

WATER DEMAND ESTIMATIONS

Introduction

A proposed project's future water use can be estimated using either of two methods. The first involves water duty factors. These factors, listed in Table 7 are averages of water demand for particular categories of users based on historical records or land use surveys. The categories are defined by lot size, type of use, zoning, and rarely, soil type. A project with a proposed land use which falls within the listed categories will have its demand estimated by this method. A second method is to estimate the future water use of a project based on a summation of each specific indoor and outdoor use. This method is used if an appropriate water duty factor is not in Table 7 or can not be feasibly generated during project review. Table 8a lists estimated indoor uses per person per year. Table 8b present estimates of water demand for various outdoor and unusual uses. If specific use factors are used to estimate both the interior and exterior demand of a project, the calculated demand must be increased by 10% to account for emergency and unusual uses. The factors are to be used without the 10% contingency if a portion of the project's demand is based on a water duty factor. For example, in the case of an unusual lot size, a standard water duty factor for a smaller lot can be used. An amount of demand calculated for the additional lot area with a specific use factor would be added to the duty factor for the smaller lot. Another example would be in estimating the proportion of interior use included in a water duty factor.

In some cases, the water demand of certain agricultural crops is needed in the analysis of the net increase in water demand due to a proposed project. Table 9 lists water duty factors published by the U.C. Cooperative Extension (Farm Advisor) in 1991 for various crops grown in Santa Barbara County.

Demand Calculations

A project's net new consumptive use is the figure which is compared to the Threshold of Significance to determine level of impact on groundwater resources. This figure represents the gross demand (i.e. water duty factor demand) adjusted for return flows to the groundwater basin, loss of natural recharge due to construction of impervious surfaces, increased recharge due to irrigated area or recharge basins and historic use on the site. "Historic use" is defined as the demonstrated average water use on the project site during the most recent ten years, excluding years prior to availability of water to the site. Both high and low water use years would be counted in the average. A "Project Water Demand Worksheet" is included as Figure 3. This worksheet accounts for all of the adjustments listed above and is designed for use in all areas of the County. Each of the factors used are explained on the attached instructions.

MITIGATION MEASURES

Measures that can be applied to projects in order to minimize withdrawals from a groundwater basin (i.e. conserve water resources) or reduce impacts in an overdrafted basin are listed below. These measures are modified from the *Standard Conditions of Approval and Standard Mitigation Measures* manual available from the Resource Management Department.

1. Outdoor water use shall be limited through the measures listed below.

[Planner: This is a menu; select only those conditions that apply. You may also use some of these measures as water conservation conditions without requiring a landscape and irrigation plan.]

- a) Landscaping shall be with native and/or *[planner specify]* drought tolerant species.
- b) Drip irrigation or other water saving irrigation shall be installed.
- c) Plant material shall be grouped by water needs.
- d) Turf shall constitute less than 20% of the total landscaped area.
- e) No turf shall be allowed on slopes of over 4%
- f) Extensive mulching (2" minimum) shall be used in all landscaped areas to improve the water holding capacity of the soil by reducing evaporation and soil compaction.
- g) Soil moisture sensing devices shall be installed to prevent unnecessary irrigation.
- h) Permeable surfaces such as turf block or intermittent permeable surfaces such as french drains shall be used for all parking areas and driveways.
- i) The applicant shall plumb each lot for a grey water system. Each dwelling shall contain a grey water system plumbed to front and rear yard irrigation systems.
- j) The applicant shall contract with an agency that sells reclaimed water to provide water for all exterior landscaping. Non-reclaimed water shall not be used to water exterior landscape. Prior to ____ the applicant shall deliver the above contract to County Counsel for review and approval. The applicant shall renew the contract annually and send copies of the contract and all receipts for reclaimed water received to permit compliance staff. These documents shall be due on ____ of every year commencing _____.
- k) Separate landscape meters shall be installed.

Plan Requirements: Prior to _____, a landscape and irrigation plan shall be submitted to P&D for review and approval. The applicant/owner shall enter into an agreement with the County to install required landscaping/irrigation and maintain required landscaping for the life of the project [*Planner: see Bond Condition # 11*].
Timing: The applicant shall implement all aspects of the landscape and irrigation plan prior to occupancy clearance.

MONITORING: P&D shall conduct site visits to ensure installation prior to occupancy.

2. Indoor water use shall be limited through the following measures [*Planner: This is a menu; select only those conditions that apply*]:
 - a) All hot water lines shall be insulated.
 - b) Water pressure shall not exceed 50 pounds per square inch (psi). Water pressure greater than 50 pounds per square inch shall be reduced to 50 psi or less by means of a pressure-reducing valve.
 - c) Recirculating, point-of-use, or on-demand water heaters shall be installed.
 - d) Water efficient clothes washers and dishwashers shall be installed.
 - e) Self regenerating water softening shall be prohibited in all structures. [*Required in Laguna Sanitation District.*]
 - f) Lavatories and drinking fountains shall be equipped with self-closing valves [*Commercial only*]
 - g) Pool(s) shall have electronic pool cover(s).

Plan Requirements: Prior to _____, indoor water-conserving measures shall be graphically depicted on building and/or grading plans, subject to DEV REV review and approval. **Timing:** Indoor water-conserving measures shall be implemented prior to _____.

MONITORING: P&D shall inspect for all requirements prior to occupancy clearance.

3. The existing facility shall be retrofitted with water conserving showerheads (2 gpm) and toilets (1.6 gallons per flush). **Timing:** Prior to land use clearance the retrofitting shall be completed by the applicant.
4. High water consumption businesses (defined by P&D), including: _____, shall be prohibited from operating on the subject property. **Plan Requirements and Timing:** Prior to _____, the applicant shall record an covenant agreeing to the prohibition with P&D for County Counsel approval to be included as a note on building plans, on lease agreements and in CCR's.

MONITORING: P&D shall ensure no such businesses occupy building prior to issuing LUC.

5. Reclaimed water shall be used for all dust suppression activities during grading and construction. **Plan Requirements and Timing:** This measure shall be filed as a note with the final map and included as a note on the grading plan. Prior to the commencement of earth movement, the applicant shall submit to the Resource Management Department an agreement/contract with a company providing reclaimed water stating that reclaimed water shall be supplied to the project site during all ground disturbances when dust suppression is required. *[Planner: see RECLAIMED WATER section]*

MONITORING: Resource Management staff shall inspect activities in the field to ensure non-potable water is being used in water trucks.

6. All new development shall provide for on-site recharge basin(s) or shall contribute fees to an area wide program to provide for a Specific Plan Area Recharge System *[planner specify]*. On-site recharge vs. contribution of the area wide system shall be based upon on-site recharge conditions and shall be determined by DER Registered Geologist. Basin(s) shall be maintained for the life of the project by a Homeowners' Association. Recharge systems shall be developed in conjunction with the FCD. **Plan Requirements:** Installation and maintenance for two years shall be ensured through a performance security provided by the applicant. **Timing:** Recharge basins shall be installed (landscaped and irrigated subject to DER and FCD approval) prior to _____.

MONITORING: Permit Compliance shall site inspect for installation and maintenance of landscape. Flood Control sign off is required on final grading plans, and Permit Compliance sign off is required to release security.

WATER WELL SPECIFIC CONDITIONS

7. Water wells used on-site shall be monitored by the use of a flow meter or by analysis of electric meter records and recorded semi-annually (May 15-June 1 and November 15- December 1). Static water level shall be recorded for each well at the same time as the water production is recorded. *[Planners: Use only for salt water intrusion or when requested by the County hydrologist/geologist.]* **Plan Requirements and Timing:** Prior to _____ the applicant shall record an agreement subject to P&D and County Counsel approval which agrees to the above condition and describes any future mitigation necessary should water quality degrade. The applicant shall maintain a record of meter readings and water levels, available to P&D upon request, for the life of the project.

MONITORING: Resource Management shall review reports and determine if future mitigation is necessary.

8. A water quality test shall be completed by the applicant. **Plan Requirements:** The applicant shall submit test to Environmental Health Services and Resource

Management for review and approval. **Timing:** Test shall be completed and submitted and approved prior to well permit issuance.

9. A pump test for the water well shall be completed by the applicant. **Plan Requirements:** The applicant shall submit test to Environmental Health Services and Resource Management for review and approval. **Timing:** Test shall be completed and submitted and approved prior to well permit issuance.
10. The owner shall complete a water quality analysis on a semiannual basis to avoid the possibility of salt water intrusion into groundwater. Pumping shall cease if the following conditions occur [*P&D Geologist specify*]. **Plan Requirements:** A copy of the report shall be furnished to Environmental Health Services and to DER semiannually. **Timing:** Prior to _____, the first water quality analysis shall commence.
11. All drilling effluent shall be collected in an earthen sump (approx. 300 s.f. area, 1½ to 2 feet deep) and disposed of at a location acceptable to P&D and EHS. **Plan Requirements:** Prior to _____, plans for the sump and disposal areas shall be submitted to P&D and EHS for review and approval. Sump and disposal areas shall be depicted on _____ plans. **Timing:** Sump and disposal areas shall be constructed prior to _____.
12. Water well shall be solely exploratory. Any development, except for the exploration and testing thereof, is NOT approved under this Coastal Development Permit.
13. A water meter shall be installed for the non-exploratory well(s). **Timing:** Prior to the use of the well for any non-exploratory purpose, the applicant shall install a water meter.

MONITORING: The applicant shall provide proof of meter installation to P&D.

14. Water well use shall be used solely for parcel _____. Water use on a separate parcel shall require further review and a Special Use Permit and Coastal Development Permit.
15. The well head including all accessory equipment, shall be screened from all viewsheds and neighboring properties within 45 days of well installation. **Plan Requirements:** A landscape plan indicating same shall be submitted prior to issuance of land use clearance for DER approval. [*Planner: use landscape bond condition*]. **Timing:** Landscape plan shall be implemented prior to _____.

MONITORING: P&D shall inspect site prior to _____.

16. The applicant shall install a coastal water quality monitoring well and monitor water quality per measure #10 above.

MONITORING: The P&D Geologist shall review the completion report of the well. (to be included with reporting under measure 10. above)

Measures suggested to mitigate the potential of certain projects to degrade water quality include the following:

17. Preparation of a fertilizer/pesticide application plan which minimizes deep percolation of chemical-laden water to be reviewed and approved by DER and EHS.
18. Installation of subsurface percolation basins and traps which would allow for detection and removal of fertilizers, pesticides and other chemicals.
19. Biannual or annual water quality analysis for the detection of organic or inorganic contaminants in production or monitoring wells.

REFERENCES

- Miller, G.A. and Rapp, J.R., 1968: Reconnaissance of the groundwater resources of the Ellwood-Gaviota area, Santa Barbara County, California; U.S.G.S. Open File Report, 50p.
- Crippen, J.R., 1965: Natural water loss and recoverable water in mountain basins of Southern California; U.S. Geological Survey Professional Paper 417-E.
- Gibbs, D.R. and Holland, P.R., 1990: County of Santa Barbara, Flood Control and Water Conservation District, Precipitation Data Report.

Environmental Thresholds and Guidelines Manual (1992 Edition)
 County of Santa Barbara
 Resource Management Department, Division of Environmental Review
 By Brian R. Baca, 4/92
 (File "thresh1.wk3")

Project Name: _____

Case Number: _____

APH(s):	Parcel size (Ac)	Zone District
_____	_____	_____
_____	_____	_____
_____	_____	_____

Project Description: _____

DEMAND CALCULATIONS (Refer to instructions on pages 3 and 4)

	Water Duty Factor (AFY/Unit)	# Units	Gross Demand	Consum. Use Fac.	Net Consum. Use (AFY)
Residential					
Combined	_____	_____	_____	_____	_____
Interior	_____	_____	_____	_____	_____
Exterior	_____	_____	_____	_____	_____
Irrigation (Refers to potential agricultural activities on large lots in addition to residential demand associated with the homesites)					
AFY/parcel	_____	_____	_____	_____	_____
AFY/acre	_____	_____	_____	_____	_____
Commercial					
Combined	_____	_____	_____	_____	_____
Interior	_____	_____	_____	_____	_____
Exterior	_____	_____	_____	_____	_____

Total demand = _____ AFY

RECHARGE ADJUSTMENTS

* These adjustments are made only for projects which are located north of the Santa Ynez Mountains (i.e. the North County). This is because most of the basin area on the South Coast is in confined conditions. Note that there is not universal agreement as to the location and size of of the recharge area of each basin. All projects will be treated as if overlying a confined basin. Any recharge credit which might be due an individual project located in an identified recharge area of a South Coast basin is considered accounted for in the increase of the Threshold of Significance from previous manuals.

Credits (Instructions on page 4)

Field recharge increase

$$\left(\frac{\text{Irrigated infiltration rate (AFY/acre)}}{\text{Non-Irrigated Infil. rate (AFY/acre)}} - \frac{\text{New Irrigated Area (Ac.)}}{\text{System Eff.}} \right) \times \text{Rainfall Feet/year} \times \text{Acres Impervious Surfaces} = \text{Recharge basin}$$

Recharge basin

$$\frac{\text{Rainfall Feet/year}}{\text{Acres Impervious Surfaces}} \times \text{System Eff.} = \text{Recharge basin}$$

Debits

Loss of natural recharge

$$\frac{\text{acres impervious surfaces}}{\text{infiltration rate}} \times \text{AFY/acre} = \text{Loss of natural recharge}$$

$$\text{Total adjustments} = \text{AFY}$$

HISTORIC USE CREDIT

$$\frac{\text{Water demand of historic land use which will be discontinued due to proposed project}}{\text{Consum. Use Fac.}} = \text{Historic Use AFY}$$

SUMMARY

$$\frac{\text{Total demand}}{\text{Recharge Adjustment}} - \frac{\text{Historic Use}}{\text{Net new Consumptive Use}} = \text{AFY}$$

Threshold of Significance

$$\frac{\text{Groundwater Basin}}{\text{T.O.S.}} = \text{AFY}$$

Notes: _____

Worksheet Instructions (calculation parameters)

Demand

1. Water Duty Factors: Included in the DER Thresholds manual (Table 3) for a variety of land uses. In some cases appropriate water duty factors may be generated by the DER geologist during case review. Note that the term "Units" can refer to parcels, dwelling units, 1000's of sq.ft. of building coverage or acres.
2. Number of Units: Only the residential units or other land uses which will be added as a result of the project are evaluated. Existing land uses which would continue after project approval are not included in project demand.
3. Gross demand: (Water Duty Factor * # of Units)
4. Consumptive Use Factor: This factor adjusts the gross water demand to account for return flows to the groundwater basin (A C.U. Factor of .6 equals 40 % return flows). Listed below are C.U. Factors to be used:

Basin	CUF	Explanation
Montecito	1.00	Gross water demand in the South Coast Basins is considered equal to consumptive use. This is because the recharge area is a small portion of the area of the of the basins (aquifers are confined) and interior effluent is ultimately conveyed to the ocean. (Wastewater reclamation is considered a new source of supply available to the purveyor.)
Foothill	1.00	
Goleta	1.00	
Santa Ynez	0.75	Average consumptive use factor estimated by RWD Registered Geologist and County Water Agency Senior Hydrologist.
Buellton	0.75	
Lompoc	0.75	
San Antonio	0.75	
Cuyama	0.75	
Santa Maria	0.75	

Exceptions:

0.60	Areas with sandy soils (Orcutt, Careaga or equivalent formation)
0.70	Orcutt area on the Orcutt Fm. (Clay layers impede infiltration)
0.75	Vandenberg Village (area of sandy soil but some of infiltrated landscape irrigation water discharges into creek and is consumed by riparian vegetation)
0.50	Wastewater disposed in the Santa Ynez River riparian basin.
*	Long-term pumpage offsets due to acceptance of treated wastewater will be counted as a direct return to the basin. (Must be demonstrated to the satisfaction of the DER Geologist)
1.00	Projects served by consolidated rock aquifers.

5. Net Consumptive Use: (Gross demand * C.U. Factor)
6. Residential Demand: Separate factors for interior and exterior use are only used when the consumptive use factors for each are different. Generally, interior use will be based on average occupancy figures from the most recent census (3.01 people/SFD) times the per person use for the type of plumbing fixtures involved. A 10 % contingency will be added to this figure.
7. Irrigation demand: Estimated by developing a water duty factor from similar land uses in the vicinity (AFY/parcel) or by an assessment of likely uses of the onsite soil types. This analysis can be performed by the applicant and reviewed for adequacy by the DER Geologist or may be prepared entirely by the DER Geologist.
8. Commercial Demand: Based on water duty factors (AFY/1000 sq.ft.) from the Thresholds Manual or as developed during case review.

Recharge Adjustments *

* These adjustments are made only for projects which are located north of the Santa Ynez Mountains (i.e. the North County). This is because most of the basin area on the South Coast is in confined conditions. Note that there is not universal agreement as to the location and size of of the recharge area of each basin. All projects will be treated as if overlying a confined basin. Any recharge credit which might be due an individual project located in an identified recharge area of a South Coast basin is considered accounted for in the increase of the Threshold of Significance from previous manuals.

9. Loss of Natural Recharge: The infiltration rate will be calculated by the DER Geologist using the Soil Moisture Balance method or Blaney Curve method. (See listing of infiltration rates in 10. below)
10. Field recharge increase: Irrigated and non-irrigated infiltration rates are calculated by the DER Geologist (listed below). Absent a detailed site plan, the proportion of impervious area and the percentage of the remaining area to be irrigated will be estimated as follows:

Lot size (sq.ft./unit)	% Impervious Area	% of yard area irrig.
7000 - 21780	35	75
21781 - 43560	30	60

Infiltration Rates (AFY/acre)

Area	Irrigated	Non- Irrigated	Analysis Method
Orcutt	.19	.05	Blaney
Buellton	.25	.09	Blaney
Santa Ynez	.30	.11	Blaney
Los Alamos	.25	.08	Blaney
Lompoc	.21	.07	Blaney

11. Recharge Basin: System efficiency is set at a maximum of .80 to account for system losses due to evaporation, leaks, loss of permeability of recharge basin over time and spills during peak flow events. A lower figure may be will be used if analysis by the DER Geologist, or other technical information, indicates that 80% efficiency cannot be achieved in the long term. Figure for annual average rainfall to be obtained from the Precipitation Data Report (Gibbs and Holland, 1990). To obtain this credit, the runoff from the impervious surfaces of the project must be conveyed to the recharge basin through impervious drains(not an unlined drainage channel).

Historic Use Credit

12. Historic use credit is only given for existing land uses that will be discontinued upon approval of the proposed project. (Examples: Removal of orchard for a new dwelling, elimination of landscaped area through enlargement of a structure, retrofitting a older onsite structure with low flow fixtures)
13. Consumptive Use Factor: Same as figure used for the demand calculation.

Summary

14. Total consumptive demand adjusted for recharge less discontinued historic use equals net new consumptive use. This figure is compared to the Threshold of Significance established for the groundwater basin to assign the impact level disclosed in the environmental document.

