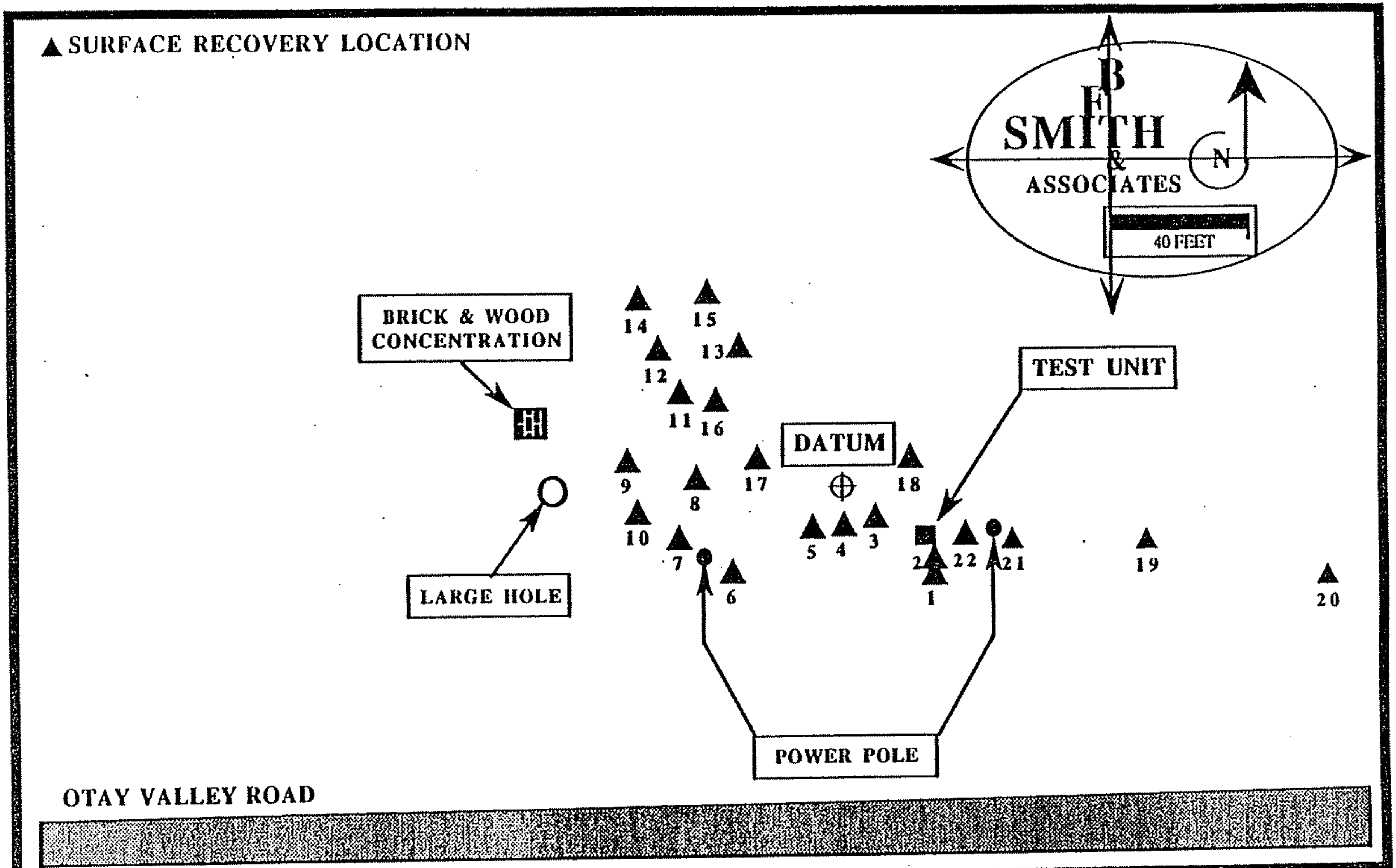
3.7.1.5.4 Site SDi-11145 Test Results

Site SDi-11145 (OVR-Temp 1) is one of two sites located on the north side of Otay Valley Road within the road improvement alignment. The site is an undisturbed resource, consisting of a scatter of artifacts located along the edge of the northern valley bluffs overlooking the Otay River course. The site provides access to the river area along a narrow ridge that follows the course of a tributary canyon into the Otay River.