TABLE 7

1992 Groundwater Thresholds Manual - Water Duty Factors

Area	Land Use Designation	Minimum Acres or Sq.Ft./Unit	AFY/Unit	AFY/Acre	AFY/1000sf	Explanation
CARPINTERIA VALLEY	1 DU/3 acre	3.00	1.64	0.55		Data from the Carpinteria Water District, 7/88. (Refer to 88-EIR-12)
	1 DU/acre	1.00	0.86	0.86		
	1.8 DU/acre	24200.00	0.60	1.08		
	3.3 DU/acre	13200.00	0.40	1.32		
	4.6 DU/acre	9470.00	0.34	1.56		
	Condominiums		0.25			
	Apartments		0.20			
	Mobile Homes		0.16			
	Office/Retail				0.95	
	Motel				8.70	
	Restaurant				4.50	
	Industrial				2.30	
	Schools				0.36	
	Parks, Irrigated Open Space				2.64	
	Greenhouses				3.00	
Open nurseries, field crops				1.00		
MONTECITO	1-E-1	43560.00	1.02	1.02		Data from the Montecito Water District, 1989. (81-88 average water use)
	20-R-1	20000.00	0.68	1.48		
	3-E-1	3 acres	1.70	0.56		
	7-R-1	7000.00	0.45	2.80		
	7-R-2	3500.00	0.26	3.18		
SUMMERLAND	Less than 2500	0.20				Data from SCHO. (79-88 average water use)
	2501-5000	0.21				
	5001-8500	0.27				
	8501-15000	0.30				
	15001-30000	0.40				
	30001-50000	0.71				
	50001-105000	1.10				
	Restaurant					
	Other					
	Public Schools	1.40				
Irrigation	1.10					

TABLE 7 (Cont'd)

Area	Land Use Designation	Minimum Acres or Sq.Ft./Unit	AFY/Unit	AFY/Acre	AFY/1000sf	Explanation	
CITY OF SANTA BARBARA	SFD "Small"	Up to 9999 sf/lot	0.32			Data from City of Santa Barbara Water Demand Factor and Conservation Study "USER'S GUIDE" Document No. 2	
	SFD "Medium"	10000-22000	0.51				
	SFD "Large"	22000-1 Acre	0.85				
	SFD "over 1 acre lot"	More than 1 Acre	1.44				
		Multi-Family Apartment		0.24			
		Auto Repair/Auto Body Shop				0.11	
		Bank				0.17	
		Church				0.17	
		Church w/School				0.18	
		Condominium		0.28			
		Convalescent Hospital				0.11	factor in AFY/bed
		Gas Station				0.29	
		Gas Station/Mini Market				0.49	
		General Office				0.10	
		Grocery Store				0.42	
		Health Club				0.32	
		Hotel/Motel				0.13	factor in AFY/room
		Hotel/Motel/Restaurant				0.15	factor in AFY/room
		Industrial Assembly & Manufacturing				0.09	
		Industrial R&D				0.15	
		Medical Office				0.15	
		Mixed Medical/Dental				0.23	
		Multi-Family Apartment		0.24			
		Restaurant, 24 hour				0.04	factor in AFY/seat
		Restaurant, Fast Food				1.26	
		Restaurant, Sit Down				0.02	
		Retail, Large-over 20,000 s.f.				0.07	
		Retail, Small-under 20,000 s.f.				0.11	
		Retirement Facility				0.10	factor in AFY/room
		Senior Apartment		0.12			
		School-Elementary				0.02	factor in AFY/student
		School-Junior High				0.03	factor in AFY/student
		Theater				0.0047	factor in AFY/seat
		Warehouse/Industrial Storage				0.07	
		Turf-grass					
		Cool-Season			2.40	0.06	
		Warm-Season			2.10	0.05	
	Orchards						
	Avocados			1.35	0.03		
	Citrus			1.53	0.04		

TABLE 7 (Cont'd)

Area	Land Use Designation	Minimum Acres or Sq.Ft./Unit	AFY/Unit	AFY/Acre	AFY/1000sf	Explanation
CITY OF SANTA BARBARA	Non-Water Conserving Groundcovers			1.80	0.04	
	Shrubs			1.80	0.04	
	Trees			1.50	0.03	
	Low Water Using (1/2 of above figures)					
	Groundcovers			1.80	0.04	
	Shrubs			1.80	0.04	
	Trees			1.50	0.03	
GOLETA VALLEY	1 DU/3+ acres (202 #)*	3.00	1.81	0.60		Data from the Goleta Water District, 1988. (1973-86 average use)
	1 DU/1.5 acres (20#)*	1.50	1.22	0.81		
	1 DU/1 acre (698#)*	1.00	0.70	0.70		
	20-R-1 (208#)*	20000.00	0.50	1.09		
	15-R-1 (151#)*	15000.00	0.44	1.28		
	12-R-1 (938#)*	12000.00	0.36	1.31		
	10-R-1 (1282#)*	10000.00	0.33	1.44		
	8-R-1 (2815#)*	8000.00	0.30	1.63		
	7-R-1 (3092#)*	7000.00	0.27	1.68		
	10-R-2 (66#)*	5000.00	0.22	1.92		
	7-R-2 (87#)*	3500.00	0.22	2.74		
	*SFD water duty factors are shown reduced by .10 AFY because all examples were pre-1980 construction and not subject to water efficiency ordinances currently in effect.					
	DR 1, 1.8, 2	43560-24200-21780	0.73	.73-1.31-1.46		
	DR 3.3, 3.5	13200-12446	0.41	1.35-1.44		
	DR 4, 4.6, 6	10890-9470-7260	0.30	1.20-1.30-1.80		
	DR 8, 10	5445-4356	0.30	2.40-3.00		
	DR 12, 12.3, 16	3630-3541-2723	0.26	3.12-3.2-4.16		
	DR 20, 25	2178-1742	0.23	4.60-5.75		
	DR 30	1452	0.13	3.900		
	Highway C., Neighbrhd C., CH, CH, C2, C3, Retail C., General C.				0.30	
	Shopping Center-SC				0.23	
	Rest.-2100(Asrs.UsrCde)				0.53	
	Hotel/Motel 0700				0.40	
	Gas Station 2500				0.33	

TABLE 7 (Cont'd)

Area	Land Use Designation	Minimum Acres or Sq.Ft./Unit	AFY/Unit	AFY/Acre	AFY/1000sf	Explanation
GOLETA VALLEY	Retail (store) 1100 1200				0.13	
	Office 1700, 1800, 2400				0.15	
	Research Park MRP				0.14	
	Light Industry M-1***				0.28	
	Heavy Industry M-2****				0.10	
	Light/Heavy Industry					
	M-1/H-2				0.23	
	Prof. Institutional P/I*****				0.14	
	Chrch.-7100(Assrs.UsrCd)				1.1/CHURCH	
**	Does not include parking lot and driveways					
***	Includes engineer/construction/food/publishers					
****	Includes auto repair/painting/trucking/builder's supply					
*****	Includes professional office/hospital/library/resrch. & dev.					
SANTA YNEZ VALLEY	Residential					Data from SYRWCD, Improvement District #1 1977
	1 DU/10 acres	10.00	1.15	0.12		
	1 DU/5 acres	5.00	0.98	0.20		
	1 DU/1-4 acres	1-4	0.82	.82-.205		
	1 DU/10000-20000 ft2	10000-20000	0.52	2.27-1.13		
	1 DU/2180-7000 ft2	2180-7000	0.14	2.79-.87		
	Commercial					
Industrial				1.64		
Institutional				0.62		
Agricultural				3.30		
Buellton Area	8-R-1	8000	0.57	3.10		Data from the Buellton Community Services District. (1982-91 average use)
	7-R-1	7000	0.57	3.50		
LOMPOC VALLEY	Residential					Data from City of Lompoc, 1977 ; Park Water, 1972
	1 DU/1-3 acres	1-3	.62	0.31		
	1 DU/20,000-1 ac.	1 ac.-20000 ft.2	.52-.62	1.28		
	1 DU/10,000-19,999	10,000-19,999	.30-.52	1.19		
	1 DU/3500-7000	3,500-7,000	.20-.30	2.07		

TABLE 7 (Cont'd)

Area	Land Use Designation	Minimum Acres or Sq.Ft./Unit	AFY/Unit	AFY/Acre	AFY/1000sf	Explanation
LOHPOC VALLEY	Commercial					
	Industrial				2.46	
	Institutional				0.98	
	Public Facility				0.33	
Mesa Oaks Area	1 DU/12500	12500	0.82			Data from the Mission Hills CSD. (1982-90 water use records)
	DR-1.8	15000	0.87			
	1 DU/25000 ft.2	25000	1.00			
LOS ALAMOS VALLEY	Ag. (Non-prime soil; irrigation demand)	100-150 ac.	25.00	.25-.17		Figure based on land use survey by DER, 1989.
	RR-5	5 ac.	0.98	0.20		Data from the LACSD, 1991 and modified from other sources. Refer to the Los Alamos Community Plan EIR.
	3-E-1	3 ac.	0.91	0.30		
	1-E-1	1 ac.	0.84	0.84		
	DR-1.8	24,200	0.73	1.31		
	10-R-1	10,000	0.62	2.70		
	7-R-1	7,000	0.57	3.55		
	DR-8	5,445	0.30	2.40		
	DR-12.3	3,540	0.26	3.20		
	PRD	15,000	0.67			
	Commercial (M-1)					
	Commercial (CII, C-2, C-3)					0.30
	ORCUTT AREA	Residential				
4 DU/acre			0.41	1.64		
5-8 DU/acre			0.33	1.65 - 2.64		
9-12 DU/acre			0.25	2.25 - 3.00		
13-22 DU/acre			1.64	2.13 - 3.61	10,890	
(Includes trailers)						
Commercial			2.05			
Industrial			3.20			

TABLE 7 (Cont'd)

Area	Land Use Designation	Minimum Acres or Sq.Ft./Unit	AFY/Unit	AFY/Acre	AFY/1000sf	Explanation
ORCUTT (1992 Update)	10-R-1	10000.00	0.86			Data from Cal. Cities Water Co., 1-90 to 2-92 use records.
	-	13400.00	0.94			
	20-R-1	20000.00	1.08			
	-	40000.00	1.40			
CITY OF SANTA MARIA	Residential					Data from the City of Santa Maria, 1982-83 records.
	Single family	3.4 pers./unit		@ 133 gcpd		
	Condominium	2.0 pers./unit		@ 117 gcpd		
	Less than 4 rooms/unit	1.7 pers./unit		@ 117 gcpd		
	4 or more rooms/unit	2.5 pers./unit		@ 117 gcpd		
	Apartment	2.1 pers./unit		@ 87 gcpd		
	Mobile Home	2.5 pers./unit		@ 125 gcpd		
	M.H. without children	2.0 pers./unit		@ 125 gcpd		
	Commercial				0.06	
	Industrial				0.08	

TABLE 8a
Water Demand Estimations Based on Individual Indoor Uses For
Santa Barbara County Including Limitations of Ord. 2948
 (Applies to all areas of Santa Barbara County)

Indoor Use Per Person	gal/yr. w/5.5 gal. Toilet* 3.9 gpm shwr.	gal/yr. w/3.5 gal. Toilet* 3 gpm shwr	gal/yr. w/1.6 gal. toilet* 2 gpm shwr
Toilet 4 flushes/day - gallons/flush 5.5/3.5/1.6	8030	5110	2336
Shower .7/day - 3.9 gal/3 gal/2 gpm x 10 min.	9965	7665	5110
Tub bath .2/day tub 1/2 full = 24 gallons	1752	1752	1752
Brush teeth 1.3/day x 2.5 gal	1186	1186	1186
Shaving 1/day 25% of pop. X 4.5 gal.	411	411	411
Washing hands 5/day wet and rinse @ .2 gal/wash	365	365	365
Drinking and cooking x 1 gallon/day	365	365	365
Clothes washing .29 x 35 gallons/wash	3704	3704	3704
Dishwashing (calc. 1 person assume 2 person/household) auto wash .5 wash/day x 18 gallons inc. rinse	3285	3285	3285
Garbage disposal (calc. one person assume 2 person/ house .5 use/day x 1 gallon	183	183	183
Gallons/Year/Person	29,246	24,026	18,697
AFY/person	0898 AFY	.0737 AFY	.0574 AFY

* Pre-ordinance toilets have mostly 5.5 gal tanks, Larry Farwell GWD 4/15/88 and Pre-ordinance standard pipe output (showers and faucets) was 3.9 gpm Ed Justus, Co., Bldg. Dept. 4/15/88.

** Further reductions in these indoor uses can be achieved through the installation of higher efficiency plumbing fixtures, for example, changing a 3.5 gallon flush toilet to a 1.6 gallon flush toilet.

TABLE 8b

Outdoor Use Per Unit (Applies county wide but some areas have a higher landscaping use).

Sauna/swimming pool.1 AFY	
Sauna/swimming pool with evaporation inhibitor	.05 AFY
Washing cars - soap and rinse with running water	15 gals/wash
Washing cars - 3 gallon bucket and brief rinse	105 gals/wash
Washing driveways	25 gals/wash
Green lawns, ornamental gardens	1.5-2 AFY/acre
Not so green lawns, ornamental gardens	1-1.5 AFY/acre
Drought resistant trees and shrubs and ivy	1 AFY/acre
Household gardens - beans, tomatoes, carrots, strawberries	1-4 AFY/acre
Commercial type orchards - avocados, lemons, walnuts	
New plantings 1-3 years	1.5-2 AFY/acre
Mature trees by flooding	1.5 AFY/acre
Mature trees by drip system	1.2 AFY/acre
Dust control/rider safety in horse arenas	1.2 AFY/acre

Unusual Water Uses (per unit)

Pets - drinking - 1 gal/day bathing - .33 gal/day	1.33 gal/day
Water beds	100 gal/year
Dark room	20 gal/use
Washing floors and household cleaning	10 gal/week
Aquaria	1 gal/week 5 gal/day

If individual use factors (from Table 8) are applied by themselves, a contingency factor of 10% of the total indoor/outdoor use calculated should be added for darkrooms, , mopping floors, leaks in the water pipes, hoses left running accidentally, washing down the house or a boat, other occasional uses or future conversion of landscaping to higher water use plants.

TABLE 9

Agricultural water duty factors in Santa Barbara County.
 Compiled by Cooperative Extension, University of California,
 Santa Barbara County (9-16-91)

IRRIGATION WATER USE BY CROPS IN SANTA BARBARA COUNTY (AFY/acre)

CROP	South Coast Area		Santa Maria & Lompoc Valleys		Santa Ynes, Los Alamos, & Sisquoc Valleys		Cuyama Valley	
	Range	Ave	Range	Ave	Range	Ave	Range	Ave
<u>Field Crops</u>								
Beans			.5-1.3	1.0	.9-1.5	1.3	1.0-1.7	1.5
Corn, field			1.5-2.2	1.8	2.0-2.8	2.2	2.4-3.2	2.8
Grain, irrigated			.3-.7	0.5	.6-1.0	.8	1.0-1.8	1.5
Sugar Beets			2.6-3.2	3.0	3.0-3.6	3.2	3.6-4.6	4.0
<u>Forages & pastures</u>								
Alfalfa			2.6-3.3	3.0	3.0-4.0	3.5	4.0-4.6	4.3
Pasture/irrigated			2.8-3.3	3.0	3.3-4.0	3.7	4.0-4.6	4.3
Sudangrass			1.0-1.8	1.5	1.3-2.0	1.7	2.0-3.0	2.5
<u>Ornamentals</u>								
Cut Flowers/field	1.5-2.3	1.8	1.5-2.3	1.8				
Flower seeds			1.5-3.0	2.3	2.0-3.5	2.7		
Greenhouse-								
-Carnations	2.0-3.0	2.5						
-Mums, pompon	3.0-4.5	4.0						
-Mums, potted	4.5-5.5	5.5						
Turfgrass	2.5-2.8	2.7	2.5-2.8	2.7	3.0-4.0	3.5	3.5-4.5	4.0
<u>Trees and Vines</u>								
Avocados	1.0-2.0	1.6	1.1-2.1	1.7				
Deciduous Fruits			1.2-2.0	1.7	1.5-3.0	2.5	3.0-4.5	3.8
Grapes			.7-1.8	1.2	1.0-3.0	2.0		
Lemons	.8-1.8	1.5	1.0-2.0	1.6				
Walnuts	1.0-2.0	1.5	1.3-2.5	1.8	2.0-3.5	3.3		
<u>Vegetables</u>								
Broccoli/Cabbage			1.3-1.5	1.4 *	1.5-2.0	1.7		
Cauliflower			1.5-2.0	1.7 *	2.0-3.0	2.5		
Carrots			1.5-3.0	2.3	2.0-2.5	2.2	2.5-3.5	3.0
Celery			2.0-2.5	2.2 *	2.0-2.5	2.2		
Lettuce			1.0-1.3	1.1 *	1.0-2.0	1.5		
Potatoes			1.5-2.0	1.7	2.0-3.0	2.5		
Strawberries	2.5-3.5	3.0	2.5-3.0	2.7				
Tomatoes	1.0-2.0	1.5	1.5-2.0	1.7				

* Average two crops per year in Santa Maria Valley (multiply factor shown by 2 to obtain AFY/acre)

12. NOISE THRESHOLDS¹

A. NOISE: PROPERTIES AND MEASUREMENT

Noise is defined as unwanted or objectionable sound. Sound is a form of energy detectable by the human hearing system, and it is commonly produced when some object is set into vibration. The vibration is transmitted to any surrounding media, such as air, causing pressure variations or "sound waves" among the air particles. These waves spread outward from the source, and along their path the waves can reflect off surfaces, they can bend around obstacles, and they can be absorbed by insulative materials. If sound waves reach one's ears, the membranes at the end of the ear canal begin vibrating. The vibration is transmitted by small bones in the middle ear to the cochlea, where the inner ear's sensory organ is located. Nerve impulses originating in the cochlea are interpreted by the brain as "sound."

Measurement of sound involves determining three variables: (1) magnitude; (2) frequency; and (3) duration.

1. Magnitude

The magnitude of variations in air pressure associated with sound wave results in the quality commonly referred to as "loudness". Human ears respond to a very wide range of sound pressures, producing numbers of awkward size when sound pressures are related on an arithmetic (1, 2, 3, ...) scale. It has therefore become customary to express sound magnitude in decibels (dB) which are logarithmic (1, 10, 100 ...) ratios comparing measured sound pressures to a reference pressure. The reference pressure commonly used in noise measurement is 20 micro-Pascals, which is considered to be the quietest sound normal ears can hear.* This sound level is assigned the value zero dB, and each increment in sound level of 20dB represents a relative change in sound pressure of ten times. A 3 dB increase in sound level represents a doubling of sound energy, but it will not be experienced as a doubling of loudness. Loudness refers to how people judge the volume of sound. As a rule of thumb, a 1 dB change in sound level requires close attention to notice a change in loudness; a 3 dB

change is clearly noticeable; and a 10 dB change will be nearly twice (or one-half) as loud. A noise of 70 dB sound is about twice as loud as 60 dB and four times as loud as 50 dB. The 50 dB noise will be twice as loud as 40 dB, and so on. Figure 1 illustrates the relationships among sound level, relative sound pressure, and relative loudness.

Sound level diminishes as distance from the source increases. For a point source of sound in free space, the rate at which the sound attenuates is inversely proportional to the square of distance from the source. This means the sound level will drop 6 dB each time the distance from the source is doubled. A stream of vehicles on a busy highway represents a "line" source of sound and the rate of attenuation is different from a point

¹ County of Santa Barbara Resource Management Department, Comprehensive Plan Noise Element and Division of Environmental Review, 1989.

source. The sound level from a busy highway will drop only about 3 dB for each doubling of distance. Sound attenuation from a train resembles a line source near the railroad tracks and at further distances (beyond about 3/10 the length of the train) can be considered a point source.

Because decibels are logarithmic ratios, they cannot be manipulated in the same way as arithmetic numbers. Addition of decibels produces such results as $70 \text{ dB} + 70 \text{ dB} = 73 \text{ dB}$. Thus, if a single automobile produces a sound level of 73 dB, two such automobiles would produce a total sound level of 73 dB. Twice as much acoustic energy is being generated, and this is represented in decibels as a 3 dB change. As a second example of decibel addition, if one automobile produces a sound level of 70 dB and the other 60 dB, the combined sound level will be 70.4 dB. When the difference between two sound levels is greater than about 10 decibels, the lesser sound is negligible in terms of affecting the total level.

Air and ground absorption of sound waves will further attenuate sound levels. The rate at which these factors attenuate sound depends on frequency content of the sound, air temperature, relative humidity, terrain, and type of ground cover.

2. Frequency

A second characteristic of sound which must be included in the measurement is frequency. Typical community sounds consist of a wide range of frequencies, from the low roar of a diesel engine to the high-pitched whine of jet aircraft. Frequency refers to the number of times per second the object producing the sound vibrates, or oscillates. The unit of measurement of frequency is Hertz - one vibration per second being equal to one Hertz (Hz).

The human ear responds to sounds whose frequencies are in the range from 20 Hz to 20,000 Hz. Frequencies above or below this range are inaudible to humans and are referred to as ultrasound and infrasound, respectively. Within the audible range, subjective response to noise varies. People generally find higher pitched sound to be more annoying than lower pitched sounds. Sensitivity of the ear also varies. While "loudness" depends primarily on sound pressure, it is also affected by frequency; and while "pitch" is closely related to frequency, it also depends on sound pressure. Thus, a 2,000 Hz tone at 5 dB sound pressure level sounds just as loud as a 20 Hz tone at 70 dB sound pressure level; 20 Hz at 70 dB sound pressure level is quiet to the ear; 2,000 Hz at 70 dB sound pressure level is quite loud.

Because of these variations, a great deal of effort has gone into the development of systems which relate physical measurements of noise to subjective human response. Most of these depend on calculations based on sound pressure levels in various frequency bands "weighted" to correspond with human response. These procedures are cumbersome for most community noise assessment needs. Presently, the most widely used measure of "loudness" for community noise evaluation is the A-weighted sound level. The primary advantage of this descriptor is simplicity, and it has fair correlation with subjective assessments of loudness and annoyance². Sound levels in this report are A-weighted and referred to as "dB(A)".

3. Duration

The third characteristic of noise that must be accounted for to describe human noise response is duration. Noise-induced hearing loss, for example, is directly related to magnitude, frequency content, and duration of noise exposure. Annoyance due to noise is also associated with how often noise is present and how long noise persists.

Environmental noise at any location is usually fluctuating from quiet one moment to loud the next. To adequately describe a noise environment, it is necessary to quantify the variation in noise level over time. One way to do this is to use a statistical approach and specify noise levels that are observed to be exceeded a given percentage of time. Commonly used exceedance levels are:

- L_{90} - That level exceeded 90 percent of the time, sometimes referred to as the Residual Noise Level.
- L_{50} - That level exceeded 50 percent of the time, the median sound level.
- L_{10} - That level exceeded 10 percent of the time, representing higher level, shorter duration noise.

Another approach to quantifying time-varying noise levels is to calculate the Energy Equivalent Sound Level (L_{eq}) for the time period of interest. L_{eq} represents a sound level which, if continuous, would contain the same total acoustical energy as the actual time-varying noise which occurs during the observation period.

Time-Weighted Noise Measures; CNEL, L_{DN} .

Noise in a residential, or other noise-sensitive setting, is often more bothersome at night than during daytime. At night, background noise levels outdoors are generally lower than during the day. Also, the activity in most households decreases at night, lowering internally generated noise levels. Individual noise events are therefore more intrusive at night, since they stand out against the background more sharply than during the daytime.