The investigation of SDi-11145 was initiated with a surface artifact mapping and recovery effort, which documented the wide distribution of cultural materials parallel to Otay Valley Road and the edge of the bluff. The map on page 30 illustrates the pattern of surface recovery, which has also been detailed in Table 11, on page 31. Three manos, one metate fragment, 25 flakes, 13 debitage, two cores, three hammerstones, two scrapers, one scraper plane, four retouched flakes, four shell fragments, and one prehistoric ceramic shard were collected. The surface artifacts were easy to visually detect, because the ground cover was light due to the arid condition of the bluff area above the flood plain. The surface artifacts were dispersed over a wide area near the bluff edge, with a concentration noted toward the southeastern portion of the site, which corresponded to the route of approach from the flood plain. The majority of the surface artifacts corresponded to the pattern attributed to the La Jolla Complex tool assemblage and likely would date to the period between 6,000 and 3,000 years before the present; however, the presence of a ceramic potsherd suggests that the site may also have been used by the late prehistoric Kumeyaay Indians. The majority of the cultural sites in the Otay region have been attributed to the La Jolla Complex, but a late prehistoric component also occupied the valley after the La Jolla Complex abandoned the area approximately 2,000 years ago. The Kumeyaay Indians entered the coastal area from the eastern county deserts and mountains approximately 1,200 years ago. Several types of artifacts used by the La Jolla and the Kumeyaay Indians are very similar in appearance, such as manos, metates, scrapers and hammerstones, because the lithic production and use of these tools were common throughout the Southwest. The artifacts which are not common to both include pottery, which was not introduced to the coast until 900 to 1,000 years ago, and projectile points. The discovery of a potsherd at the site does not imply that the site was used solely by the Kumeyaay Indians, only that the Kumeyaay also used the site. In light of the fact that the majority of the sites in the area have been attributed to the La Jolla Complex and that the tool recovery from SDi-11145 corresponds to the La Jolla assemblage (with the exception of the potsherd), it appears that the site probably was more closely associated with the La Jolla Complex than with the Kumeyaay Indians.

The subsurface testing of Site SDi-11145 consisted of the excavation of one test unit, measuring one meter square. The unit was positioned in the area of the greatest concentration of surface artifacts, near the southeast corner of the site. The location of the unit near the bluff ledge has been illustrated on page 30. The unit was excavated to a depth of twenty centimeters to ensure that any masked resources would be identified. The results of the unit have been included in Table 12, on page 32. The test unit results indicated that a cultural deposit was present at the site. The recovery of two tools, two cores, and nineteen flakes and debitage indicated that the site was used repeatedly over a period of time. The subsurface deposit did not include any indication of a midden, such as charcoal, food bone or highly organic soil indicative of an actual occupation. The presence of lithic materials at depth reflects on the use of the site for food collecting and processing; however, the lack of any indication of actual occupation and cooking suggests the site was only a small subsistence camp associated with a larger occupation village located in the vicinity.

In conclusion, the surface mapping and subsurface testing of Site SDi-11145 within the alignment of the proposed Otay Valley Road widening project documented a widely dispersed site which did contain a subsurface deposit. This deposit was evaluated and found to retain a moderate level of research value. The presence of a subsurface deposit suggests that information could be derived regarding the course of the adaptation of the subsistence pattern over time. Furthermore, the possibility of both a La Jolla Complex and a Kumeyaay Indian component indicates that the site could provide information about differences between the subsistence patterns of these two groups at the same location at different periods of time. In light of this moderate level of research potential at the site, the resource has been evaluated as potentially sensitive. The area of this sensitivity measures only 75 feet in diameter, and is situated along the bluff edge.



SITE SDi-11,145

DATA RECOVERY MAP

TABLE 11

Surface Recovery Data
Site SDi-11145
Otay Valley Road Widening Project

Catalogue Number	Location	Recovery	Material
1	Surface 1	1 Uniface Mano	Granite
2	Surface 1	1 Scraper Plane	Basalt
3	Surface 1	1 Retouched Flake	Basalt
4	Surface 1	4 Flakes	Basalt
5	Surface 1	2 Debitage	Basalt
6	Surface 1	1 Debitage	Quartzite
7	Surface 2	1 Retouched Flake	Felsite
8	Surface 2	1 Flake	Basalt
9	Surface 2	2 Flakes	Felsite
10	Surface 3	2 Flakes	Basalt
11	Surface 3	1 Flake	Felsite
12	Surface 3	1 Debitage	Basalt
13	Surface 4	1 Metate Fragment	Granite
14	Surface 4	4 Flakes	Basalt
15	Surface 5	1 Side Scraper	Basalt
16	Surface 5	2 Flakes	Basalt
17	Surface 5	3 Flakes	Felsite
18	Surface 5	1 Debitage	Felsite
19	Surface 5	1 Potsherd	Tizon Brown Ware
20	Surface 6	1 Flake	Basalt
21	Surface 6	1 Retouched Flake	Basalt
22	Surface 6	1 Scraper	Basalt
23	Surface 7	1 Hammerstone	Basalt
24	Surface 7	1 Flake	Felsite
25	Surface 8	1 Hammerstone	Basalt
26	Surface 9	3 Flakes	Basalt
27	Surface 10	1 Hammerstone	Basalt
28	Surface 11	2 Marine Shell Fragments	*Chione*
29	Surface 11	1 Marine Shell Fragment	*Macoma*
30	Surface 12	1 Marine Shell Fragment	*Macoma*
31	Surface 13	1 Debitage	Basalt
32	Surface 14	1 Debitage	Basalt
33	Surface 15	1 Debitage	Basalt
34	Surface 16	1 Debitage	Basalt
35	Surface 17	1 Biface Mano	Granite
36	Surface 18	1 Debitage	Basalt
37	Surface 19	1 Debitage	Basalt
38	Surface 20	1 Debitage	Basalt
39	Surface 21	1 Retouched Flake	Felsite
40	Surface 22	1 Biface Mano	Granite
41	Surface 22	1 Flake	Basalt
42	Surface 22	1 Flake	Felsite

TABLE 12

Test Unit Recovery Data
Site SDi-11145
Otay Valley Road Widening Project

Test Unit	Level	Recovery
1	0-10 cm.	1 Granite Biface Mano 8 Basalt Flakes 3 Felsite Flakes 2 Basalt Cores
	10-20 cm.	4 Basalt Flakes 3 Felsite Flakes 1 Basalt Spokeshave 1 Basalt Debitage

TABLE 13

Artifact Summary Data
Site SDi-11145
Otay Valley Road Widening Project

Recovery Category	Artifact Type	Surface	Test Unit	Total
Ground Stone Tools	Manos	3	1	4
	Metates	1		1
Lithic Production Waste	Flakes	25	18	43
	Debitage	13	1	14
	Cores		2	2
Percussion Tools	Hammerstones	3		3
Precision Tools	Scrapers	2		2
	Scraper Planes	1		1
	Spokeshaves		1	1
	Retouched Flakes	4		4
Lithic Totals		52	23	75
Shell	*Chione*	2		2
Shell	*Macoma*	2		2
Shell Totals		4		4
Ceramics	Tizon Brown Ware	1		1