Community Noise Equivalent Level (CNEL) and Day-Night Average Level (L_{DN}) are noise indices that attempt to take into account differences in intrusiveness between daytime and nighttime noises. CNEL and L_{DN} values result from the averaging of hourly Energy-Equivalent Sound Levels for a 24-hour period, with a weighting factor applied to evening and nighttime L_{eq} values.

For CNEL and L_{DN} calculations, the day is divided into time periods with the following weightings:

Community Noise Equivalent Level

- Daytime: 7 a.m. - 7 p.m. - weighting factor of 1
 - Evening: 7 p.m. - 10 p.m. - weighting factor of 5 dB
 - Nighttime: 10 p.m. - 7 a.m. - weighting factor of 10 dB
- #### Day-Night Average Level

- Daytime: 7 a.m. - 10 p.m. - weighting factor of 1
- Nighttime: 10 p.m. - 7 a.m. - weighting factor of 10 dB

CNEL and L_{DN} have been shown to have good correlation with group responses to long-term noise exposure. In practice, CNEL and L_{DN} are virtually identical. Experience with highway, railroad, airport, and general community noise in this County has shown that the two measures consistently agree with 1.0 dB. In this report they are used interchangeably.

Noise Exposure Contours

Noise exposure contours are the mapped expressions of points of equal average noise level, analogous to topographic contours which are the mapped expression of points of equal elevation. Noise contours can be drawn with respect to any noise measure; to satisfy State requirements for the Noise Element, L_{DN} and CNEL have been used in this report. Noise contours usually refer to a single source of noise such as a freeway, although they sometimes combine multiple sources.

4. Ambient Noise

Ambient noise refers to background noise. It is the composite of noise from all sources which impact a given location. It is the normally existing noise environment at a particular place. Ambient noise levels are measured as described in the previous sections, using weighted noise measurement systems.

Noise impacts associated with proposed projects may involve ambient noise in several ways. A project may involve a significant noise impact if it generates noise that creates a substantial increase in ambient noise levels affecting noise-sensitive uses in the project vicinity. A project may also have significant noise impacts if the project involves siting of a noise-sensitive land use in a location with high ambient noise levels.

B. NOISE THRESHOLD CRITERIA

1. Controlling Noise

Significant noise impact problems in Santa Barbara County are primarily associated with transportation facilities. Noise in the vicinity of airports, railroads, and major trafficways exceeds health and welfare criteria for noise exposure in relation to residential use. While noise from commercial, industrial, agricultural, and "population" activities may be part of the ambient noise at any location, rarely do these generate noise of the same magnitude as transportation sources.

In the unincorporated County, it is estimated that as many as 8,000 housing units and 21,000 persons are potentially exposed to transportation noise at Day-Night Average Levels exceeding 60 dB. The exposure level of 60-65 dBA is considered to be the maximum outdoor noise level compatible with residential and other noise-sensitive land uses. In locations outside the immediate influence of a major transportation noise source, ambient Day-Night Average Levels typically range from 46 dB(A) to 57 dB(A). Although localized noise problems will exist in these areas, generally ambient noise levels are acceptable, based on health and welfare criteria.

Controlling the impact of transportation noise must be approached both by quieting vehicles and by protecting sensitive land uses in locations where noise impact is excessive. The first of these approaches is beyond the legal jurisdiction of the County

because Federal and State legislation is preemptive in the field of noise source control. The County's primary opportunities to manage transportation noise impact lie in:

- a. Planning for compatible uses near existing transportation facilities.
- b. Imposing design standards on proposed sensitive development near existing transportation facilities.
- c. Incorporating noise control features into the design of new or expanded trafficways to protect existing sensitive areas.

2. Planning Policies

- a. In the planning of land use, 65 dB(A) Day-Night Average Sound Level is regarded as the maximum exterior noise exposure compatible with noise-sensitive uses unless noise mitigation features are included in project designs.
- b. Noise-sensitive land uses are considered to include:
 1. Residential, including single- and multi-family dwellings, mobile home parks, dormitories, and similar uses.
 2. Transient lodging, including hotels, motels, and similar uses.
 3. Hospitals, nursing homes, convalescent hospitals, and other facilities for long-term medical care.
 4. Public or primate educational facilities, libraries, churches, and places of public assembly.
- c. Noise-sensitive uses proposed in areas where the Day-Night Average Sound Level is 65 dB(A) or more should be designed so that interior noise levels attributable to exterior sources do not exceed 45 dB(A) L_{DN} when doors and windows are closed. An analysis of the noise insulation effectiveness of proposed construction should be required, showing that the building design and construction specifications are adequate to meet the prescribed interior noise standard.
- d. Residential uses proposed in areas where the Day-Night Average Sound Level is 65 dB(A) or more should be designed so that noise levels in exterior living spaces will be less than 65 dB(A) L_{DN} . An analysis of proposed projects should be required, indicating the feasibility of noise barriers, site design, building orientation, etc. to meet the prescribed exterior noise standard.
- e. The Resource Management Department, Public Works Department's Building and Safety Division, and Health Department's Environmental Health Services Division have administrative procedures for determining project compliance with the State Noise Insulation Standards related to interior noise levels.
- f. For protection of sensitive activities, as well as the airports, noise-sensitive land uses, other than hotels and motels insulated to the level prescribed in the State Noise Insulation Standards, should not be permitted within the 65 dB(A) CNEL contour of any airport.

- g. Residential use should be avoided within the 65 dB(A) CNEL contour of any airport and under airport traffic patterns.
- h. Zoning ordinance noise level provisions for the M-1 and M-2 zone districts require that noise generated by any use on the property shall not exceed seventy-five (75) dB L_{10} at or beyond any point along the property boundary upon which such use is located. In no case shall the volume of sound exceed sixty-five (65) dB L_{dn} at the location of any nearby noise sensitive uses. The M-RP zone district requires that the volume of sound generated or resulting from any use, other than motor vehicles, operated in any lot shall not exceed fifty (50) decibels at any point along the boundary of or outside of the lot upon which such use is located. All of these requirements assume measurements are taken during calm air conditions.
- i. In the planning and design of major transportation routes and facilities, noise impacts on existing or planned land uses are carefully considered so that noise-related land use conflicts are minimized.
- j. The Goleta Community Plan (Policy N-GV-1) requires that interior noise-sensitive uses (e.g., residential and lodging facilities, educational facilities, public meeting places and others specified in the Noise Element) shall be protected to minimize significant noise impacts.
- k. The Montecito Community Plan requires that noise-sensitive uses, as defined in the Noise Element, shall be protected from significant noise impacts.
- l. The Summerland Community Plan requires that interior noise sensitive uses, noise-sensitive uses as defined in the Noise Element, shall be protected from significant noise impacts.

3. Noise Thresholds

The following are thresholds of significance for assisting in the determination of significant noise impacts. The thresholds are intended to be used with flexibility, as each project must be viewed in its specific circumstances.

- a. A proposed development that would generate noise levels in excess of 65 dB(A) CNEL and could affect sensitive receptors would generally be presumed to have a significant impact.
- b. Outdoor living areas of noise sensitive uses that are subject to noise levels in excess of 65 dB(A) CNEL would generally be presumed to be significantly impacted by ambient noise. A significant impact would also generally occur where interior noise levels cannot be reduced to 45 dB(A) CNEL or less.
- c. A project will generally have a significant effect on the environment if it will increase substantially the ambient noise levels for noise-sensitive receptors adjoining areas. Per item a., this may generally be presumed when ambient noise levels affecting sensitive receptors are increased to 65 dB(A) CNEL or more. However, a significant effect may also occur when ambient noise levels affecting sensitive receptors increase substantially but remain less than 65 dB(A) CNEL, as determined on a case-by-case level.

- d. Noise from grading and construction activity proposed within 1600 feet of sensitive receptors, including schools, residential development, commercial lodging facilities, hospitals or care facilities, would generally result in a potentially significant impact. According to EPA guidelines (see Figure 2) average construction noise is 95 dB(A) at a 50' distance from the source. A 6 dB drop occurs with a doubling of the distance from the source. Therefore, locations within 1600' of the construction site would be affected by noise levels over 65 dB(A). To mitigate this impact, construction within 1600 feet of sensitive receptors shall be limited to weekdays between the hours of 8 AM to 5 PM only. Noise attenuation barriers and muffling of grading equipment may also be required. Construction equipment generating noise levels above 95 dB(A) may require additional mitigation.

All noise studies evaluating ambient noise levels and changes resulting from project development should be prepared by licensed acoustical engineers.

FIGURE 1: SOUND LEVEL OF COMMON SOUNDS

<u>Sound</u>	<u>Sound Pressure Level</u>	<u>Relative Sound Pressure</u>	<u>Relative Loudness (approximate)</u>
Jet Take-Off, 200 feet	120	1,000	64
Riveting Machine	110		32
Power Mower, 5 feet	100	100	16
Motorcycle, 50 feet	90		8
Inside Sports Car (50 mph)	80	10	4
Vacuum Cleaner	70	3	2
Ordinary Conversation, 3 feet	60	1	1
Private Business Office	50		1/2
Inside Average Residence	40	.1	1/4
Soft Whisper, 5 feet	30		1/8
Inside Recording Studio	20	.01	1/16
Rustle of leaves	10		1/32
Threshold of Hearing	0	.001	1/64

*Reference 20 microPascals, adapted from several sources

References

1. U.S. Department of Transportation, Transportation Noise and Its Control (Washington, D.C. US GPO) 1972
2. U.S. Environmental Protection Agency, Public Health and Welfare Criteria For Noise (Washington, D.C. US GPO) 1973
3. U.S. Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety (Washington, D.C. US GPO) 1974

FIGURE 2

Noise Levels for Typical Construction Equipment Referenced to 50 Feet

		NOISE LEVEL (dba) AT 50 FEET					
		60	70	80	90	100	110
EQUIPMENT POWERED BY INTERNAL COMBUSTION ENGINE	EARTH MOVING	COMPACTERS (ROLLERS)		■			
		FRONT LOADERS		■	■		
		BACKHOES		■	■	■	
		TRACTORS		■	■	■	
		SCRAPERS, GRADERS		■	■	■	
		PAVERS			■	■	
		TRUCKS			■	■	
EQUIPMENT POWERED BY INTERNAL COMBUSTION ENGINE	MATERIALS HANDLING	CONCRETE MIXERS		■	■		
		CONCRETE PUMPS			■		
		CRANES (MOVABLE)		■	■		
		CRANES (DERRICK)				■	
EQUIPMENT POWERED BY INTERNAL COMBUSTION ENGINE	STATIONARY	PUMPS		■			
		GENERATORS		■	■		
		COMPRESSORS		■	■		
IMPACT EQUIPMENT	PNEUMATIC WRENCHES			■			
	JACK HAMMERS AND ROCK DRILLS			■	■		
	PILE DRIVERS (PEAKS)				■	■	
OTHER	VIBRATOR		■	■			
	SAWS		■	■			

Note: Based on limited available data samples.

Source: EPA, 1971: "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," NTID 300-1.

13. QUALITY OF LIFE GUIDELINES

Quality of life can be broadly defined as the aggregate effect of all impacts on individuals, families, communities, and other social groupings and on the way in which those groups function. The quality of life subsumes what others label as the psychological, psychosocial, well-being, or satisfactoral impacts. Quality of life has implications for mental health and well-being, social structure, and community well-being:

- * Mental health and well-being encompasses changes in the mental states of individuals, including their attitudes, perceptions, and beliefs as well as the associated psychological and physiological consequences of those changes.
- * Social structure encompasses changes in the social organization of families and groups, their collective postures over the impacts, and how impacts affect the cohesion and viability of the group.
- * Community well-being encompasses changes in community structure that relate to non-economic factors, such as desirability, social cohesion, livability, attractiveness, and sense of place.

Quality of life issues, while hard to quantify, are often primary concerns to the community affected by a project. Examples of such issues include the following:

- Loss of privacy;
- Neighborhood incompatibility;
- Nuisance noise levels (not exceeding noise thresholds);
- Increased traffic in quiet neighborhoods (not exceeding traffic thresholds);
- Loss of sunlight/solar access.

The County interprets the CEQA mandate for maintaining a high quality environment strictly, and considers the maintenance of a high quality human environment an important responsibility. The State CEQA Guidelines clearly support the use of local standards in determining what constitutes a significant effect on the environment. Therefore, on a case by case basis, the elements comprising "quality of life" shall be considered. Where a substantial physical impact to the quality of the human environment is demonstrated, the project's effect on "quality of life" shall be considered significant.

14. PUBLIC SAFETY THRESHOLDS

A. PURPOSE

The thresholds contained within this chapter assist the County in classifying the significance of impacts to public safety in a consistent and comprehensive manner when considering a discretionary land-use action. These thresholds focus on involuntary public exposure to acute risks that stem from certain types of activities with significant quantities of hazardous materials. Such activities include installations or modifications of facilities that handle hazardous materials (hereinafter referred to as hazardous facilities), and the transportation of hazardous materials. However, the thresholds also assist in identifying potentially significant impacts to non-hazardous land uses proposed in proximity to existing hazardous facilities.

The thresholds employ quantitative measures of societal risk during the environmental review of a proposed development to indicate whether the annual probability of expected fatalities or serious injuries is significant or not. Measuring societal risk must comply with County-approved guidelines; however, it is not necessary to complete a quantitative risk analysis in order to determine whether an environmental impact report is required or not during preparation of an initial study. Both unmitigated risk estimates and the effectiveness of options to mitigate significant risk should be tested against the threshold. If a proposed project exposes the public to significantly high risks despite all feasible measures to mitigate the impact, then approval of the project requires a statement of overriding considerations, adopted by the approving authority and supported by substantial evidence in the record. Upon project approval, the risk estimates should be adjusted and charted on the thresholds to reflect the risk accurately, based on accepted mitigation, for future land-use planning and permitting purposes.

As described below, these thresholds should not function as the sole determinants of significance for public safety impacts. Rather, they must be used in concert with applicable County policy, regulation, and guidelines to address other qualitative factors specific to the project which also help determine the significance of risk. For example, highly sensitive land uses (e.g., hospitals or schools) are generally given greater protection from hazardous situations overall. Also, long-term significant risks (e.g., natural gas production) generally are treated more conservatively than relatively short-term risks (e.g., natural gas exploration).

B. DEFINITIONS

ACUTE RISK -- Chance of fatality or serious injury due to a single, short-term, involuntary exposure to a release of hazardous gas, liquid, or solid, or to a fire or explosion.

FATALITY -- Death, including exposure to an accident that produces escape-impairing symptoms and considering nearly all individuals that could be exposed (i.e., not just healthy workers, but the elderly, the young and individuals with preexisting health problems).

FEASIBLE -- Capable of being accomplished in a successful manner with a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

OCCUPATIONAL SAFETY -- Applies to employees and contractors (not including construction crews) of a hazardous facility (including people who visit the hazardous facility to provide services or conduct business).

QUALITATIVE FACTORS -- Consideration of special characteristics of risk not generally included in its quantification but being sufficiently important to influence the identification and analysis of significant public safety effects, directly or indirectly.

QUANTITATIVE FACTORS -- Use of relevant empirical data, in raw form or modified as necessary by expert judgment, and employed in scientifically or technically accepted methodologies, to predict the probability and consequences of an accident with regard to a potentially vulnerable individual or group of people.

SAFETY -- A judgment of the acceptability of risk, recognizing that there is always some chance of an accident that may adversely affect someone, no matter what precautionary steps are taken to prevent the accident or protect against its consequences.

SERIOUS INJURY -- Physical harm to a person that requires significant medical intervention.

SOCIETAL RISK -- Risk to a group of people, expressed in terms of the distributed frequency of events that cause multiple casualties or, when appropriate, the likelihood of casualties at a specific location or area.

C. APPLICABILITY

These thresholds apply to risks stemming from the following facilities and activities if (a) they are subject to a discretionary land-use action (or would communicate its concerns for public safety to another jurisdiction that is making a discretionary decision such as routes for shipping hazardous materials), and (b) initial analysis reveals substantial evidence to support a fair argument that the potential of a significant impact to public safety could result from approval of the project subject to such action.

1. Oil wells and gas wells (unless abandoned or undergoing abandonment), and associated production.
2. Gas and hazardous liquids pipelines, including oil if a significant risk is expected, but exempting existing natural gas pipelines owned by a Californian public utility regulated by the California Public Utilities Commission and operated for the purpose of delivering gas directly to the Goleta storage field or consumers (except activities related to liquefied natural gas), and exempting new low pressure distribution pipelines (125 psig or lower) operated by a Californian public utility and regulated by the California Public Utilities Commission.
3. Oil and/or gas processing and storage facilities, including facilities for removing sulfur, removing gas liquids, and compressing gas.
4. Oil refineries.

5. Handling, storage, and transport of compressed natural gas or methanol related to facilities for refueling motor vehicles with these materials.
6. All handling, storage, and transport of chlorine in containers with a capacity of one ton or more, or an equivalent amount of chlorine in bottles or cylinders connected through a common header.
7. Handling, storage, and transport of anhydrous ammonia in containers with a capacity of one ton or more, or an equivalent amount of anhydrous ammonia in bottles or cylinders connected through a common header.
8. Handling, storage, and transport of acutely hazardous rocket propellants such as nitrogen tetroxide (including instances where the County would communicate with other jurisdictions about discretionary actions that affect public safety in this County such as designation of routes for transporting hazardous materials).
9. Handling, storage, and transport of spent radioactive fuel and other high-level, radioactive materials (including instances where the County would communicate with other jurisdictions about discretionary actions that affect public safety in this County such as the designation of route for transporting hazardous materials).
10. Storage of natural gas liquids, including liquified petroleum gas, unless such storage is limited to a single container with a maximum capacity of 10,000 gallons or less and does not require refilling more than once weekly.
11. Facilities of a type not addressed in 1-10 above, and not exclusively dedicated to retail distribution of consumer products (such as gasoline stations, or hardware, paint, and dry-cleaning stores) that:
 - (a) use a classified Class A or B explosive (per Title 49, Code of Federal Regulations, 171-179); or
 - (b) use substances classified as high-level radioactive materials; or
 - (c) use specified quantities of regulated substances (pursuant to Title 19 of the California Code of Regulations, Division 2, Chapter 4.5) and meet all of the following criteria:
 - (i) The regulated substance(s) is stored as a compressed gas or liquified compressed gas, or is expected to vaporize or evaporate quickly upon release (e.g., through failure of container, piping, or valve), or is stored as a liquid at a temperature that exceeds its boiling point;
 - (ii) The regulated substance(s) has the potential to cause a significant risk to public safety according to the County's environmental thresholds. (For example, the regulated substance(s) exists as a gas or vapor upon accident release, and will either release into the open atmosphere or become dangerously explosive in a confined environment.)
 - (iii) The regulated substance(s) is associated with a specific activity that is generally considered to be incompatible with surrounding land uses.

12. All development proposed in proximity to one or more existing hazardous facilities as described above, unless (a) the hazardous facility(ies) are inoperative for the purpose of abandonment, or (b) the proposed development is a single family residential unit which the County considers to be a voluntary exposure to the hazardous facility, or (c) the proposed development does not require a discretionary land-use action.

In cases 1 through 11 listed above, these thresholds apply to risks imposed on present and reasonably projected future land use, considering principally permitted uses under current zoning along with any conditional uses that are permitted or under review.

With regard to land uses with transitory populations (e.g., parks, roads, pedestrian and bike paths), these thresholds apply only when these populations are considered to be often present often or to often flow continuously (e.g., a frequently used recreational park or frequently traveled road). They do not apply when transitory populations are considered to be sporadic or often absent (e.g., hiking trails and other uses where the infrequent presence of people renders inclusion herein as overly speculative).

These thresholds do not apply to occupational safety (i.e., employees of the hazardous facility or people who visit the hazardous facility to provide services or conduct business). Occupational risk, which is governed by State and Federal OSHA, is considered to be more voluntary characteristically and, as such, is generally judged according to more lenient standards of significance than those used for involuntary exposure.

Additionally, these thresholds do not address impacts other than public safety, although accidents that involve hazardous materials potentially impact communities and the environment in other ways (e.g., ecological damage, ground/surface water contamination, demand on fire and police services, economic disruption, interruption to surrounding land uses). These thresholds may be used to address the probability of such impacts occurring. The determination of significance of all such impacts is left to other applicable thresholds and the judgment of specialists that address those impacts in environmental reviews.

Lastly, these thresholds do not address issues of chronic risks which adversely impact public health as a result of long-term or repeated exposure to a hazardous material or situation. Issues of chronic exposure to air toxins are covered under the thresholds for air quality, and the Air Pollution Control District advises on appropriate methodology for modeling air quality. Air quality modeling and methods of health risk assessment to address soil and water contamination differ from those applied to acute risks. Consequently, any application of this threshold to determine the significance of chronic risk should be done so cautiously, making necessary adjustments to the threshold as necessary.

D. DETERMINING WHEN TO DO QUANTITATIVE RISK ANALYSIS

The thresholds of significance on pages 8 and 9 are designed for use during the preparation of an environmental impact report if the initial study reveals substantial evidence of a potentially significant risk to public safety due to exposure to hazardous materials. Comprehensive quantitative analysis of societal risk is necessary at this stage; however, this level of analysis is not required to prepare an initial study.

Instead, a 4-step screening methodology is used during the preparation of the initial study for determining the potential of a project to have a significant effect on public safety.