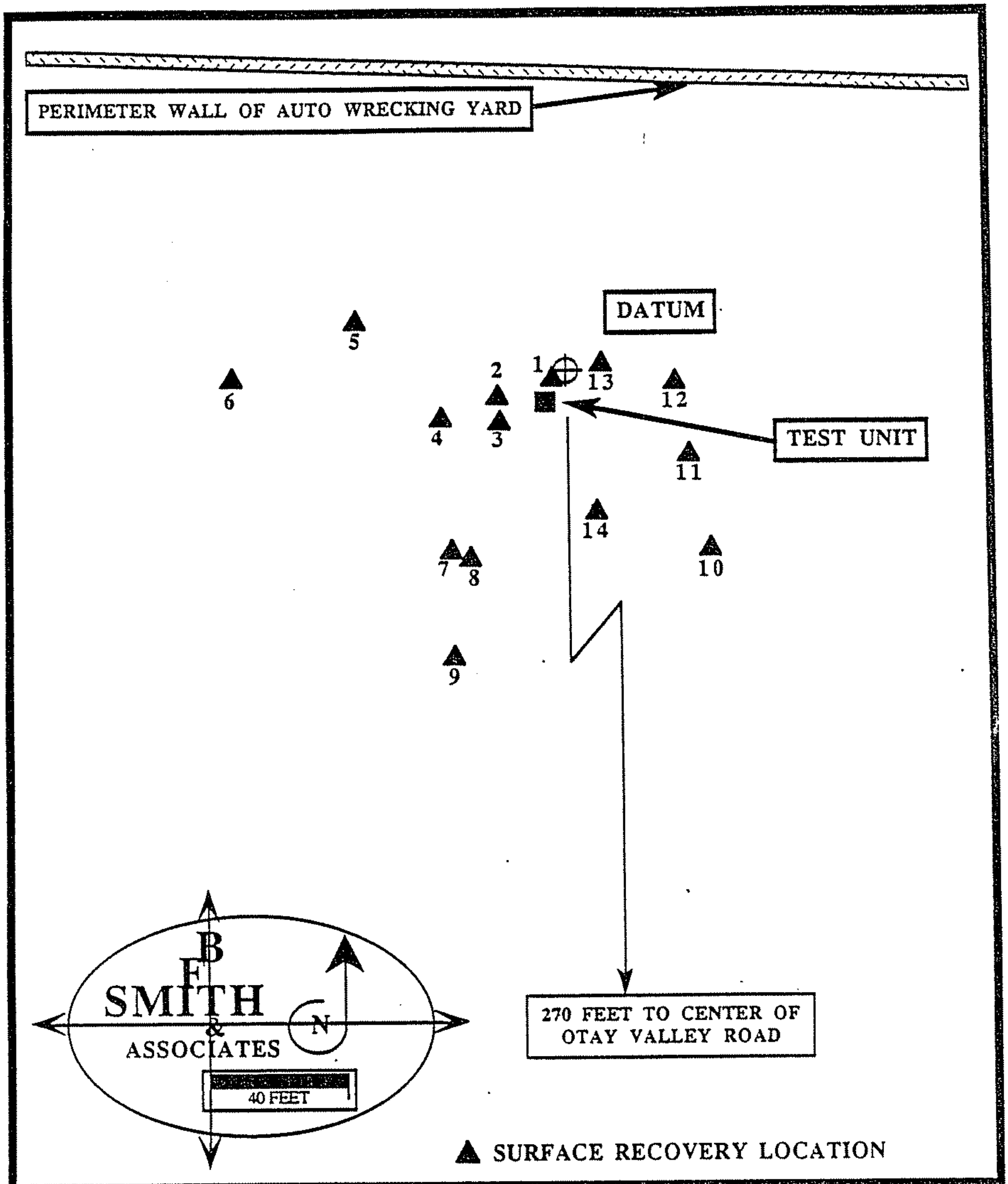
3.7.1.5.5 Site SDi-11146 Test Results

Site SDi-11146 (OVR-Temp 2) is one of two sites located on the north side of Otay Valley Road within the road improvement alignment. The site is a slightly disturbed resource, consisting of a scatter of artifacts located along the edge of the northern valley bluffs overlooking the Otay River course. The source of previous impacts appears to have been the clearing of the area, possibly as a prelude to cultivation, although the site does not appear to have actually been farmed. The site provides access to the river area along a narrow ridge that follows the course of a tributary canyon into the Otay River, similar to Site SDi-11145.

The investigation of SDi-11146 included a surface artifact mapping and recovery effort, which documented the wide distribution of cultural materials parallel to Otay Valley Road and the edge of the bluff. A map has been provided on page 35 which illustrates the pattern of surface recovery. The recovery, which is listed in Table 14, on page 36, included one mano, six flakes, two debitage, four cores, one scraper, three scraper planes, and one utilized flake. Surface artifacts were easy to visually identify, because the ground cover was light due to the arid conditions of the bluff area above the flood plain. The surface artifacts were dispersed over a wide area near the bluff edge, with a concentration noted toward the eastern area of the site which corresponded to the route of approach from the flood plain. The surface artifacts corresponded to the pattern noted for the La Jolla Complex tool assemblage, and date approximately to the period between 6,000 to 3,000 years before the present.

The subsurface testing of Site SDi-11146 consisted of the excavation of one test unit, measuring one meter square. The unit was positioned in the area of the greatest concentration of surface artifacts, in the eastern portion of the site. The location of the unit near the bluff ledge has been illustrated on page 35. The unit was excavated to a depth of twenty centimeters to ensure that any masked resources would be identified. The results of the units have been included in Table 15, on page 37. The test unit produced only a single utilized flake and did not reveal the presence of any significant cultural deposits.

In conclusion, the results of the surface mapping and subsurface testing of Site SDi-11146 within the alignment of the proposed Otay Valley Road widening project documented a widely dispersed site which did not contain any detectable subsurface deposits of any research value or significance. The site has therefore been evaluated as a non-significant resource.



SITE SDi-11,146

DATA RECOVERY MAP

TABLE 14

Surface Recovery Data
Site SDi-11146
Otay Valley Road Widening Project

Catalogue Number	Location	Recovery	Material
1	Surface 1	1 Biface Mano	Granite
2	Surface 1	1 Core	Felsite
3	Surface 2	1 Scraper Plane	Basalt
4	Surface 3	1 Core	Basalt
5	Surface 3	1 Flake	Felsite
6	Surface 4	1 Side Scraper	Felsite
7	Surface 5	1 Scraper Plane	Felsite
8	Surface 6	1 Scraper Plane	Basalt
9	Surface 6	1 Flake	Felsite
10	Surface 7	1 Debitage	Basalt
11	Surface 8	1 Debitage	Felsite
12	Surface 9	1 Debitage	Basalt
13	Surface 10	1 Core	Basalt
14	Surface 11	2 Flakes	Basalt
15	Surface 12	1 Core	Felsite
16	Surface 13	1 Flake	Basalt
17	Surface 13	1 Flake	Felsite
18	Surface 14	1 Utilized Flake	Felsite

TABLE 15

Test Unit Recovery Data
Site SDi-11146
Otay Valley Road Widening Project

Test Unit	Level	Recovery
1	0-10 cm.	1 Basalt Utilized Flake
	10-20 cm.	No Recovery

TABLE 16

Artifact Summary Data
Site SDi-11146
Otay Valley Road Widening Project

Recovery Category	Artifact Type	Surface	Test Unit	Total
Ground Stone Tools	Manos	1		1
Lithic Production Waste	Flakes	6		6
	Debitage	2		2
	Cores	4		4
Precision Tools	Scrapers	1		1
	Scraper Planes	3		3
	Utilized Flakes	1	1	2
Lithic Totals		18	1	19

3.7.2 IMPACT

In general, any grading of the proposed roadway will impact the cultural resources present in the path of the grading action. The locations of five prehistoric sites within the alignment suggests that planning for the roadway could not avoid any of the sites, although the eastern sites could be missed if the roadway were shifted to the south. The recent changes to Design Alternative 2 include an alignment east of Nirvana Road that begins on the north side of the existing Otay Valley Road and extends only in a southerly direction.

The actual impact analysis is based on the evaluation of significance for each of the individual cultural resources. Utilizing the data gathered during the testing program, the following table presents the significance rating and likelihood of potentially adverse impacts:

SITE	SIGNIFICANCE*	POTENTIAL IMPACTS
(1) SDi-8065	Non-significant; no research potential	Not adverse
(2) SDi-8065A	Non-significant; no research potential	Not adverse
(3) SDi-8912	Non-significant; no research potential	Not adverse
(4) SDi-11145	Significant; moderate research potential	Adverse
(5) SDi-11146	Non-significant; no research potential	Not adverse

* Relates only to portions of sites within the study area.

Of the five sites evaluated, only site, SDi-11145, was evaluated as significant based upon the research potential of the site. The research potential of SDi-11145 is associated with a small subsurface deposit of artifacts that may represent a stratigraphic record of the prehistoric response to environmental changes in the food supply in the valley. Because of the research potential of Site SDi-11145, any disturbance of the resource could represent a potentially adverse impact. The remaining four sites will also likely be impacted by the project; however, the fact that these sites were evaluated as non-significant provides the basis for the determination that the impacts to these four sites will not be adverse.

The archaeological site files records searches for the project noted that portions of Deneri Winery were present within the proposed alignment. As was noted in Section 3.7.1, the concrete foundations noted in the records as being portions of the winery were relocated and interpreted as part of the gravel mining operations that took place in the riverbed. The reason for this interpretation is that the concrete slabs are situated on top of hydraulically mined fill, which matches the spoil piles of rocks visible throughout the riverbed. Portions of the winery may exist elsewhere in the flood plain to the south of the alignment; however, no further investigations were conducted to search for these foundations. The concrete foundations associated with the mining operations do not represent significant resources since these do not retain any research potential concerning historical events or persons. Any impacts to these foundations would not represent an adverse impact to cultural resources.

3.7.3 MITIGATION

The only site evaluated as a significant resource during the present study was SDi-11145. The potential for adverse impacts to the site from the proposed project is great, since any grading of the site will remove the resource which is a very shallow deposit of cultural materials along the bluff edge above and to the north of Otay Valley Road. The potentially adverse impacts to the site will require mitigation as part of any regulatory approval of this project.