1. Certain facilities, such as major sour gas pipelines and gas processing facilities that support offshore oil and gas facilities, would automatically be subject to quantitative risk analysis and the risk thresholds.
2. For facilities not included in step 1, staff first determines the hazard zone based on the threshold levels of concentration for the particular hazardous materials involved and reasonably worst-case accidents. Levels of concentration for most chemicals are identified by the state. The hazard zones for materials commonly used in the county will be determined. Any hazard zone that encompasses other potentially inhabitable land uses triggers step 3, inclusive of non-hazardous development (other than a single-family residence) proposed within the hazard zone of an existing hazardous facility. Otherwise, the proposed project is not considered to have a significant impact due to acute exposure to hazardous materials.
3. If the hazard zone encompasses off-site receptors, staff then calculates the Individual Risk for the hazardous material(s) involved, based on the probability of an accident occurring, and proceeds to step 4. Calculations may be pre-determined based on existing information or will be accomplished through a qualified risk analyst.
4. Staff adjusts the Individual Risk to reflect conditional probabilities, called the Individual Specific Risk. Such probabilities address factors such as number of hours in the day in which someone is present in the hazard zone. A measurement of one in a million (1×10^{-6}) on an annual basis indicates sufficient evidence to trigger the risk thresholds and a comprehensive risk analysis.

E. USING THESE RISK THRESHOLDS

When an Environmental Impact Report is required, the CEQA Guidelines stipulate that it identify and focus on significant environmental effects of a proposed project. Such efforts include health and safety problems caused by the physical changes to the environment and any significant effects the project might cause by bringing development and people into the area affected by a significant hazard (section 15126). In so doing, the report must also identify and describe any significant environment effects which cannot be avoided if the proposed project is approved and implemented (generally referred to as unavoidable impacts). The Governor's Office of Planning and Research recommends that CEQA lead agencies establish thresholds of significance. These thresholds may be qualitative, quantitative, or both, whichever form best fits their purpose of providing an analytical method to gauge the significance of a particular environmental effect in a consistent, efficient, and predictable manner.

For identifying the significance of impacts to public safety for purposes of CEQA compliance, the County has consistently focused on quantifying societal risk. In general, risk is a compound measure of the probability and consequences of an adverse effect. Common expressions of risk include individual risk and societal risk. Individual risk is somewhat restricted in its ability to reflect actual risk; it only expresses the risk to a single individual without consideration of the total vulnerable population in a hazardous zone (e.g., a remotely located facility carries an equivalent individual risk as one located next to a hospital). Societal risk, illustrated as a risk

spectrum, expresses a continuous variation in risk as a relationship of probability and consequence, the latter measuring the number of estimated fatalities and serious injuries.

The thresholds illustrated in figures 1 and 2 require quantitative risk analysis to determine the total societal risk attributable to the full set of possible accidents that can occur from the operation of a hazardous facility or undertaking of an activity that involves handling of hazardous materials. The analysis must consider both the significance of the risk and the beneficial effect of mitigation. It must also comply with County guidelines for risk assessment to ensure compatibility with the thresholds and consistency over time. When these thresholds are applied to proposed development in proximity to an existing hazardous operation, the risk measurement must be adjusted to reflect reductions in risk due to mitigation and to reflect societal risk to the newly proposed development.

These thresholds refine previous, quantitative thresholds by employing the entire risk spectra of a project and they refine the qualitative character of previous thresholds by employing qualitative factors into the determination of significance. The thresholds provide three zones -- green, amber, and red -- for guiding the determination of significance or insignificance based on the estimated probability and consequence of an accident. Risk analysis is based on best available data and modeling techniques but still requires informed assumptions to compensate for gaps in data, shortfalls in modeling, or ability to predict future outcomes with 100% accuracy. Given the unavoidable margin of error associated with any projection, the amber zone represents an area where caution is recommended, particularly considering the presence or absence of relevant qualitative factors; meanwhile, the overall goal should remain focused on maximizing public safety, using feasible mitigation to achieve a risk spectrum that falls solely within the green zone.

Risk spectra plotted on the thresholds should be interpreted as follows for purposes of determining the potential significance of an adverse impact to public safety.

1. Class I Impact. Class I applies to adverse impacts that, following environment review, the County considers to be unavoidable and significant (i.e., cannot be mitigated to insignificance via feasible measures).

Regarding public safety, the County considers a societal risk spectrum that falls in the red or amber zones after application of all feasible mitigation to be an unavoidable, significant impact on public safety.

Class I impacts to public safety may constitute an unreasonable risk, considering how far the risk spectrum penetrates into the red zone, the feasibility of alternative locations with lesser risk, other qualitative factors, and applicable law and guidelines. Unreasonable risk shall be determined for each project individually, based on policies provided in the Safety Element and other relevant policies and codes. Lacking any such determination, project approval requires a statement of overriding considerations by the applicable land-use authority, showing that the benefits of the proposed development exceed its adverse impacts to public safety.

2. Class II Impact. Class II applies to adverse impacts that, following environmental review, the County considers to be significant but avoidable through application of feasible mitigation (i.e., mitigation can render the impact to be insignificant).

Regarding public safety, the County considers a societal risk spectrum that falls in either the red or amber zones to be a significant impact to public safety. Such risk shall be considered a Class II impact for purposes of compliance with CEQA if application of feasible mitigation is sufficient to lower the risk spectrum so that it falls fully within the green zone.

3. Class III Impact. Class III applies to adverse impacts that, following environmental review, the County considers to be insignificant for purposes of complying with CEQA.

Regarding public safety, the County considers a societal risk spectrum that falls completely in the green zone to be a Class III, insignificant impact to public safety and no mitigation (or additional mitigation) is required for purposes of compliance with CEQA.

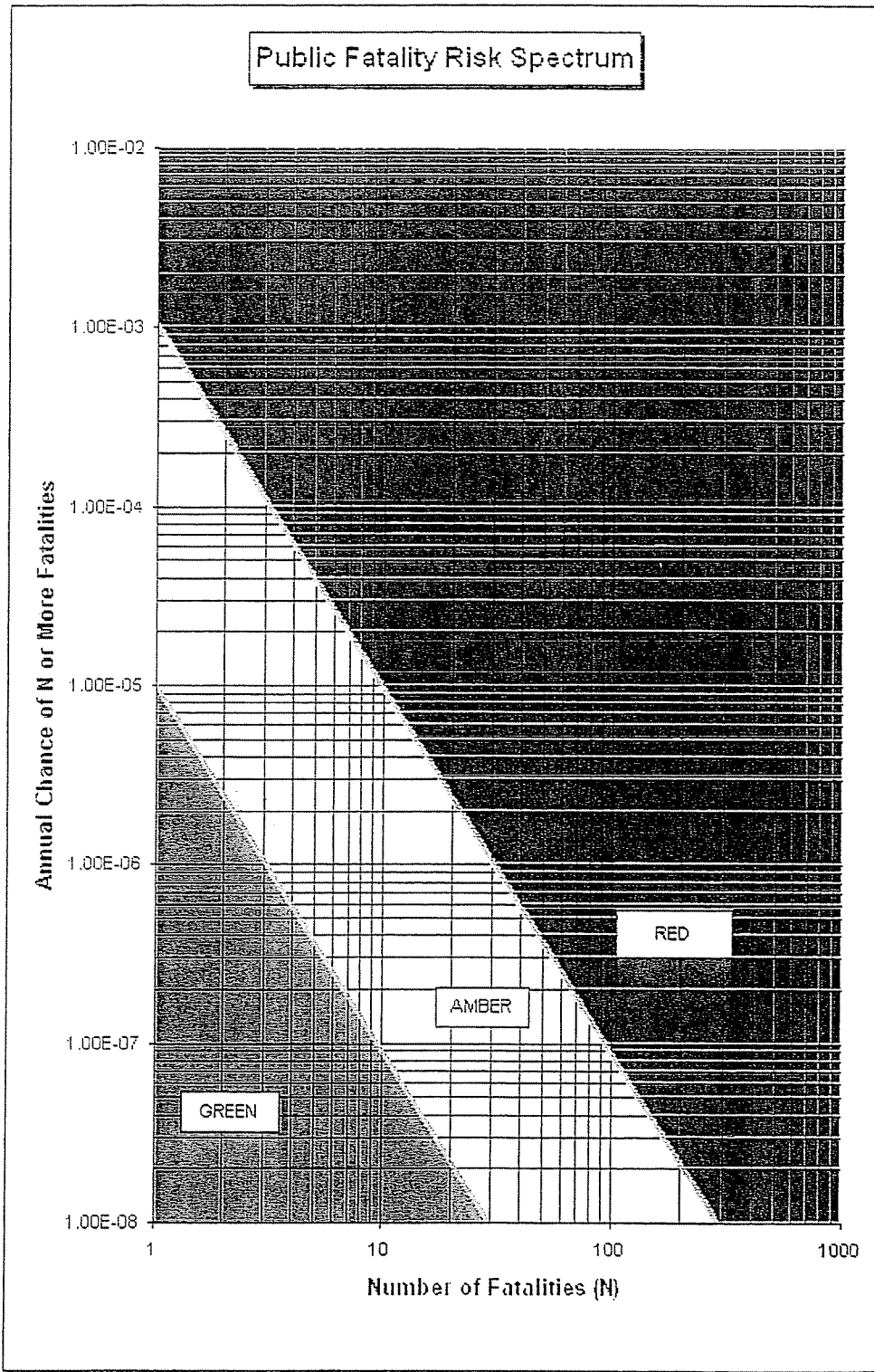


Figure 1
 Santa Barbara Fatality Risk Thresholds

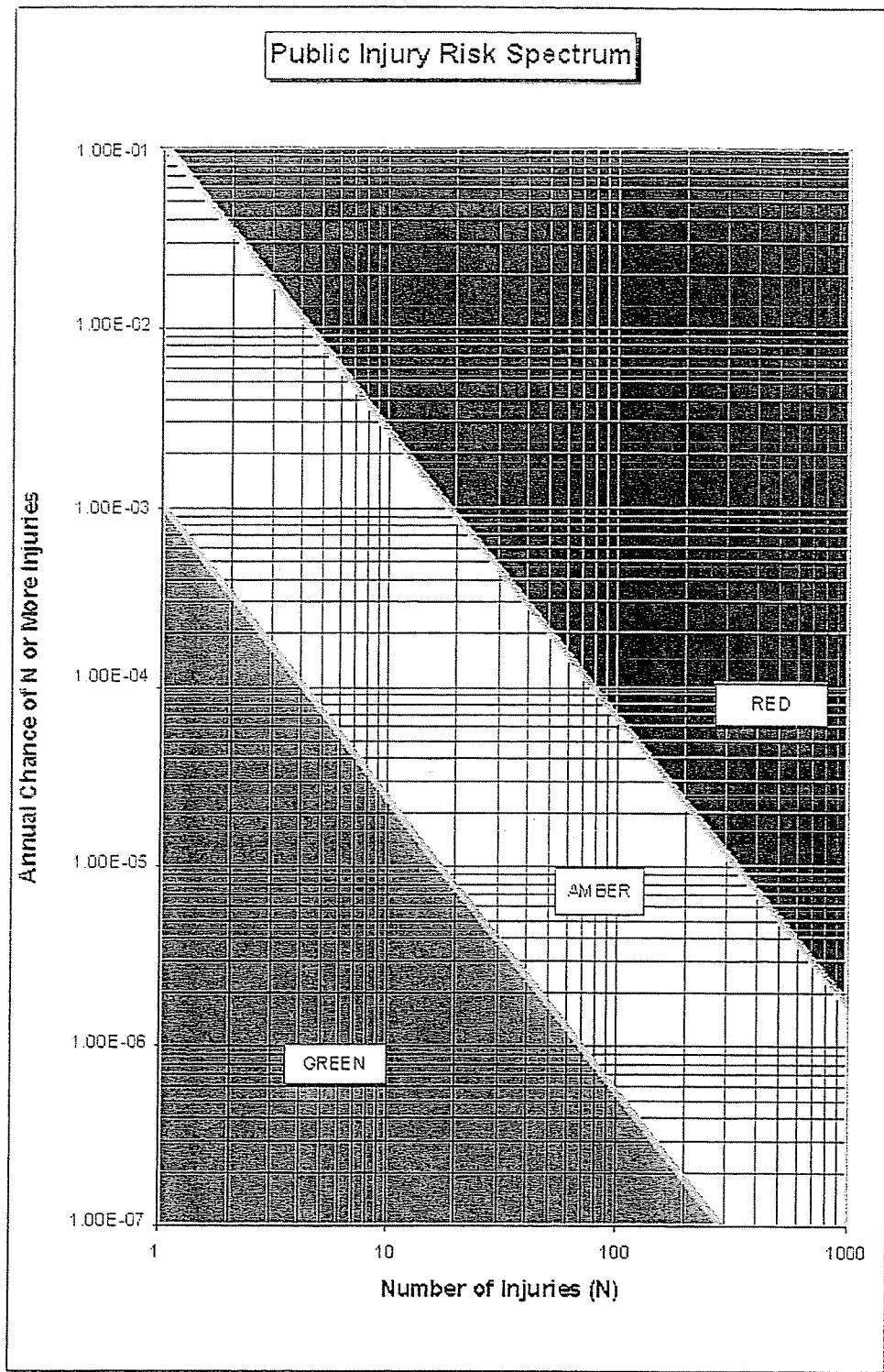


Figure 2
Santa Barbara Injury Risk Thresholds

15. SCHOOLS THRESHOLDS (INTERIM)

Issue Summary

The issue of existing and potential overcrowding of school facilities is of concern both locally and State-wide given the overall fiscal situation throughout the State of California and given the legal constraints regarding collection of funds and other mitigation on a project specific level. Several of the school districts in the County are currently experiencing overcrowding, including the Orcutt Union School District, Santa Maria Joint Union High School, and Hope School District, among others. Increased enrollment is difficult for the districts to deal with for a number of reasons which vary by district, including lack of existing facilities, lack of funding to construct new facilities and fund additional teachers, and lack of land to accommodate expanding campuses.

Under existing state law, a local jurisdiction cannot require mitigations or apply conditions which exceed the fees as allowed by state law for a development project which is consistent with its General Plan Designation. In many instances, this creates a situation where overcrowding may result from a project without the opportunity for mitigation through project conditions attached to a County permit. However, there are other measures, beyond the authority of the County, which may be used by the State and the school districts to address school facility impacts. These may include the use of temporary/portable classrooms, intra- or inter-district student transfers to less crowded schools, double session or year-round school schedules, and combination of classes of students on several grade levels. In the situation where the County is not able to recommend project specific mitigation which may reduce impacts to school facilities, the focus of CEQA is to disclose the impacts and to discuss the options which the school districts may use to address the overcrowding issue.

Determination of Significant Impact

A significant level of school impacts is generally considered to occur when a project would generate sufficient students to require an additional classroom. This assumes 29 students per classroom for elementary/junior high students, and 28 students per classroom for high school students, based on the lowest student per classroom loading standards of the State school building program. This threshold is to be applied in those school districts which are currently approaching, at, or exceeding their current capacity.

A project's contribution to cumulative schools impacts will be considered significant if the project specific impact as described above is considered significant.

Methodology for Determining Significance

At the present time, RMD has very little countywide information regarding school capacity status. Until we have compiled information on the various school districts in the County, the project planner should individually contact districts which may be affected by their project. A

form has been developed which includes relevant questions to ask the affected districts regarding capacity, enrollment projections, and facility information. This form should be used to ensure that adequate information is received from the districts to determine if a significant impact would occur from the project.

Context of Analysis

Based upon Corona-Norco USD v. City of Corona, an ND rather than an EIR may be prepared for development projects having Class I impacts only on schools (schools impacts are the only cause for preparation of an EIR) for which mitigation is limited by law to payment of standard fees.

Mitigation Measures

The following mitigation measures may be used to address impacts to affected schools. However, mitigation is limited by state law. For projects which do not involve a legislative act, payment of standard fees, as specified in the second mitigation measure, is the maximum mitigation allowed. *Staff is currently reviewing mitigation options for projects which do involve a legislative act based upon the outcome of the recent election and other possible changes in applicable law. Staff will provide mitigation language for the Planning Commission's review during the hearing process on the thresholds.*

1. The applicant shall notify the *[Planner insert appropriate school district]* of the expected buildout date of the project to allow the District to plan in advance for new students.
Plan Requirement: A copy of the notice shall sent to RMD prior to land use clearance for the project.

MONITORING: RMD shall ensure letter is sent prior to issuing land use clearance.

2. The applicant shall pay the adopted fees per square foot of livable space being created by the project to the appropriate school district(s). These fees are used by the districts to construct temporary or permanent classroom space, but are not used to provide additional teachers. **Plan Requirements and Timing:** The applicant shall submit final square footage calculations and a copy of the fee payment to the school district(s) prior to

MONITORING: RMD shall ensure payment made prior to issuance of building permits.

16. SURFACE AND STORM WATER QUALITY SIGNIFICANCE GUIDELINES

A. Introduction

The following information is excerpted from several EPA publications including the preamble to the NPDES Phase II rules as published in the Federal Register¹ and EPA storm water fact sheets and guidance documents².

Storm water runoff from lands modified by human activities can harm surface water resources and, in turn, cause or contribute to an exceedance of water quality standards by changing natural hydrologic patterns, accelerating stream flows, destroying aquatic habitat, and elevating pollutant concentrations. Such runoff may contain or mobilize high levels of contaminants, such as sediment, suspended solids, nutrients (phosphorous and nitrogen), heavy metals and other toxic pollutants, pathogens, oxygen-demanding substances, and floatables. After a rain, storm water runoff carries these pollutants into nearby streams, rivers, lakes, estuaries, wetlands, and oceans. The highest concentrations of these contaminants often are contained in "first flush" discharges, which occur during the first major storm after an extended dry period. Individually and combined, these pollutants impair water quality, threatening designated beneficial uses and causing habitat alteration or destruction. Uncontrolled storm water discharges from areas of urban development and construction activity negatively impact receiving waters by changing the physical, biological, and chemical composition of the water, resulting in an unhealthy environment for aquatic organisms, wildlife, and humans. Although water quality problems also can occur from agricultural storm water discharges and return flows from irrigated agriculture, this area of concern is statutorily exempted from regulation as a point source under the Clean Water Act and is not addressed in these guidelines.

Urbanization alters the natural infiltration capability of the land and generates a host of pollutants that are associated with the activities of dense populations, thus causing an increase in storm water runoff volumes and pollutant loading in storm water that is discharged to receiving waterbodies. Urban development increases the amount of impervious surface in a watershed as farmland, forests, and other natural vegetation with natural infiltration characteristics are converted into buildings with rooftops, driveways, sidewalks, roads, and parking lots with virtually no ability to absorb storm water. Storm water runoff washes over these impervious areas, picking up pollutants along the way while gaining speed and volume because of their inability to disperse and filter into the ground. What results are storm water flows that are higher in volume, pollutants, and temperature than the flows from more pervious areas, which have more natural vegetation and soil to filter the runoff. Studies reveal that the level of imperviousness in an area strongly correlates with decreased quality of the nearby receiving waters. Research conducted in numerous geographical areas, concentrating on various variables and employing widely differing methods, has revealed that stream degradation occurs at relatively low levels of imperviousness, such as 10 to 20 percent (even as low as 5 to 10 percent).

¹ 64 FR 68722

² Available on the Internet at www.epa.gov/npdes.

Furthermore, research has indicated that few, if any, urban streams can support diverse benthic communities at imperviousness levels of 25 percent or more. An area of medium density single family homes can be anywhere from 25 percent to nearly 60 percent impervious, depending on the design of the streets and parking.

Relationship of Sources to Primary Pollutants of Concern

Pollutant Source/Activity	Primary Pollutants of Concern in Urban Runoff ^a								
	Physical Parameters ^a	Synthetic Organics ^b	Petroleum Hydrocarbons ^c	Heavy Metals ^d	Nutrients	Pathogens	Sediments	Oxygen-Demanding Substances ^e	Floatables ^f
Vehicle Service Facilities		•	•	•					
Gas Stations		•	•	•					
Metal Fabrication Shops		•	•	•					
Restaurants									•
Auto Wrecking Yards	•	•	•	•					
Mobile Cleaners		•							
Parking Lots	•		•	•					•
Residential Dwellings	•	•		•	•	•	•	•	
Parks/Open Spaces					•	•	•	•	•
Construction Sites	•						•	•	
Corporation Yards	•	•	•	•					
Streets & Highways	•		•	•				•	•
Marinas									•
Golf Courses		•			•		•	•	
Sewer Overflows	•					•		•	

a. salinity, pH, temperature. b. pesticides, herbicides, PCBs. c. oil, grease, solvents. d. lead, copper, zinc, cadmium. e. plant debris, animal waste. f. litter, yard wastes.

* adapted from *Model Urban Runoff Program*. July 1998. City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde and Central Coast Regional Water Quality Control Board. EPA Assistance Agreement No. C9-999266-95-0.

In addition to impervious areas, urban development creates new pollution sources as population density increases and brings with it proportionately higher levels of car emissions, car maintenance wastes, pet waste, litter, pesticides, and household hazardous wastes, which may be washed into receiving waters by storm water or dumped directly into storm drains designed to discharge to receiving waters. More people in less space results in a greater concentration of pollutants that can be mobilized by storm water discharges into storm sewer systems.

The first national assessment of urban runoff characteristics was completed for the *Nationwide Urban Runoff Program (NURP)* study. The NURP study is the largest nationwide evaluation of storm water discharges undertaken to date. EPA conducted the NURP study to facilitate understanding of the nature of urban runoff from residential, commercial, and industrial areas. One objective of the study was to characterize the water quality of discharges from separate storm sewer systems that drain residential, commercial, and light industrial (industrial parks) sites. Storm water samples from 81 residential and commercial properties in 22 urban/suburban

areas nationwide were collected and analyzed during the 5-year period between 1978 and 1983. The majority of samples collected in the study were analyzed for eight conventional pollutants and three heavy metals. Data collected under the NURP study indicated that discharges from separate storm sewer systems draining runoff from residential, commercial, and light industrial areas carried more than 10 times the annual loading of total suspended solids (TSS) than discharges from municipal sewage treatment plants that provide secondary treatment. The NURP study also indicated that runoff from residential and commercial areas carried somewhat higher annual loadings of chemical oxygen demand (COD), total lead, and total copper than effluent from secondary treatment plants. Study findings showed that fecal coliform counts in urban runoff typically range from tens to hundreds of thousands of most probable number (MPN) per hundred milliliters (ml) of runoff during warm weather conditions, with the median for all sites being around 21,000 MPN/100 ml.

B. Construction Site Runoff

Polluted storm water runoff from construction sites often flows to storm drains and ultimately is discharged into local rivers and streams. Of the pollutants listed below, sediment is usually the main pollutant of concern. Sediment runoff rates from construction sites are typically 10 to 20 times greater than those of agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to our nation's waters. The siltation process described previously can (1) deposit high concentrations of pollutants in public water supplies; (2) decrease the depth of a waterbody, which can reduce the volume of a reservoir or result in limited use of a water body by boaters, swimmers, and other recreational enthusiasts; and (3) directly impair the habitat of fish and other aquatic species, which can limit their ability to reproduce. Excess sediment can cause a number of other problems for waterbodies. It is associated with increased turbidity and reduced light penetration in the water column, as well as more long-term effects associated with habitat destruction and increased difficulty in filtering drinking water.

Pollutants Commonly Discharged From Construction Sites

Sediment	Pesticides
Solid and sanitary wastes	Concrete truck washout
Nitrogen (fertilizer)	Construction chemicals
Phosphorous (fertilizer)	Construction debris

C. Post Construction Runoff

There are generally two forms of substantial impacts of post-construction runoff. The first is caused by an increase in the type and quantity of pollutants in storm water runoff. As runoff flows over areas altered by development, it picks up harmful sediment and chemicals such as oil and grease, pesticides, heavy metals, and nutrients (e.g., nitrogen and phosphorus). These pollutants often become suspended in runoff and are carried to receiving waters, such as lakes, ponds, and streams. Once deposited, these pollutants can enter the food chain through small aquatic life, eventually entering the tissues of fish and humans. The second kind of post-construction runoff impact occurs by increasing the quantity of water delivered to the waterbody during storms. Increased impervious surfaces interrupt the natural cycle of gradual percolation of

water through vegetation and soil. Instead, water is collected from surfaces such as asphalt and concrete and routed to drainage systems where large volumes of runoff quickly flow to the nearest receiving water. The effects of this process include stream bank scouring and downstream flooding, which often lead to a loss of aquatic life and damage to property.

D. Federal and State Regulations

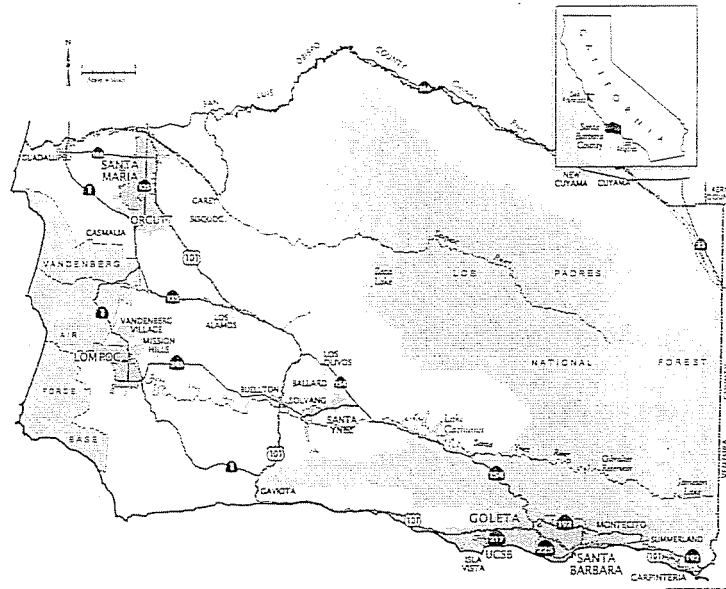
The Federal Water Pollution Prevention and Control Act (i.e., the Clean Water Act or CWA) requires that discharges do not substantially degrade the physical, chemical or biological integrity of the Nation's waters. Specifically Section 402 established the National Pollutant Discharge Elimination System (NPDES) Regulations for wastewater and other pollutant discharges.

Congress amended the CWA in 1987 to require the implementation of a two-phased program to address storm water discharges. Phase I, promulgated by the U.S. Environmental Protection Agency (EPA) in November 1990, requires NPDES permits for storm water discharges from municipal separate storm sewer systems (MS4s) serving populations of 100,000 or greater, construction sites disturbing greater than 5 acres of land, and ten categories of industrial activities.

Despite the comprehensiveness of the NPDES Phase I program, the EPA recognized that smaller construction projects (disturbing less than 5 acres) and small municipal separate storm sewers (MS4s³) were also contributing substantially to pollutant discharges nationwide. Therefore, in order to further improve storm water quality, the EPA promulgated the NPDES Phase II program (*Federal Register* Vol. 64, No. 235, December 8, 1999). The Phase II regulations became effective on February 7, 2000, and require NPDES permits for storm water discharges from regulated small MS4s and for construction sites disturbing more than 1 acre of land. The Phase II regulations published by the EPA designated the urbanized areas⁴ of Santa Barbara County as a regulated small MS4.

³ Those generally serving less than 100,000 people and located in an urbanized area as defined by the Bureau of the Census.

⁴ An *urbanized area* is a land area comprising one or more places (central place(s)) and the adjacent densely settled surrounding area (the urban fringe) that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile.



In addition, Section 401 and 404 established regulations for the discharge of dredged or fill material into waters of the United States and water quality impacts associated with these discharges. In California, the Porter-Cologne Water Quality Control Act establishes waste discharge standards pursuant to the Federal NPDES program, and the state has the authority to issue NPDES permits to individuals, businesses, and municipalities.

E. County Water Quality Issues

Because the EPA has determined that the urbanized areas of Santa Barbara County are subject to the Phase II NPDES regulations, it is presumed that the county has a general urban runoff water quality problem. In addition to this general presumption, over the last three years Project Clean Water has collected analytical water quality data and identified the water quality concerns in county streams, creeks and beach areas. These concerns include:

- Bacteria levels consistently above applicable standards during storm events,
- Levels of metals (copper, chromium, zinc, and lead) approaching or exceeding Regional Water Quality Control Board Basin Plan objectives,
- Elevated levels of nitrogen and phosphorus in all creeks during storm events, and
- Detection of pesticides in all watersheds.

The Regional Water Quality Control Board has also identified that the quality of several important recreational water bodies and water supplies have been impaired. These water bodies and their contaminants include:

- San Antonio Creek (northern) – sediments.
- Santa Ynez River – nutrients (e.g., phosphorus and nitrogen), salinity, total dissolved solids, chlorides and sediments.
- Goleta Slough – metals, pathogens, and sediment.

- Arroyo Burro Creek – pathogens (e.g., bacteria).
- Mission Creek – pathogens.
- Carpinteria Salt Marsh – nutrients and sediment.
- Carpinteria Creek - pathogens
- Rincon Creek – pathogens and sediment.

F. County Water Quality Protection Policies

Policies regarding the protection of water quality in the unincorporated areas of Santa Barbara County are provided in the Comprehensive Plan Land Use Element, various Community Plans, and the Local Coastal Plan. The overarching policy which applies to both construction and post-construction is Land Use Element Hillside and Watershed Protection Policy 7 (Coastal Plan Policy 3-19), which states:

Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste shall not be discharged into or alongside coastal streams or wetlands either during or after construction.

Project approval requires a finding of consistency with this and all other applicable water quality policies in the Comprehensive and Community Plans.

G. Significance Guidelines for Assessment of Water Quality Impacts

Guidelines for assessing project-specific and cumulative water quality impacts are presented below. The assessment of impacts must account for construction-related impacts (i.e., vegetation removal, erosion, use of construction materials on the site, and staging of construction activities) and post-construction (or post-development) impacts (i.e., increases in impervious surfaces and increased runoff, entrainment of pollutants, and effects of discharges on aquatic habitats and biota).

G.1 Project Specific Potential Significance Impacts

- (a) A significant water quality impact is presumed to occur if the project:
- Is located within an urbanized area of the county and the project construction or redevelopment individually or as a part of a larger common plan of development or sale would disturb one (1) or more acres of land;
 - Increases the amount of impervious surfaces on a site by 25% or more;
 - Results in channelization or relocation of a natural drainage channel;
 - Results in removal or reduction of riparian vegetation or other vegetation (excluding non-native vegetation removed for restoration projects) from the buffer zone of any streams, creeks or wetlands;

- Is an industrial facility that falls under one or more of categories of industrial activity regulated under the NPDES Phase I industrial storm water regulations (facilities with effluent limitation; manufacturing; mineral, metal, oil and gas, hazardous waste, treatment or disposal facilities; landfills; recycling facilities; steam electric plants; transportation facilities; treatment works;; and light industrial activity);
- Discharges pollutants that exceed the water quality standards set forth in the applicable NPDES permit, the Regional Water Quality Control Board's (RWQCB) Basin Plan or otherwise impairs the beneficial uses⁵ of a receiving waterbody; or
- Results in a discharge of pollutants into an "impaired" waterbody that has been designated as such by the State Water Resources Control Board or the RWQCB under Section 303 (d) of the Federal Water Pollution Prevention and Control Act (i.e., the Clean Water Act).
- Results in a discharge of pollutants of concern to a receiving water body, as identified in by the RWQCB.

(b) Projects that are not specifically identified on the above list or are located outside of the "urbanized areas" may also have a project-specific storm water quality impact. Storm water quality impacts associated with these projects must be evaluated on a project by project basis for a determination of significance. The potential impacts of these projects should be determined in consultation with the county Water Agency, Flood Control Division, and RWQCB. The issues that should be considered are:

- the size of the development;
- the location (proximity to sensitive waterbodies, location on hillsides, etc.);
- the timing and duration of the construction activity;
- the nature and extent of directly connected impervious areas;
- the extent to which the natural runoff patterns are altered;
- disturbance to riparian corridors or other native vegetation on or off-site;
- the type of storm water pollutants expected; and
- the extent to which water quality best management practices are included in the project design.

(c) All projects determined to have a potentially significant storm water quality impact must prepare and implement a Storm Water Quality Management Plan (SWQMP) to reduce the impact to the maximum extent practicable. The SWQMP shall include the following elements:

- identification of potential pollutant sources that may affect the quality of the discharges to storm water;

⁵ Beneficial uses for Santa Barbara County are identified by the Regional Water Quality Control Board in the Water Quality Control Plan for the Central Coastal Basin, or Basin Plan, and include (among others) recreation, agricultural supply, groundwater recharge, fresh water habitat, estuarine habitat, support for rare, threatened or endangered species, preservation of biological habitats of special significance.

- the proposed design and placement of structural and non-structural BMPs to address identified pollutants;
- a proposed inspection and maintenance program; and
- a method of ensuring maintenance of all BMPs over the life of the project.

Implementation of best management practices identified in the SWQMP will generally be considered to reduce the storm water quality impact to a less than significant level.

G.2 Less than Significant Impacts

The following land uses and projects are generally presumed to have a less than significant project-specific water quality impact. These include:

- Redevelopment projects that do not increase the amount of impervious surfaces on the site nor change the land use or potential pollutants;
- New development and redevelopment projects that incorporate into the project design construction BMPs for erosion, sediment and construction waste control and incorporate post-construction BMPs to protect sensitive riparian or wetland resources, reduce the quantity of runoff, and treat runoff generated by the project to pre-project levels;
- Lot line adjustments that do not alter the development potential of the lots involved;
- Development of a single family dwelling (and associated accessory uses including but not limited to roads and driveways, septic systems, guesthouse, pool, etc.) disturbing less than one acre on existing legal lot.

G.3 Cumulative Impacts

Because of the county's designation under the Phase II NPDES regulations, all discretionary projects (except those that do not result in a physical change to the environment) within the urbanized area whose contributions are cumulatively considerable must implement one or more best management practices to reduce their contribution to the cumulative impact.

H. General Mitigation Guidelines for Water Quality Impacts

If water quality impacts are considered from the beginning stages of a project more opportunities are available for water quality protection. Best management practices (mitigation measures) chosen for a project should minimize water quality impacts and attempt to maintain pre-development runoff conditions. Best management practices are divided into two main categories, non-structural BMPs and structural BMPs.

Non-structural BMPs are preventative actions that involve management and source controls such as protecting and restoring sensitive areas such as wetlands and riparian corridors, maintaining and/or increasing open space, providing buffers along sensitive water bodies, minimizing impervious surfaces and directly connected impervious areas, and minimizing disturbance of soils and vegetation. Structural BMPs include: storage practices such as wet ponds and extended-detention outlet structures; filtration practices such as grassed swales, sand filters and filter strips;

and infiltration practices such as infiltration basins and infiltration trenches. In many cases combinations of non-structural and structural measures will be required to reduce water quality impacts.

Non-structural and structural BMPs most applicable to the development projects in the county are included in “ A Planner’s Guide to Conditions of Approval and Standard Mitigation Measures” and the county’s adopted BMP manuals for construction site runoff control. Additional guidance on best management practices is available from the State⁶, the EPA⁷ and from other sources such as BASMAA “Starting at the Source”⁸. Storm water technologies are constantly being improved, and staff and developers must be responsive to any changes, developments or improvements in control technologies.

⁶ *California Storm Water Best Management Practice Handbooks* (California Stormwater Quality Task Force, 1993).

⁷ On the Internet at www.epa.gov/npdes/menuofbmps/menu.htm.

⁸ *Start at the Source: Design Guidance Manual for Stormwater Quality Protection* (Bay Area Stormwater Management Agencies Association, 1999).

17. SOLID WASTE THRESHOLDS

I. BACKGROUND

Santa Barbara County generates in excess of 2,000 tons of solid waste per day. This waste stream contains valuable resources such as glass, paper, metals and plastics which can be recycled, reducing environmental impacts associated with the production of new materials, and extending the life expectancy of rapidly diminishing landfill space. In addition, environmentally acceptable landfill replacement sites are scarce, politically sensitive, and expensive to bring into operation.

Currently, most of the county waste stream is buried on a daily basis in seven landfills located around the county. Estimates of the current life expectancy for six of the seven County landfills range from less than 1 to 39 years (Table 1).

A countywide average of 48.6% of the total solid waste stream is generated by residential users, while 51.4% is generated by commercial/industrial related development (Table 2). Reduction of this waste stream through source reduction practices and recycling efforts must be considered when evaluating solid waste impacts from new projects in the County. In addition, emphasis needs to be placed on encouraging the use of recycled products containing high percentages of post-consumer waste. The following is a discussion of the policies, statistics relating to solid waste generation and landfill space, and solid waste significance thresholds for projects in Santa Barbara County, as established by P&D and Public Works Solid Waste Division.

II. POLICIES

The justification for requiring recycling programs for new projects is based on the environmental impacts associated with landfill operation, expansion, relocation, and closure, as well as impacts associated with production of raw materials. The California Integrated Waste Management Act of 1989 requires city and county governments to be responsible for planning and overseeing solid waste management and recycling activities. This legislation requires each city and county to develop a Source Reduction and Recycling Element (SRRE) that provides strategies for diverting 25% of all solid waste from landfills by 1995 and 50% by 2000. These reductions are to be reached, in order of priority, by source reduction, recycling and composting, and environmental transformation (incineration, pyrolysis, or biological conversion), with land disposal as a final option. Santa Barbara County Board of Supervisors adopted the County's SRRE in February 1992. In order to meet the SRRE goals and objectives stringent thresholds and mitigation to reduce solid waste generation for new development projects will be required. Other source reduction and recycling measures would be instituted on Statewide or County basis through various mechanisms as indicated in the SRRE (i.e. variable can rates.)

In addition, Land Use Development Policy 4 of the County Comprehensive Plan, requires a finding that there are adequate public services (in this case landfill capacity) to serve new development. This Policy can also serve as justification for requiring waste reduction mitigation as conditions of project approvals.

III. WASTE STREAM CHARACTERISTICS

Of the total amount of solid waste disposed of in county landfills per year (594,045 tons), approximately 49.7% is comprised of recyclable glass, paper, metals, and plastics. An additional 195,000 tons per year (32.9%) of yard waste (grass clipping, tree trimmings, etc.), food, and wood wastes can potentially be composted and/or chipped (Table 3). Thus over 80% of the solid waste stream is comprised of recyclable and compostable material. County and private sector efforts to compost yard, food, and wood waste may be implemented on a countywide basis, and if successful, could significantly reduce the total waste stream. With an effective solid waste management program (as discussed in section VI), the solid waste stream of new development projects can be reduced by over 50%, nearly doubling the life expectancy of County landfills and reducing environmental impacts associated with landfill operations and replacement, and resource recovery.

IV. THRESHOLDS OF SIGNIFICANCE

Project Specific:

The following thresholds are based on the projected average solid waste generation for Santa Barbara County from 1990-2005. The goals outlined in the SRRE assume a 1.2% annual increase, which equates to approximately 4,000 tons per year increase in solid waste generation over the 15 year period. A project is considered to result in significant impacts to landfill capacity if it would generate 5% or more of the expected average annual increase in waste generation thereby using a significant portion of the remaining landfill capacity. Based on the analysis conducted (as illustrated in table 5), the numerical value associated with this 5% increase is **196 tons per year**. As indicated above, source reduction, recycling, and composting can reduce a project's waste stream by as much as 50%. If a proposed project generates 196 or more tons per year after reduction and recycling efforts, impacts would be considered significant and unavoidable (Class 1). Project approval would then require adoption of overriding considerations. A typical single family residential project of 68 units or less would not trigger the threshold of significance.

Cumulative Thresholds:

Projects with a project specific impact as identified above (196 tons/year or more) would also be considered cumulatively significant, as the project specific threshold of significance is based on a cumulative growth scenario. However, as landfill space is already extremely limited, any increase in solid waste of 1% or more of the estimated increase accounted for in the SRRE would be considered an adverse contribution (class III) to regional cumulative solid waste impacts. One percent of the SRRE projected increase in solid waste equates to **40.0 tons per year**. To reduce adverse cumulative impacts and to be consistent with the SRRE, mitigation (as discussed in section VI) should be recommended for projects which generate between 40 and 195 tons of solid waste. Projects which generate less than 40.0 tons per year of solid waste would not be considered to have an adverse effect due to the small amount of waste generated by these projects and the existing waste reduction provisions in the SRRE. A typical single family residential project of 14 units or less would not trigger this adverse impacts level.

Potential Future Development Mitigation Fees: The SRRE identifies development impact fees as a potential funding source to offset waste management costs. Proposed measures to reduce the waste stream include development of waste diversion facilities, which process mixed commercial, industrial and residential wastes to recover recyclables. Development, implementation and maintenance of proposed waste diversion facilities could be partially funded through impact fees. The Solid Waste Division of Public Works is considering this option, which would require ordinance adoption by the Board of Supervisors. If a fee program were to be adopted, the thresholds of significance would be revised to reflect the added mitigation provided by the fee program.

V. IMPACT ASSESSMENT/THRESHOLD APPLICATION

Residential projects:

The annual per capita waste generation rate for Santa Barbara County is currently 2.11 tons. Of this 2.11 tons, residential per capita waste generation rate is 0.95 tons (1,900 pounds) (includes interior and exterior waste). Waste generation rates are based on the County of Santa Barbara Waste Generation Study (February, 1991) and the Area Planning Council Forecast '89 (Table 4).

The County average residents per household rates are:

Single Family Residences: 3.01 people per household

Attached Residences (condos, townhomes, apts, duplex, triplex): 2.65 people per household

(from the 1990 census information, C. Pauley Comprehensive Planning, P&D.)