Mitigation of adverse impacts may be accomplished through the implementation of one of the following three alternatives:

(1) Mitigation Alternative 1: Mitigation could be accomplished through the preservation of SDi-11145 by redirecting the roadway to the south, into the flood plain, thus removing the threat of grading to the resource. The most obvious problem with this alternative is that the flood plain may be too sensitive biologically to support the intrusion of the roadway expansion. The preservation of the site would require that the present northern edge of Otay Valley Road remain in its current location, and any grading to the north of the road that would affect the bluff edge be eliminated. This very priority is now included in the Project Design and in Design Alternative 1, where the bluffs to the north of Otay Valley Road will not be disturbed, and the roadway will expand into the flood plain south of the existing road.

(2) Mitigation Alternative 2: Mitigation could be accomplished through data recovery. A salvage program would require that a representative sample of the site be examined using a statistically valid sampling design and a sample level of 5%. By completing a salvage of the site, the research potential of the site would be reduced and the impacts to the site would no longer be considered adverse.

(3) Mitigation Alternative 3: The "no project" alternative would leave the road as it presently exists, and the areas adjacent to the road would not be impacted. There would be no impacts to cultural resources resulting from this alternative, since construction would not intrude into the site areas. While such avoidance of impacts to cultural resources, particularly Site SDi-11145, is preferable, it is certain that continued use of most of the site area for agricultural purposes will result in continued site impacts, and the eventual commercial development of lots along Otay Valley Road

will also result in future impacts to the site. In light of on-going uses and probable future development in the area, the "no project" alternative will not offer significantly improved status to the cultural resource.

3.7.4 ANALYSIS OF SIGNIFICANCE

The present project design will not constitute a significant impact to cultural resources. The intensity of the change represented by the roadway construction is not significant either singularly to any of the resources or in a cumulative sense. In light of the fact that the evaluation of the cultural resources that will be disturbed by the project has revealed that the resources are not unique and offer no opportunities for further research, then the impacts will not be controversial. The extent of any impacts to cultural resources which may occur will be minimal, particularly because no subsurface deposits were identified within the area of the proposed road design.

Alternative Road Design 1 will generally follow the same alignment as the project, with expansion of the construction area east of Nirvana Road in a southerly direction from the north edge of the current alignment of Otay Valley Road. Since this expansion does not include any additional resources to those within the project design, the significance of the impacts to cultural resources will be identical to those which will result from the project.

Alternative Road Design 2 will include encroachment into the hillside terraces east of Nirvana Road and north of Otay Valley Road, where Sites SDi-11145 and SDi-11146 were documented. As was noted previously in Section 3.7.3, Site SDi-11145 was evaluated as a potentially significant cultural resource. The intensity of the impacts represented by Alternative 2 would be significant, since the resource is sensitive and unique. The extent of the impacts to Site SDi-11145 would also be significant, since grading represented by this project alternative would include the total resource, or at least that portion of the site which contains the significant subsurface deposits. In the context of the regional cultural resource population, Site SDi-11145 represents an unique site. This is due to the fact that the site has an association with the late prehistoric occupation of the Otay River Valley while most other sites in the valley are associated with the La Jolla Complex. Therefore, in a regional context, the impacts to this site will be significant and would require mitigation. Lastly, the impacts to Site SDi-11146 would be neither significant nor controversial, since the site is not unique and offers no opportunities for further research.

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APPENDIX

Archaeological Site Files Record Searches

4.0 ALTERNATIVES

4.7 ALTERNATIVES - CULTURAL RESOURCES

Impacts and Significance

The impacts represented by the proposed project were evaluated as being not significant, given the fact that the resources to be disturbed (or portions thereof) are not unique or significant. Design Alternatives 1 and 2 were also evaluated, and the archaeological data from the field investigations revealed that Alternative 2 (the hillside alternative) would in fact represent an important and adverse impact to Site SDi-11145. Alternative 1 (the wet land alternative) will impact the same level of cultural resources as the current project design, and will not represent a significant impact. The project and the alternatives are evaluated as follows:

Project —	Impacts to cultural resources will occur, but since these will not be significant, the project has been evaluated as a minimal negative impact.
Alternative 1 —	Same as the project as a whole.
Alternative 2 —	Impacts to cultural resources will occur, and in the case of Site SDi-11145, these impacts will be significant. The utilization of Alternative 2 would constitute a negative impact requiring mitigation. The impact of Alternative 2 would be much greater than the Project or Alternative 1.
"No Project Alternative "—	This alternative will present neither beneficial nor negative impacts to cultural resources. This is because even without the project, most of the cultural resources within the area of the project will continue to be impacted by cultivation or other development activities.