To calculate a residential project's solid waste generation the following formula is used:

for SFR: $3.01 \text{ people/unit} \times \# \text{ of units} \times 0.95 \text{ tons/year} = \text{tons/yr/project}$

for attached units: $2.65 \text{ people/unit} \times \# \text{ of units} \times 0.95 \text{ tons/year} = \text{tons/yr/project}$

Commercial/Industrial/Institutional Projects:

Commercial/industrial users are the largest source of solid waste, generating approximately 51% of all solid waste deposited in county landfills. This waste stream is primarily comprised of paper products, metals, and plastics, resources which have a high recovery value. Commercially generated waste products can be successfully recycled with relative ease. Many recycling businesses have established service agreements with commercial/industrial businesses to provide recyclable material pickup on a regular basis. Due to the high degree of value and relative ease in recovering commercial waste resources, recycling of these products is desirable. To determine the waste stream for a specific project the following information is provided:

ESTIMATED ANNUAL COMMERCIAL WASTE GENERATION RATES¹

<u>Commercial/Industrial</u>	<u>Annual Generation Rate</u>
<u>Retail</u>	(in tons)
Neighborhood Center(30,000-100,000 sq.ft)	sq.ft. x 0.0009
Regional Shopping Center (100,000-300,000 sq.ft.)	sq. ft. anchor x 0.0012 sq. ft.
tenant x 0.0048 General Retail & Misc Services	sq. ft. x 0.0057
Eating and Drinking Establishment	sq. ft x 0.0115
Auto Dealer & Service Station	sq. ft. x 0.0016
Hotel and Motel	# of rooms x 0.80
Warehouse	sq. ft. x 0.0016
Health Services	sq. ft. x 0.0013
Hospital	# of rooms x 1.90
Office	sq. ft. x 0.0013
Educational Institutions	sq. ft. x 0.0010
Transportation, Communication & Utilities	sq. ft. x 0.0026
Manufacturing	sq. ft. x 0.0026

¹ Figures based on Industry and National Standards as discussed in the Ventura County Solid Waste Thresholds, 1992)

For project types that are indicated above, the estimated waste stream can be determined by surveying similar uses, ideally within Santa Barbara County. If possible, three such uses should be included in the survey.

Residual Impact Calculation:

Waste generation * 0.50 (or other waste reduction %)= tons/year
(tons/year) (% of waste reduction)

VI. MITIGATION MEASURES

The following mitigation measures are suggested for projects which would exceed County solid waste thresholds. This is a partial list of measures and does not preclude measures which may be applicable on a project specific basis.

The applicant shall develop and implement a solid waste management plan to be reviewed and approved by Public Works Solid Waste Division and P&D and shall include one or more of the following measures:

- o Provision of space and/or bins for storage of recyclable materials within the project site.
- o Establishment of a recyclable material pickup area for commercial/industrial projects (i.e., loading docks, etc.).

- o Implementation of a curbside recycling program to serve the new development.
- o Development of a plan for accessible collection of materials on a regular basis (may require establishment of private pick-up depending on availability of County sponsored programs.)
- o Implementation of a monitoring program (quarterly, bi-annually) to ensure a 35% - 50% minimum participation in recycling efforts, requiring businesses to show written documentation in the form of receipts.
- o Development of Source Reduction Measures, indicating method and amount of expected reduction.
- o Implementation of a program to purchase recycled materials used in association with the proposed project (paper, newsprint etc.). This could include requesting suppliers to show recycled material content.
- o Implementation of a backyard composting yard waste reduction program.

One or more of the above measures may apply to a specific project. County waste characterization studies estimate that implementation of the measures described can reduce waste generation by 50%. The expected reduction in waste generation from mitigation measures for a specific project should be developed in consultation with the Public Works Department Solid Waste Division.

Table 1
 Estimated Remaining Capacity for Landfills
 In the County of Santa Barbara
 (In Number of Years)

Landfill	Permitted*	Proposed/Considered Expansions**
NORTH COUNTY		
Foxen Canyon	<1	25
Lompoc, City of	30	15
New Cuyama	34	0
Santa Maria, City of	10	0
Vandenberg AFB	50	11
Ventucopa	39	0
SOUTH COUNTY		
Tajiguas	13	75
Source: County of Santa Barbara, Solid Waste Management, 1992		
* Landfill capacity of disposal site under existing permit.		
** Landfill capacity of disposal site with modification of existing permit or issuance of new permit.		

Table 2
 Santa Barbara County
 Waste Composition by Wasteshed

Landfill	Residential	Commercial	Industrial
NORTH COUNTY			
Foxen Canyon	29.1%	61.7%	9.2%
City of Lompoc	51.5%	46.8%	1.7%
City of Santa Maria	30.0%	65.5%	4.5%
New Cuyama	83.8%	15.0%	1.2%
Vandenberg AFB	72.0%	28.0%	0
Ventucopa	90.0%	10.0%	0
North County Average	36%	60%	4%
SOUTH COUNTY			
Tajiguas	61.0%	29.0%	10.0%
County Average	48.6%	44.4%	7.0%
Source: County of Santa Barbara Waste Generation Study, February 1991.			

Table 3
 Recyclable Waste Generation
 In Santa Barbara County Landfills
 (Tons Per Day)

Landfill	COMMODITIES				
	Paper	Glass	Metal	Yard Waste	Tons/Day
NORTH COUNTY					
Foxen Canyon (Operates 359 days/year)	24.59 29.4%	5.69 6.8%	3.61 4.3%	16.17 19.4%	50.06 59.9%
Lompoc, City of (Operates 360 days/year)	45.02 26.5%	8.19 4.8%	20.34 12.0%	23.31 13.7%	96.86 57.0%
New Cuyama (Operates 365 days/year)	0.88 29.4%	0.20 6.8%	0.13 4.3%	0.58 19.4%	1.79 59.8%
Santa Maria, City of (Operates 359 days/year)	146.72 27.4%	16.54 3.1%	52.64 9.8%	90.61 16.9%	306.51 57.3%
Vandenberg AFB (Operates 303 days/year)	13.13 24.9%	1.91 3.6%	12.49 23.7%	17.81 33.8%	45.35 86.0%
Ventucopa (Operates 365 days/year)	0.29 29.3%	0.07 6.8%	0.04 4.4%	0.19 19.5%	0.60 60.0%
SOUTH COUNTY					
Tajiguas (Operates 307 days/year)	294.83 30.2%	98.52 10.1%	50.14 5.1%	196.31 20.1%	639.80 65.5%
Source: County of Santa Barbara Waste Generation Study, February 1991					

Table 4
Solid Waste Generation Rates for
Residential, Commercial, and Industrial Generators

Jurisdiction	Total	Residential	Commercial	Industrial	Comm/Ind
Unincorporated County	308080	156638	86566	52784	139350
Carpinteria	40106	22316	10586	7200	17786
Guadalupe	9040	3208	4976	857	5833
Lompoc	59567	29249	28267	2051	30318
Santa Barbara	1487949	72616	26764	49368	76132
Santa Maria	162063	40050	85730	36283	122013
Solvang	8633	3936	3924	773	4697
Vandenberg	21161	14142	6254	0	6254
	757399	342155	253067	149316	402383
Generation Rates	2.11	0.95	0.70	0.42	1.12

Source: County of Santa Barbara Waste Generation Study, February 1991

All figures are tonnages per year.

Table 5: Solid Waste Threshold Calculations

Year	Residential Generation	Change	5% of Change	Commercial Generation	Change	5% of Change	Industrial Generation	Change	5% of Change	Total Generation	Change	5% of Change	1% of Change
1990	156640	1760	88	98650	1290	64.5	52780	450	22.5	308070	3500	175	35
1991	158400	1910	95.5	99940	1300	65	53230	450	22.5	311570	3660	183	36.6
1992	160310	1920	96	101240	1310	65.5	53680	450	22.5	315230	3680	184	36.8
1993	162230	1940	97	102550	1330	66.5	54130	460	23	318910	3730	186.5	37.3
1994	164170	1970	98.5	103880	1350	67.5	54590	460	23	322640	3780	189	37.8
1995	166140	2000	100	105230	1370	68.5	55050	460	23	326420	3830	191.5	38.3
1996	168140	2020	101	106600	1380	69	55510	470	23.5	330250	3870	193.5	38.7
1997	170160	2040	102	107980	1400	70	55980	480	24	334120	3920	196	39.2
1998	172200	2060	103	109380	1420	71	56460	480	24	338040	3960	198	39.6
1999	174260	2090	104.5	110800	1440	72	56940	480	24	342000	4010	200.5	40.1
2000	176350	2130	106.5	112240	1450	72.5	57420	480	24	346010	4060	203	40.6
2001	178480	2130	106.5	113690	1480	74	57900	490	24.5	350070	4100	205	41
2001	180610	2170	108.5	115170	1500	75	58390	490	24.5	354170	4160	208	41.6
2003	182780	2190	109.5	116670	1510	75.5	58880	500	25	358330	4200	210	42
2004	184970	2230	111.5	118180	1530	76.5	59380	500	25	362530	4260	213	42.6
2005	187200			119710			59880			366790			
Average			101.87	70.2			23.67			195.73			39.15

Generation numbers were obtained from the County of Santa Barbara Waste Generation Study, February 1991.

All figures are tonnages.

Generation calculations assume a 1.2% growth rate.

~~18. THRESHOLDS OF SIGNIFICANCE FOR TRAFFIC IMPACTS AND CONTENTS OF A TRAFFIC STUDY⁴~~

~~A. Introduction~~

~~The threshold criteria and traffic report contents proposed in the following pages are intended to provide a basis for improved analyses of the potential traffic impacts of proposed projects. The criteria and report contents will also help to standardize traffic impact reports making them easier to use in the planning process. It is hoped that standardization will aid in the compilation of traffic data for use in other EIRs.~~

~~Evaluation of traffic impacts and development of proposed mitigation measures is a complex task. When a potential for significant adverse traffic impacts is evident, the traffic analysis should be performed by a registered civil engineer that is qualified to perform traffic engineering studies and is familiar with Santa Barbara County.~~

~~CEQA Guidelines, Appendix G, states that a project will ordinarily have a significant effect on the environment if it will "cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system." The following threshold criteria assume that an increase in traffic that creates a need for road improvements is "substantial in relation to the existing traffic load and capacity of the street system." It should be noted that the following criteria are guidelines for the majority of potential traffic impacts. The list of criteria is not intended to be all inclusive as the potential for impact may vary depending upon the environmental setting and the nature of the project.~~

~~B. Threshold Criteria - Significant Adverse Impact~~

- ~~1. The impacts of project generated traffic are assessed against the following County thresholds. A significant traffic impact occurs when:
 - ~~a. The addition of project traffic to an intersection increases the volume to capacity (V/C) ratio by the value provided below or sends at least 5, 10 or 15 trips to at LOS F, E or D.~~~~

~~1. County of Santa Barbara Department of Resource Management, Division of Environmental Review; originally written in June 1985 and periodically updated.~~

~~LEVEL OF SERVICE
(including project)~~

~~INCREASE IN V/C
GREATER THAN~~

~~A _____ 0.20~~

~~B _____ 0.15~~

~~C _____ 0.10~~

~~OR THE ADDITION OF:~~

~~D _____ 15 trips~~

~~E _____ 10 trips~~

~~F _____ 5 trips~~

~~b. Project access to a major road or arterial road would require a driveway that would create an unsafe situation or a new traffic signal or major revisions to an existing traffic signal.~~

~~c. Project adds traffic to a roadway that has design features (e.g., narrow width, road side ditches, sharp curves, poor sight distance, inadequate pavement structure) or receives use which would be incompatible with substantial increases in traffic (e.g. rural roads with use by farm equipment, livestock, horseback riding, or residential roads with heavy pedestrian or recreational use, etc.) that will become potential safety problems with the addition of project or cumulative traffic. Exceedance of the roadway designated Circulation Element Capacity may indicate the potential for the occurrence of the above impacts.~~

~~d. Project traffic would utilize a substantial portion of an intersection(s) capacity where the intersection is currently operating at acceptable levels of service (A-C) but with cumulative traffic would degrade to or approach LOS D (V/C 0.81) or lower. Substantial is defined as a minimum change of 0.03 for intersections which would operate from 0.80 to 0.85 and a change of 0.02 for intersections which would operate from 0.86 to 0.90, and 0.01 for intersections operating at anything lower.~~

~~If the above thresholds are exceeded, construction of improvements or project modifications to reduce the levels of significance to insignificance are required.~~

Mitigation Measures:

~~In order to reduce project impacts to levels of insignificance the proposed mitigations (e.g., road improvements, trip reductions) must restore affected intersections to an acceptable LOS (C) and/or reduce safety impacts to insignificance. The scope of the mitigation must reduce the project's contribution to insignificance and be timed to be implemented prior to occurrence of the impact (e.g., prior to intersection degrading to LOS D). The payment of offsite road fees in and of itself is not adequate to mitigate a project's impacts.~~

~~The thresholds of significance identified above assume full contribution to the Off Site Road Improvement Fund. Without the fee program a much smaller increase in the V/C ratio would have to be considered significant.~~

~~.2. When a Traffic Study is Required~~

~~A traffic study will generally be required when it appears that the thresholds of significance identified above will be exceeded. In almost all cases where trip generation during the peak hour is expected to exceed 50 vehicles a traffic study will be required.~~

~~A previous traffic study for the development under review will only be acceptable if it is less than two years old.~~

~~.3. Coordination between County Departments~~

~~In order to ensure coordinated planning, DER and the Roads Division should discuss potential project impacts prior to sending out requests for proposal (RFP). The following items should be established prior to sending of the RFP: definition of study area, cumulative projects and intersections requiring critical movement analysis. A copy of the traffic study should be submitted for the County Traffic Engineer.~~

C. Contents of Traffic Study

~~Some traffic studies may require information or analysis beyond what is described below; some may require less.~~

~~1. Executive Summary~~

~~This should be no more than two pages summarizing the project's traffic impacts, needed road improvements, and proposed changes in the project.~~

~~2. Maps Showing the Following:~~

~~a. Location of proposed project~~

~~b. Collectors, arterials and state highways that will be used by occupants and visitors to get to and from major attractions and productions.~~

~~c. Location of cumulative projects that will impact those roads identified in (b) and the status of those projects (e.g. Proposed, Under Review, Approved, Under Construction).~~

~~d. Percent distribution of traffic from the proposed project and cumulative projects.~~

- e. ~~Traffic volumes on road identified in (b): existing traffic, existing plus project traffic, existing plus project plus cumulative traffic (weekday ADT and PHH).~~

3. Tables Showing the Following:

- a. ~~Proposed project and cumulative projects, their size and nature, trip generation rates, trip generation (ADI and PHT) and status (see item 2C)~~
- b. ~~Signalized intersections, intersections with potential for signals, LOS (Existing, existing plus project, existing plus project plus approved projects, existing plus project plus full cumulative), existence of signal warrants and existence of operational problems and project specific and cumulative impacts post mitigation implementation.~~
- c. ~~Roadway design features that will become potential safety problems or will be below County standards with the addition of cumulative traffic. Roadways in critical need of reconstruction.~~
- d. ~~Improvements needed to correct the identified deficiencies separated by project impacts and cumulative impacts, LOS after mitigation, approximate cost and the probable or scheduled timing of each improvement, identification of specific improvements to be constructed by developer and/or a dollar contribution to be made by developer (i.e., payment to Off-Site Improvement Fund).~~

4. Narrative, Footnotes and Appendices Containing the Following:

- a. ~~Sources and dates of data including persons contacted~~
- b. ~~Raw traffic count data (all traffic count data must be less than two years old)~~
- c. ~~Methods used and special circumstances~~
- d. ~~Level of service calculations~~
 - 1. ~~Peak hour turning movements and LOS (show V/C), for existing, existing plus project, existing plus project plus cumulative traffic~~
 - 2. ~~Lane configuration and traffic control~~
 - 3. ~~Mitigation measures proposed and effect on LOS~~

~~CRITICAL MOVE GUIDELINE VALUES FOR ENVIRONMENTAL ASSESSMENTS –
TYPICAL SIGNALIZED INTERSECTIONS
ALL PHASED OPERATIONS~~

<u>L.O.S.</u>	<u>Project Impact</u>	<u>Cumulative Impact</u>
A	100	50
B	70	30
C	40	15
D	10	0-10
E	0-10	0-10

~~NOTES:~~

- ~~1. Use restricted to environmental assessments only. More precise estimates are obtained by calculations changes in volume to capacity ratio (V/C).~~
- ~~2. For all phases, the difference in critical moves between Levels of Service is approximately 150.~~
- ~~3. These values are guidelines only. Values should be adjusted on a project by project case if necessary.~~
- ~~4. No signalized intersection is typical. Use common sense.~~

County Intersections

Volume to Capacity and Level of Service (LOS)

South County

<u>Intersection</u>	<u>Existing V/C Level of Service</u>	<u>Existing Approved Cumulative Projects</u>	<u>Approved and Pending Cumulative Projects</u>	<u>With Improvements</u>	<u>Date and Source</u>
Storke/101 NB Ramp	NA/E - F	NA/F	NA/F	Unfunded 0.68/B	10/89 89 SD-5
Storke/101 SB Ramp	NA/E - F	NA/F	NA/F	Unfunded 0.55/A	10/89 89 SD-5
Los Cameros/ 101 NB Ramp				Unfunded	10/89
(AM)	0.49/A	0.76/C	0.98/E	0.47/A	89 SD-5
(PM)	0.46/A	0.55/A	0.71/C	Unfunded NA/B	10/89 89 SD-5
Los Carneros/ 101 SB Ramp	0.78/C	1.03/F	1.28/F	Unfunded NA/B-C	10/89 89 SD-5
Cathedral Oaks/Fairview	0.44/A	_____	_____		4/85
Fairview/101 NB Ramps	0.72/C	_____	_____		4/85
Fairview/101 SB Ramps	0.81/C	_____	_____		4/85
Los Carneros/ Hollister	0.61/B	0.71/C	0.87/D	Unfunded 0.79/C	10/89 89 SD-5
Hollister/ San Marcos	0.60/A/B	_____	_____		5/85
Hollister/ Fairview	0.88/D	0.99/E	1.15/F	Funded 0.90/D	10/89 89 SD-5
Hollister/ Storke	0.64/B	0.74/C	0.87/D	Unfunded 0.74/E	10/89 89 SD-5
Hollister/ Orvieto Way	0.52/A	0.54/A	_____		10/89 89 SD-5

Hollister/217 NB Ramp	0.75/C	--	--	--	6/88 88-EIR-11 6/88
Hollister/ Walnut	0.72/C	--	--	--	88-EIR-11
Patterson/101 SB Ramp	NA/E-F	NA/E-F	NA/E-F	0.59/A	6/88 88-EIR-11
Hollister/217 SB Ramp	0.64/B	0.69/B	0.73/C	--	12/88 88-EIR-22
Hollister/ Ward Drive	0.75/C	0.81/D	0.86/D	0.82/D	12/88 88-EIR-22
Hollister/ Patterson	0.76/C	0.82/D	0.92/E	--	12/88 88-EIR-22
Hollister/ Turnpike	0.73/C	0.77/C	0.82/D	--	12/88 88-EIR-22
Calle Real/ San Antonio	0.18/A	0.28/J,	0.41/J,	--	88-EIR-16
Calle Real/ El Sueño	0.55/A	0.65/B	0.80/C	--	88-EIR-16
<hr/>					
Calle Real/Hwy154	0.82/D	0.86/D	0.91/		88-EIR-16
Turnpike/ Cathedral Oaks	0.75/C	--	--	--	89-EIR-8
Turnpike/ 101 NB	0.67/B	0.68/B	0.79/C	--	89-EIR-8
Turnpike/ 101 SB	0.56/A	0.58/A	0.69/B	--	89-EIR-8
Patterson/ Calle Real	NA/E	--	--	0.43/A	89-EIR-8
Patterson/ 101 NB	1.03/F	1.09/F	1.23/F	0.50/A	89-EIR-8
Hollister/ Modoc	0.75/C	--	--	--	2/88
Calle Real/ Fairview	0.83/D	--	--	--	4/85
Calle Real/ Turnpike	0.47/A	--	--	--	12/88

Calle Real/ Las Positas	NA/C	_____	3/78
Medoc/Las Positas	NA/A	_____	3/78
East Valley/ San Ysidro	NA/A	_____	8/80
Carpinteria/ Linden	NA/C	_____	8/80
El Colegio/ Los Carneros	0.60/A-B	_____	10/84

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County Intersections

Volume to Capacity and Level of Service (LOS)

North County

<u>Intersection</u>	<u>Existing V/C Level of Service</u>	<u>Existing- Approved- Cumulative Projects</u>	<u>Approved and Pending- Cumulative Projects</u>	<u>With Improvements</u>	<u>Date and Source</u>
Clark Ave./ Frontage	0.34/A				8/84
Clark Ave./ Rt. 135 NB	0.48/A	0.55/A	0.67/B		1/90 90 EIR-1
Clark Ave./ Rt. 135 SB	0.41/A	0.47/A	0.60/A		1/90 90 EIR-1
Clark Ave./ Orcutt Rd.	0.47/J.	0.50/A	0.57/A		1/90 90 EIR-1
S.R. 246/ Alamo Pintado	0.59/A/B				
S.R. 246/ Alisal	0.59/A/B				3/85
Bradley Rd./ Clark Ave.	0.56/A	0.71/C	0.96/E		1/90 90 EIR-1
Bradley Rd./ Foster Rd.	0.41/A	0.52/A			88 EIR-13
Bradley Rd./ Santa Maria Way	0.54/A				3/88
Broadway/ Betteravia	E				1980
Broadway/ Main St.	D/E				1975
Rte. 135/ Foster Rd.	0.73/C	0.96/E	1.33/F		1/90 90 EIR-1
Bradley Rd./ Rice Ranch Rd.	0.24/A	0.24/A	0.25/A		3/90 90 EIR-1

Intersection	Existing V/C Level of Service	Existing Approved Cumulative Projects	Approved and Pending Cumulative Projects	With Improvements	Data Source
Clark Ave./ Stillwell Rd. (E)	0.56/A	0.65/B	0.85/D	---	3/90 90-EIR-I
Clark Ave./ Stillwell Rd. (W)	0.43/A	0.50/A	0.68/B	---	3/90 90-EIR-I
Clarke Ave./ Hwy. 101 NB Ramp	0.51/A	0.57/A	0.70/B	---	3/90 90-EIR-1
Clarke Ave./ Hwy. 101 SB Ramp	0.59/A	0.70/B	0.92/E	--	3/90 90-EIR-1
Bradley Rd./ Patterson Rd.	0.59/A	0.80/C	1.10/F	--	9/89 89-SD-4
Clarke Ave./ Hwy. 101 NB Ramp	0.51/A	0.58/A	0.71/C	--	9/89 89-SD-4
Clark Ave./ Hwy. 101 SB Ramp	0.59/A	0.70/B	0.92/E	--	3/90 90-EIR-1
Route 135/ Bradley Rd./	--	--	0.79/C	--	9/89 89-SD-4
Route 135/ Main St.	0.76/C	1.27/F	--	1.11/F	88-EIR-13
Route 135/ Cook	0.67/B	--	--	--	88-EIR-13
Miller St./ Main St.	0.75/C	1.10/F	---	1.01/F	88-EIR-13
Miller St./ Cook	0.52/A	0.93/E	--	--	88-EIR-13
Foster/ Bradley	0.41/A	0.52/A	--	--	88-EIR-13
Foster/ California Blvd.	0.49/A	NA/B-C	--	--	---

Intersection	Existing V/C Level of Service	Existing Approved Cumulative Projects	Approved and Pending Cumulative Projects	With Improvements	Date and Source
Clarke Ave./ Broadway St.	0.29A	0.38/A	--	--	89-ND-64
Blosser Rd./ Foster Rd.	*/A	*/A	--	--	89-ND-64
Blosser Rd./ Clark Ave.	*/A	*/A	--	--	89-ND-64
Blosser Rd./ Solomon Rd.	*/A	*/A	--	--	89-ND-64
Solomon Rd./ Hwy. 1	*/A	*/A	--	--	89-ND-64

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19. VISUAL AESTHETICS IMPACT GUIDELINES

A. DETERMINATION OF SIGNIFICANCE

The classification of a project's aesthetic impacts as beneficial or adverse, and insignificant or significant, is clearly subject to some personal and cultural interpretation.

However, there are guidelines and policies which can be used to direct and standardize the assessment of visual impacts. Thus, this discussion does not constitute a formal significance threshold, but instead it directs the evaluator to the questions which predict the adversity of impacts to visual resources.

B. ASSESSING VISUAL IMPACTS

Assessing the visual impacts of a project involves two major steps. First, the visual resources of the project site must be evaluated. Important factors in this evaluation include the physical attributes of the site, its relative visibility, and its relative uniqueness.

In terms of visibility, four types of areas are especially important: coastal and mountainous areas, the urban fringe, and travel corridors.

Next, the potential impact of the project on visual resources located onsite and on views in the project vicinity which may be partially or fully obstructed by the project must be determined. To some extent, the former step is more important in rural settings, and the latter in urban areas. Determining compliance with local and state policies regarding visual resources is also an important part of visual impact assessment.

Significant visual resources as noted in the Comprehensive Plan Open Space Element which have aesthetic value include:

- Scenic highway corridors
- Parks and recreational areas
- Views of coastal bluffs, streams, lakes, estuaries, rivers, water sheds, mountains, and cultural resource sites
- Scenic areas.

All views addressed in these guidelines are public views, not private views.

C. INITIAL STUDY ASSESSMENT QUESTIONS FOR THE ANALYSIS OF VISUAL RESOURCES

CEQA Guidelines Appendix G (b) states: "A project will normally have a significant effect on the environment if it will have a substantial, demonstrable negative aesthetic effect". The following questions are intended to provide information to address the criteria specified in Appendix G. Affirmative answers to the following questions indicate potentially significant impacts to visual resources.

- 1a. Does the project site have significant visual resources by virtue of surface waters, vegetation, elevation, slope, or other natural or man-made features which are publicly visible?
- 1b. If so, does the proposed project have the potential to degrade or significantly interfere with the public's enjoyment of the site's existing visual resources?
- 2a. Does the project have the potential to impact visual resources of the Coastal Zone or other visually important area (i.e., mountainous area, public park, urban fringe, or scenic travel corridor)?
- 2b. If so, does the project have the potential to conflict with the policies set forth in the Local Coastal Plan, the Comprehensive Plan or any applicable community plan to protect the identified views?
3. Does the project have the potential to create a significantly adverse aesthetic impact through obstruction of public views, incompatibility with surrounding uses, structures, or intensity of development, removal of significant amounts of vegetation, loss of important open space, substantial alteration of natural character, lack of adequate landscaping, or extensive grading visible from public areas?

D. REFERENCES

1. County Resource Management Department, Scenic Highway Element of the County Comprehensive Plan, 1982.
2. County Resource Management Department, Open Space Element of the County Comprehensive Plan, 1979.
3. Department of Resource Management, Local Coastal Plan, January 1982.
4. United States Forest Service, Visual Management System, 1973.
5. Geological Survey Circular 620, Quantitative Comparison of Some Aesthetic Factors Among Rivers, 1969.
6. U.S. Dept. of Agriculture, Agriculture Handbook 478, National Forest Landscape Management, Vol. 2, Chap. 2, Utilities, July 1975.
7. Viohl, Richard C., Nieman, Thomas J., The Description, Classification, and Assessment of Visual Landscape Quality, School of Landscape Architecture, S.U.N.Y. College of Environmental Science and Forestry, Syracuse N.Y., 13210, Exchange Bibliography #1064, Council of Planning Librarians.

APPENDIX A

SANTA BARBARA COUNTY Planning and Development

Biological Resources Guidelines Technical Background Document

September 1994

Synopsis:

As an appendix to the Biological Resources Guidelines (September 1994) of the County Environmental Thresholds and Guidelines Manual, this document provides additional technical background information about biological resources, which may be useful when evaluating development proposals for impacts on vegetation, wildlife, and biological habitats.

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A. SUMMARY OF BIOLOGICAL RESOURCE STATUTES

September 1994

The Biological Resources Guidelines provides a short summary of legal authority under the California Environmental Quality Act (CEQA) for evaluating biological resource impacts, and Federal, State and County requirements and polices for the protection of biological resources.

Following are additional excerpts describing the statutory basis for the protection of individual plant and animal species, and biological habitats.

1. The Legal Basis For Protection of Threatened, Endangered and Candidate Species.

The following text is excerpted from a "REVISED MEMORANDUM OF LAW DEMONSTRATING CONTINUING COMPLIANCE BY THE STATE OF CALIFORNIA WITH 16 USC SECTION 1535(c) OF THE FEDERAL ENDANGERED SPECIES ACT OF 1973", originally prepared in 1974 by Evelle Younger, Boronkay and Mok with revisions made by JOHN K. VAN DE KAMP, Attorney General of California and others in 1990.

"The authority of the state to conserve resident species of fish, wildlife or plants determined by the state agency to be endangered or threatened is granted in the Federal Endangered Species Act (ESA) 16 USC section 1535(c)(1)(A) and (2) (A).

California Fish and Game Code Section 200 grants general authority to the Fish and Game Commission to regulate the taking or possession of birds, mammals, fish, amphibians and reptiles subject to more specific statutory restrictions...."

Regulations and Statutory Authority

"Important state authority for the conservation of endangered and threatened species of fish, wildlife and plants is found in California Endangered Species Act (CESA) enacted in 1984. Cal. Fish & Game Code §2051 et seq..... In addition for a complete picture the California Endangered Species Act (CESA) must be read with the Native Plant Protection Act (Cal. Fish and Game Code section 1900 et seq.) which also governs the preservation, protection and enhancement of endangered or rare native plants...."

California Endangered Species Act (Cal. Fish and Game Code Sections 2051 et seq.)

"This important conservation legislation declares State policy regarding threatened and endangered species, provides for a listing and review process, prohibits certain acts damaging to listed species, and provides a consultation process whereby state projects are reviewed for impacts on listed species. Both the Commission and Department are given important powers and duties vis a vis protection of subject species.

The CASE declares the State's interest in threatened and endangered species (Cal. Fish and Game Code §2051) and unequivocally sets out the State's policy in California Fish and Game Code section 2052:

"The Legislature further finds and declares that it is the policy of the state to conserve, protect, restore, and enhance any endangered species or any threatened species and its habitat and that it is the intent of the Legislature, consistent with conserving the species, to acquire lands for habitat for these species."

Toward that end state agencies in approving projects are required to seek out feasible alternatives to avoid jeopardizing the continued existence of listed species or provide appropriate mitigation and enhancement measures. Cal. Fish & Game Code §§ 2053-54. The California thresholds for endangered and threatened status (Cal. Fish & Game Code §§ 2062 and 2067) are equivalent to Federal definitions. See 16 USC §§1532(6) and 1532(20). Also the tools listed for "conserving" resources (Cal. Fish & Game Code § 2061) are identical to the federal model. 16 U.S.C. §1532(3)."

"...Species to be so conserved must first be listed. That responsibility rests with the Fish and Game Commission upon consideration of sufficient scientific information. Cal. Fish & Game Code § 2070. The listing process may be initiated by petition from any interested person (Cal. Fish & Game Code §§ 2071, 2072 and 2072.3) or on recommendation of the Department of Fish and Game (Ca. Fish & Game Code Section 2072.7. Petitions are evaluated by the Department which makes a recommendation to the Commission as to whether the petition contains sufficient information to determine if action is warranted. Cal. Fish & Game Code § 2073.5. Petitions and Department-initiated recommendations are then acted upon by the Commission, which decides whether to require formal review of the request. Cal. Fish & Game Code § 2074.2. Formal review and the corresponding "candidate species" status triggers substantial opportunities for public participation through the notification of interested parties. See Cal. Fish & Game Code §§ 2074, 2074.2, 2075, 2077 and 2078. This notification and opportunity to participate continues throughout the designation process. Formal review itself may take up to one year and results in a Department report on listing including, if appropriate, a preliminary identification of the habitat that may be essential to the continued existence of the species and recommendation as to management activities and other recommendations for recovery of the species. Cal. Fish & Game Code § 2074.6."

"Currently California's list of threatened or endangered plants and animals is set out in 14 Cal. Code Choosy. sections 670.2 and 670.5. This listing is subject to periodic Department review and appropriate Commission response. Cal. Fish & Game Code § 2077...."

"Once a species is listed "[N]o person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the Commission determines to be an endangered species or a threatened species, or attempt any of those acts," subject to some exceptions principally involving plants. Cal. Fish & Game Code § 2080....**This prohibition generally applies to candidate species undergoing formal review.** [emphasis added] Cal. Fish & Game Code § 2085..."

"In the event a project is being carried out by a local agency the Department [of Fish & Game] may participate in the environmental review process as a responsible or trustee agency as appropriate. In that regard the status of threatened or endangered is recognized in the environmental review process (14 Cal. Code Choosy. 15380) and a project impact is normally considered significant, thus requiring the consideration of alternatives and mitigation, if a project will substantially affect a threatened or endangered species of animal or plant or the habitat of the species. 14 Cal. Code Choosy. Causa. 6, Chap. 3, Cheesy. G(c)."

"The Native Plant Protection Act [Cal. Fish and Game Code section 1900 et seq.] provides further authority to conserve plant species and conduct investigations in support of conservation in accordance with 16 U.S.C. sections 1535(c)(2)(A)(C).

3. Wildlife and Natural Areas Conservation Act (California Fish and Game Code Section 2700 et seq.).

This legislation became effective November 9, 1988 and provides money for habitat protection for California species including those designated as threatened or endangered. Cal. Fish & Game Code § 2701. The principal protection focus is acquisition...."

"California Fish and Game Code Section 1700 et seq., entitled "Conservation of Aquatic Resources," declares State policy to encourage conservation of the living resources of the ocean and other state waters, including species preservation.

Similarly California Fish and Game Code section 1750 et seq. (Native Species Conservation and Enhancement Act) declares a *policy of maintaining sufficient populations of all species of wildlife and native plants and the habitat necessary to insure their continued existence at optimum levels* and establishes an account to manage private donations toward that end....California Fish and Game Code section 1800 et seq. provides that the policy of the State, inter alia, is "*to encourage the conservation and maintenance of wildlife resources*" including the maintenance of "*sufficient populations of all species of wildlife and the habitat necessary to ...perpetuate all species of wildlife for their intrinsic and ecological values....*" Lastly, Cal. Fish and Game Code Sections 1930-1933 establishes the significant natural areas program to protect

and preserve important habitats and ecosystems through developing information with respect to natural resources (the California Natural Diversity Data Base)...[and other mechanisms]."

Public Resources Code

"California Public Resources Code Section 21000 et seq. was [enacted] in 1970 as the [California] Environmental Quality Act of 1970 (CEQA), to promote the declared legislative intent to maintain a quality environment including the protection of natural resources.

Section 21001(c) of the code provides that it is the policy of the State to:

"Prevent the elimination of fish or wildlife species due to man's activities, insure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities and examples of the major periods of California history."

The Act goes on to provide for an environmental impact report, similar to the provisions in the National Environmental Policy Act of 1969 and for the preparation of environmental impact reports by all local agencies, state agencies, boards, and commissions on any project which would have a significant effect on the environment."

California Coastal Act

"California Public Resources Code Section 30000 et seq. was added by statute in 1976 as the California Coastal Act. The act sets out various policies protecting marine and land resources including species and habitat. To this end, the California Coastal Commission was established to regulate development with local government along the coast to insure that development will be consistent with conservation policies."

Authority and Jurisdiction over Wetlands

The Federal Clean Water Pollution Control Act of 1972, ("Clean Water Act") requires a permit for the discharge of pollutants into the waters of the United States. The Clean Water Act defines pollutants to include dredge and fill materials (33 U.S.C. S 1362). Section 404 of the Clean Water Act authorizes the Army Corps of Engineers to issue permits to discharge dredge and fill materials into waters of the United States (33 U.S.C. S 1344(a). Federal Regulations define waters of the United States to include wetlands (33 CFR S 328.3(a)(7).

Due to the widely recognized high economic and biologic value of wetlands, the California Coastal Act mandates governmental regulation of these areas. The Act requires that the biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes be maintained and, where feasible, restored. Sections of the Act provide general policies for development in and adjacent to wetlands, and specific policies for protecting these areas (California Coastal Commission, 1981).

Fish and Game Sections 1601 and 1603 prohibit any person or governmental agency, or public utility from substantially diverting or obstructing the natural flow or substantially change the bed, channel or bank of any river, stream or lake designated by the department, or use any material from the streambeds without obtaining the appropriate permit from the California Department of Fish and Game.

It is generally advisable to consult with representatives of these agencies prior to submittal of an application to the County, so that impacts to Wetlands and Deepwater Habitats are avoided or minimized to the greatest extent feasible.

2. The Legal Basis for The Protection of Habitats

California Fish and Game Code Section 1750 et. seq. (Native Species Conservation and Enhancement Act) declares a policy of maintaining sufficient populations of all species of wildlife and native plants and the habitat necessary to ensure their continued existence at optimum levels.

California Fish and Game Code Section 1800 et seq. states that it is the policy of the state "*to encourage the conservation and maintenance of wildlife resources" including the maintenance of "sufficient population of all species of wildlife and the habitat necessary to... perpetuate all species of wildlife for their intrinsic and ecological values...."*

Furthermore, CEQA (Public Resources Code section 21000(c) states that it is the policy of the state to: "*...prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities and examples of the major periods of California history.*"

CEQA Appendix G, items (c), (d), and (t) specifically mention or refer to habitat.

The California legislature has further recognized the need to conduct habitat-based land use planning through adoption of the *Natural Community Conservation Planning Act of 1991 (NCCP)* (Fish and Game Code Section 2800 et. seq). The purpose of this Act is to provide for regional protection and perpetuation of natural wildlife diversity while allowing compatible land use and appropriate development and growth. The NCCP process is designed to provide an alternative to current "single species" conservation efforts by formulating regional, natural community-based habitat protection programs to protect the numerous species inhabiting each of the targeted natural communities.

In 1986, the U.S. District Court for Hawaii (*Palila v. Hawaii Department of Land and Natural Resources and Sportsmen of Hawaii, 649 F.Supp.1070 [1986] (Palila II)*) issued a ruling regarding destruction of habitat of an endangered bird known as "Palila" in the State of Hawaii. Regarding the term "harm" within the definition of "take" of the Federal Endangered Species Act, the Court concluded:

"A finding of "harm" does not require death to individual members of the species; nor does it require a finding that habitat degradation is presently driving the species further toward extinction. Habitat destruction that prevents the recovery of the species by affecting essential behavioral patterns causes actual injury to the species and effects a taking under Section 9 of the Act."

"The key to the Secretary's [of the Interior] definition is harm to the species as a whole through habitat destruction or modification. If the habitat modification prevents the population from recovering, then this causes injury to the species and should be actionable under Section 9."

See also *Sierra Club v. Lyng*, 694 F.Supp.1260 (E.D. Tex. 1988) and *Sierra Club v. Yeutter*, 926 F.2d 429 (5th Cir.1991). Further discussion of habitat protection under the Endangered Species Act is provided by Sidle and Bowman (1988).

B. BIOLOGICAL SURVEY GUIDELINES

1. Initial Assessment of Biological Resources (Initial Studies, EIRs and Mitigated NDs)

During the overall land use permit process, an on-site inspection is conducted by the Planning and Development Department to determine if critical or sensitive biological resources may be impacted by a proposed project. Should the on-site investigation indicate the presence, or a high potential for the presence, of critical or sensitive biological resource, a biological survey may be required, pursuant to CEQA Section 15064 (Determining Significant Impacts). The biological survey could be completed as part of an EIR or it could be used to develop a Mitigated Negative Declaration as provided for by CEQA Section 15070:

1. The Initial Study shall be used to provide a written determination of whether a Negative Declaration or an EIR shall be prepared for a project.
2. Where a project is revised in response to an Initial Study so that potential adverse effects are mitigated to a point where no significant environmental effects would occur, a Negative Declaration shall be prepared instead of an EIR. If the project would still result in one or more significant effects on the environment after mitigation measures are added to the project, an EIR shall be prepared.
3. The EIR shall emphasize study of the impacts determined to be significant and can omit further examination of those impacts found to be clearly insignificant in the Initial Study.

Biological survey reports are conducted and written by professional biologists under contract to the County. Payment for the study is accomplished by a deposit with the County from the applicant in an amount equal to the cost estimate of the consulting biologist. In some cases, work is performed by a RMD-qualified biologist under contract to the applicant.

All biological surveys are subject to review and acceptance by RMD staff and may require reexamination by an outside consulting biologist acceptable to RMD. If a disagreement among experts occurs, review by an independent biologist may be required.

In a majority of cases, applicants work with the staff of the Development Review Division to modify the project design for the purpose of reducing impacts to biological resources to an acceptable level. Project design modifications, with the applicant's consent, then become a part of the project description and the basis for issuing a Mitigated Negative Declaration. However, if design modifications are not acceptable to an applicant, then additional biological analysis (and possibly development of additional mitigation measures) would be required as a component of an EIR pursuant to the above citation from CEQA.

2. Qualifications to Perform the Biological Survey

- A. Biological consultants must be on the RMD list of qualified biologists or on staff of a RMD-qualified consulting firm or otherwise be acceptable to RMD. A file is retained in RMD which tracks the performance of each consultant. Consultants should be selected on the basis of possessing objectivity and the following qualifications, in order of importance:
1. A BA/BS in biological sciences or other degree specializing in the natural sciences.
 2. Professional or academic experience as a biological field investigator, with a background in field sampling design and field methods;
 3. Taxonomic experience and a knowledge of plant or animal (whichever is appropriate) ecology;
 4. Familiarity with plants, animals, or both (whichever is appropriate) of the area, including the species of concern; and
 5. Familiarity with the appropriate county, state and federal policies related to special status species and biological surveys.
 6. In addition, the County of Santa Barbara requires that a consultant, hired to perform a biological survey, presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed. Therefore, to avoid a real or perceived appearance of a conflict of interest, a biological survey submitted by a consultant shall be subject to verification of the RMD staff biologists or a third outside consulting biologist.

3. Guidelines for Preparation of Biological Survey Reports

* These guidelines were prepared by James R. Nelson, a botanist with the California Energy Commission, published in its original form by the California Department of Fish and Game (1984) and supplemented by RMD staff in consultation with local biologists.

A. When to Conduct a Biological Survey

It is appropriate to conduct a biological field survey to determine if, or the extent to which, sensitive plants or animals or a habitat of concern will be affected by a proposed project when:

1. Based upon an initial biological assessment, it appears that the project may damage potential special status plant or animal habitats;
2. Special status species have historically been identified on the project site and adequate information for impact assessment is lacking; or
3. No initial biological assessment by RMD biologist has been conducted and it is not known which habitats or the quality of habitats exist on the site, nor what the potential impacts of the project may be.

B. Guidelines and Goals of the Biological Survey

Biological surveys that are conducted to determine the environmental impacts of development activities should include particular attention to all rare, threatened, and endangered species and habitats. The species and habitats are not necessarily limited to those that have been "listed" by state and federal agencies, but include any species that, based upon all available data, can be shown to be rare, threatened and/or endangered. These can include "federal candidate" species, "state special concern" species, and those of local concern such as those species which are endemic, rare in the region, or declining in number.

Field searches should be conducted in such a manner that they will locate any listed or special status plant or animal species that may be present/a resident or that may utilize the site on a seasonal rather than year-round basis. Specifically:

1. Investigations should be conducted at the proper season and time of day when special status species are both evident and identifiable. Field surveys should be scheduled to coincide with known flowering periods, and/or during periods of phenological development that are necessary to identify plants of concern, and during periods critical to the species such as nesting for birds or larval development for amphibians.
2. Investigations should be both predictive in nature and based upon field inspection. Surveys should predict the presence of rare plants and animals (which may not be present every year or which may use it infrequently) based upon the occurrence of habitats or other physical features, in addition to actual field observation. The survey should not be limited to a description of those species that are actually observed in the field. Every species noted in the field should be identified to the extent necessary to ensure that it is neither a listed nor special status species.
3. Investigations should be conducted in such a manner that they are consistent with conservation ethics. Collections of voucher specimens or rare (or suspected rare) plants or animals should be made only when such

actions do not jeopardize the continued existence of the population and in accordance with applicable state and federal regulations. All voucher specimens should be deposited at local public herbaria or recognized museums of natural history for proper storage and future reference. Photography should be used to document plant identifications and habitat whenever possible, especially when rare plant populations cannot withstand collection of vouchers.

4. Investigations should be conducted using systematic field techniques in all habitats of the site to ensure a reasonably thorough coverage of potential impact areas.
5. Investigations should be well-documented. When rare or endangered plants or animals or unusual plant communities are located, a California Native Plant Field Survey Form or its equivalent must be completed and sent to the Natural Diversity Data Base and a copy attached to the report sent to RMD.

C. Contents of the Biological Survey

Reports of biological field surveys and reports must contain the following information with the exception of items 10 through 12 which are recommended for inclusion but may not be necessary in all cases.

1. A detailed map of the project regional location and specific study area;
2. A written description of the biological setting, referencing the plant community and a detailed map of the vegetation and/or animal habitat areas.
3. A detailed description of the survey methodology;
4. The dates and times of field visits;
5. An assessment of all potential direct and indirect impacts;
6. A discussion of the status, distribution, and habitat affinities of all special status plants or animals found at the project site;
7. A discussion of the quality of the habitat considering: its ability to support species diversity, its ability to be self-sustaining (in the context of the surrounding area, not just the project boundaries), how common or rare it is (see Table 3 for example), how good a representative it is (plant community), the degree of previous disturbance, and other history of the site, etc.

8. Recommended mitigation measures to reduce impacts to the maximum extent feasible and to protect the resource(s) by considering a range of possibilities, including: avoidance, fencing, open space easements, clustering and off-site mitigation;
9. Suggestions for monitoring and evaluating the effectiveness of the mitigation measures;
10. Solutions which, when feasible, work toward regional protection of the resources, including: combining open space easements with adjacent ownerships, maintenance of open space corridors; attempting to preserve as much contiguous habitat as possible;
11. Recommended methods for the restoration of damaged habitats, where appropriate and feasible, and suggested success criteria to be achieved at the end of the proposed monitoring period;
12. A list of all listed or special status plant or animal species observed or expected to occur on site. A list of additional species observed or expected should also be included. This may be representative of the communities present rather than exhaustive. Division by taxonomic group is not necessary.
13. Copies of all Natural Diversity Data Base Field Survey Forms sent to Sacramento and Natural Community Field Survey Forms, for sensitive species or communities found on the project site;
14. The name(s) of the field investigator(s); and
15. A list of references cited, persons contacted, herbaria and museums visited, and the location of voucher specimens.

C. BIOLOGICAL HABITAT DESCRIPTIONS AND PROJECT DESIGN SUGGESTIONS

The following provides brief descriptions of some, though not all, of the habitats occurring in Santa Barbara County, an explanation of the habitat's importance, and project design suggestions for minimizing impacts to habitats, as well as individual plant and animal species. These habitats are by no means the only priority habitats in the county, rather, they represent the habitats where conflicts with land use developments most often occur.

1.0 Wetlands

All naturally occurring wetlands are considered significant resources because they provide a high number of functional values in a generally dry, arid region, and because of their extremely rare occurrence within the region. Examples include, but may not be limited to coastal salt and brackish marshes, fresh water marshes and vernal pools.

Wetlands, due to the presence of water, support the most diverse assemblages of plants and animals found in the southwestern United States. Because of the high biological productivity in wetlands and the historic elimination of 90% of California's wetlands, the highest numbers of threatened and endangered species most often occur here. Wetlands are utilized by a large number of organisms including invertebrate larvae, large mammals and plants that may only survive in wetland areas. Wetlands provide food, cover for protection against predators, and habitat for breeding of some species. Because Santa Barbara County is located along the Pacific Flyway, the County not only has a diverse resident bird population, but also those migrating birds that overwinter in Santa Barbara County (migrants). Wetlands provide seasonal and year-round habitat to several migrating bird species along the Pacific Flyway and fish utilize some of these areas as spawning and foraging habitat.

Wetlands also provide a number of public benefits¹ including: (1) protection of the shore from erosion (typically applicable to marshes, sloughs, and other estuaries), (2) Water Quality/Hydrology which support groundwater recharge, surface water availability, and water purification/filtration, (3) food chain support, (4) nutrient cycling, and (5) Socio-Economic benefits which include aesthetics, ethno-botany, recreation, research, education, economic benefit, etc.

1.1 Coastal Salt Marsh

a. Description

Coastal salt marshes are restricted to the upper intertidal zone of protected shallow bays, estuaries, and coastal lagoons. Physical conditions are dominated by the tides and variances in elevation which influence the frequency and duration of

¹ Bowland and Ferren (1992), and Sather and Smith (1984)

tidal flooding. The harsh, tidal environment of a salt marsh results in zones of different indicator plants. The environment includes tidal inundations of salt or brackish water, water-saturated soils containing few air spaces and hence reduced oxygen levels, and an environment fully exposed to sun, wide temperature fluctuations, wind, etc. The lowest zone is inundated twice daily; whereas the middle or upper zones may be inundated only once or twice a month, or even by only the highest spring tides (Faber, 1982).

Because tides are so important in providing moisture for coastal marshes, any interruption in tidal circulation can have drastic effects on these communities. The total area of marsh habitat may be correlated with the tidal prism (the total volume of water moving in and out of the slough\marsh\lagoon, etc). As tidal prisms are reduced through sedimentation due to urban and agricultural development or for road construction, the likelihood of closure at the mouth increases. This event can change the soil and water salinity and water levels. This in turn affects many salt-tolerant plants adapted to this type of environment and convert salt-marsh habitat to upland habitats available to species such as the Belding's Savannah sparrow. Additionally, wildlife species such as the tidewater goby, depend on brackish waters to survive.

In addition to sedimentation, increases of fresh water inputs into the system due to urban and agricultural runoff may reduce salinity levels, while upstream dams may have the opposite effect. This runoff may also introduce toxic elements into the marsh such as fertilizers, septic effluent, pesticides, oil, grease, etc. Other potential impacts include changes in depth of enclosed water, elevated temperatures and decreased oxygen from algal blooms often associated with high nitrogen levels from polluting sources. These changes can alter the number and diversity of wildlife species. (Zedler, J. 1982). Development adjacent to the area could also disrupt wildlife behavioral patterns due to noise, neighboring domestic dogs and cats and other physical disturbances.

b. Project Design Suggestions

1. Maintain tidal prism.
2. Minimize adverse hydrologic changes, sedimentation, and introduction of any toxic elements.
3. Timing of construction activity should be carefully planned to minimize indirect impacts such as noise and turbidity on sensitive animal species during critical periods such as breeding and nesting.
4. Maintain wildlife dispersal corridors.
5. Enhancement and restoration of salt marshes that can be incorporated into the project include: removal of existing fill, improving tidal circulation

through grading, channel excavation, or removing other impediments to circulation, and cleanup.

1.2 Vernal Pools and Associated Features

a. Description

Vernal pools are perhaps the most unique, rare, and endangered type of wetlands in California according to a number of studies cited in the Ferren and Pritchett 1988 report (p. 3). In fact, these wetlands are found only in a few places in the world outside California, namely southern Oregon and in the Cape Province of South Africa (Faber, P. 1982).

A vernal pool is a small depression that fills with water during the winter (gradually drying during the spring and becoming completely dry in the summer) and supports a unique assemblage of plants.

V.L. Holland and David Keil (1990) add: "Vernal pool vegetation is characterized by herbaceous plants that begin their growth as aquatic or semiaquatic plants and make a transition to a dry-land environment as the pool dries. This generally results in the development of concentric rings of vegetation that develop around the margins of the drying pool. Most vernal pool plants are annual herbs. The relatively few perennial species grow from deeply seated rhizomes or rootstocks. Shrubs and trees are absent from vernal pool communities. Some species from vernal pool communities have very showy flowers and act as aspect dominants."

"Vernal Flat" is used to describe areas that are not easily definable as discrete basins (vernal pools) and whose wetland/upland affiliations fluctuate corresponding to changing precipitation trends from year to year. Following several years of average to above-average rainfall, these tend to support vernal pool species and exclude upland species. Following several years of low rainfall, these areas tend to be characterized by upland species (Olson, 1992).

"Swales" are low moist areas, that when associated with vernal pools, may support vernal pool species including invertebrates (for example: U.S. Fish & Wildlife Service, 1992). They may also be important because they transport rain water to a vernal pool or complex of pools.

Wildlife species, such as the western spadefoot toad and California Tiger Salamander utilize these seasonal wetlands for breeding and egg-laying during the first rains of the year (December through April). The tiger salamander can spend several months in the larval stage, metamorphosing to adult salamanders as late as May through August when the pools dry up and then dispersing to rodent burrows in adjacent grassland areas. Spadefoot toads breed later in the year than tiger salamanders (March through April) and are dependent upon grass pollen and other vegetation for food and to conserve moisture during the tadpole stage. This species also metamorphoses to adults and disperses to surrounding rodent burrows

in adjacent grasslands. Furthermore, other amphibians utilize these seasonal ponds as habitat.

Direct and indirect impacts to the pool itself may result in adverse changes to either the physical or chemical properties of the pool. Impacts to the watershed or community in which it functions may also impact the pool. For example, fragmentation of habitat may interrupt interaction between the habitat and the organisms within the pools (pollination, seed, invertebrate and vertebrate dispersal, provision of drinking and bathing water, etc.).

b. Project Design Suggestions

1. Because vernal pools do not exist by themselves as isolated units, and instead function within a larger plant community such as a grassland, the surrounding upland habitat should be preserved to the maximum degree feasible. If the vernal pools occur in a dispersed pattern throughout an upland community, the entire community should be preserved as one unit.
2. Design developments to provide a buffer around all vernal pools (with the possible exception of artificially created pools), or include enough of a buffer to protect the topographic watershed, whichever is greater. Typical buffer area: 100-250 feet from edge of pool.
3. Vernal Pool "complexes" (groupings of several pools have swales according to hydrology and topography) should be avoided and buffered (minimum of 100 feet) or enough of a buffer to protect the topographic watershed of the entire complex, whichever is greater.
4. Restoration and enhancement can include removal of exotic (non-native) species, planting of appropriate native species (seeding), removal of fill, relocation of foot and bike paths around rather than through the pools, etc.
5. Disturbance to vernal pools or vernal pool complexes should be timed to avoid breeding seasons of sensitive wildlife species.

1.3 Riparian Habitats

a. Description

Riparian habitat is generally considered as the terrestrial or upland area adjacent to freshwater bodies, such as the banks of linear watercourses (e.g.: creeks and streams), the shores of lakes and ponds, and aquifers which emerge at the surface such as springs and seeps (Bowland and Ferren 1992). The habitat is typically thought of as a corridor from stream bank to bank (from edge of riparian

vegetation to edge of riparian vegetation) which may include a wetland portion in the center.²

Riparian habitat occurs in and along the County's four major rivers (Santa Ynez, Santa Maria, Cuyama and Sisquoc) and in and along the County's many creeks and streams. This habitat can also occur along arroyos and barrancas, and other types of drainages throughout the County.

Riparian habitat is particularly rich in wildlife species, in that water is present at least during some part of the year in these corridors and the dense plants of varying heights provide a diverse food source and safety from predators. In particular, riparian habitat provides forage, cover, water, migration and fawning for Santa Barbara County's resident deer herd. Various types of cover are required by deer including protective cover, for fawning, feeding and resting, escape cover from predators, and thermal cover to provide temperature regulation in the winter and summer. Riparian habitats typically provide all these habitat requirements. Deer also require a variety of food types in their diet, depending upon the time of year and will utilize oak woodlands, chaparral and grasslands adjacent to riparian corridors in order to obtain a sufficient diet. The shade of bank side vegetation can keep a stream cold enough for migratory sport fish such as steelhead trout.

Less obvious species that utilize the riparian corridors are the amphibians that require plunge pools in which to reproduce, seek protection from predation and maintain a constant body temperature. Pool and riffle sequences within streams and creeks are necessary for successful spawning for many species of fish. Specialized bird species such as Cooper's hawks and a great variety of songbirds utilize riparian habitat for breeding, nesting and foraging due to the diversity of structural heights and continuity of vegetation along the drainages.

b. Project Design Suggestions

1. Incorporate into project design a vegetated buffer from the upland edge of the riparian canopy at least 50 feet in width.
2. Inclusion of adjacent upland vegetation in the buffer. Upland vegetation is important as habitat for a large number of species, particularly amphibians,³ and also aids in stabilizing the banks, which reduces erosion and sedimentation potential.
3. Retain animal dispersal corridors, including the understory.

²The Cowardin classification system does not use the term "riparian". Cowardin categories for riparian systems are palustrine and riverine.

³ Some species such as the western pond turtle may utilize upland habitat as much as 1/4 mile away from the riparian wetland (Sweet 1992).

4. Construction activity can be planned to avoid critical time periods (nesting, breeding) for fish and other wildlife species.
5. Careful siting of some projects such as bridges and pipelines can limit the disturbance area to previously disturbed locations.
6. Restoration or enhancement of riparian habitat on a project site can enhance the ecological value of the creek, stream, or river, both upstream and downstream.

2.0 Chaparral

Chaparral is composed mainly of woody, evergreen shrubs. It forms extensive shrublands that occupy most of the hills and lower mountain slopes of Santa Barbara County and throughout California. It is adapted to drought and fire, passing through cycles of burning and regrowth approximately every 30 years. Even though chaparral has no commercial value, it provides the most highly valued watershed cover of any vegetation community in the state (Hanes, 1977). Chaparral occurs throughout Santa Barbara County and is further broken down into a number of categories.

2.1 **Burton Mesa Chaparral**

a. **Description**

Central Maritime Chaparral, also known as Sandhill or Burton Mesa Chaparral is a unique form of chaparral that is restricted to the aeolian sands of the Orcutt soils formation north of Lompoc. Many of the species unique to Burton Mesa Chaparral are narrowly restricted in distribution (Odion, Storrer and Semonsen 1993, Ferren et. al 1984, Smith 1976, Dames and Moore 1985). Because of the high number of endemic species (many of which are dominants in the community), the unusual oaks, and a rich herbaceous understory, Burton Mesa Chaparral has been recognized as a valuable biological resource by local biologists and the County of Santa Barbara. Various land uses have reduced its original limited extent which has been estimated as follows:

Original Central Chaparral Habitat	22,153 acres
1938 Central Maritime Chaparral	14,563 acres
1987 Central Maritime Chaparral	8,618 acres

In 1988 it was reported that of the 39 percent of original habitat that remains, two-thirds is found within Vandenberg Air Force base, where it is severely threatened by military development and land management practices that have resulted in the invasion of vigorous exotic (non-native) species particularly iceplant. These trends are continuing at a rapid rate (Odion, Hickson and D'Antonio 1992, Philbrick and Odion 1988).

Since the time the 1988 report was written a 5,125 acre property was acquired by the State of California. This land contains roughly 3,250 acres of semi-pristine to pristine, and roughly 150 acres of degraded Central Maritime Chaparral, in addition to substantial acreages of other important plant communities (Odion, Storrer and Semonsen 1993). Mitigation efforts are now being focused on acquisition of adjacent lands and funding of habitat restoration and management within the preserve.

2.2 Coastal Sage Scrub

a. Description

Coastal sage scrub is a drought-tolerant, Mediterranean habitat characterized by soft-leaved, shallow-rooted subshrubs such as California sagebrush, (*Artemisia californica*), several sage species (*Salvia spp.*), California buckwheat (*Eriogonum spp.*), and California encelia (*Encelia californica*) (Bowler, 1990). Commonly called "soft chaparral", Coastal sage scrub is highly fire adapted, and increases in species richness following fires, but a second wave in the number of species (mostly understory species that are not fire successional) occurs 15-25 years after burning (Westman 1987).

Coastal sage scrub and the related coastal succulent scrubs in northern Baja California originally extended from San Francisco to El Rosario in Baja California and has been divided into four floristic associations, two of which occur in Santa Barbara County: Diablan (San Francisco to Point Conception) and Venturan (Point Conception to Los Angeles). Coastal sage scrub is limited to the lower elevations of both the coastal and interior regions of the mountains where moist maritime air penetrates inland.

More than a decade ago it was estimated that 85 to 90 percent of the original coastal sage scrub habitat (Westman, 1981) had been eliminated as a result of urban development and agriculture (O'Leary, 1989). Other factors contributing to loss of this habitat have been reported to be increased air pollution and changes in fire frequency due to fire suppression activities. Coastal sage scrub is being reduced in its overall extent and fragmented by road and urban development particularly in Orange and San Diego Counties.

2.3 Project Design Suggestions

1. The basic principles of preserving biodiversity apply to this habitat type. Design the project so that continuous, unbroken habitat areas are preserved to the greatest extent feasible.
2. Retain corridors to connect with other undisturbed areas to preserve wildlife travel corridor.

3. Removal of invasive exotic species such as freeway iceplant (Zedler and Scheid 1988) and pampas grass improves the quality of the remaining habitat.
4. Consider indirect effects of chaparral removal, including reduction of groundwater recharge, increased erosion and sedimentation to adjacent creeks and streams which may affect riparian habitats and wildlife.
5. Balance between design measures for habitat protection and for fire management.

3.0 Native Grasslands

a. **Description**

Native grasslands which are dominated by perennial bunch grasses such as purple needlegrass (*Stipa pulchra*) tend to be patchy (the individual plants and groups of plants tend to be distributed in patches). Valley Grassland in California once occurred over 8 million acres in the Central Valley and in scattered patches along the Coast Ranges (Heady, 1977). Few stands of native grasslands remain in the state and the habitat is considered rare both in the state and within the county. Even among the "pristine" grasslands in the state, the vegetative cover of native grassland species is reportedly rarely greater than 50 percent, and in many of these reserves it is commonly found between 15 and 25 percent of the total vegetative cover (Keeler-Wolf, 1992). A study commissioned by the County in 1989 reported that native grassland areas are exceedingly rare in the County, except on the Channel Islands and inside Gaviota State Park (Odion, 1989).

b. **Project Design Suggestions**

1. Design the project so that continuous habitat areas are preserved to the greatest extent feasible.
2. Incorporation of restoration and enhancement measures, including weeding, intentional burning, revegetation (planting of seeds or plugs), or other procedures will facilitate natural regeneration of the grassland.

4.0 Woodlands and Forests

a. **Description**

Generally speaking, there are three types of oak woodlands in Santa Barbara County. Valley Oak Woodland is typically characterized by scattered trees surrounded by grassland, whereas trees in live oak and blue oak woodlands tend to be more closely spaced. Coast Live Oak (*Quercus agrifolia*) forms dense groves of trees on north-facing slopes and is the primary oak species found in southern oak woodlands. Deep alluvial soils in interior valleys support grasslands and Valley Oak Woodland (*Quercus lobata* and *Quercus agrifolia*). The foothills of the inner coast ranges are inhabited by Blue Oak (*Quercus douglasii*), Coast

Live Oak (*Quercus agrifolia*), Digger Pine (*Pinus sabiniana*), and other components of blue oak woodland. The number, type, and density of oak trees, are principal characteristics which define the various types of woodlands; further, the relationship between trees and vegetation in the understory below in woodlands also define variety in woodland habitats. In addition to oak forests, a variety of pine and other coniferous forests also occur in the county. Oak communities are emphasized in the following discussion because they so frequently occur in the same areas in which developments are proposed.

Oak habitats offer diverse resources to wildlife: shade in summer, shelter in winter, perching, roosting, nesting, and food storage sites. Acorns are the most plentiful food source, but oak catkins, twigs, leaves, buds, sap, galls, fungi, lichens, and roots all provide important foods. Other species associated with the oak woodland include redberry, coffeeberry, toyon, mistletoe, poison oak, forbs and grasses which are also important foods for wildlife. Insects feeding in oak habitats are eaten by birds, reptiles, amphibians, mammals and other insects which in turn feed larger predators such as owls, hawks, snakes, bobcats, coyotes, mountain lions and bears. Some oak trees are "granary trees" in which acorn woodpeckers store acorns. Scrub jays and magpies inadvertently "plant" acorns when they store them in the ground. Dead trees, or snags, provide perching, feeding and nesting sites for raptors as well as thermal cover for smaller mammals, reptiles and amphibians. Oaks provide wildlife habitat from the seedling through the snag (dead tree) stages of succession in the woodland. This habitat type supports a diverse wildlife population, and disruption of the woodland often indirectly results in disrupting wildlife breeding, nesting, foraging, and dispersal.

b. Project Design Suggestions for Woodlands and Forests

1. Retain contiguous blocks of habitat area particularly where adjacent to offsite habitat areas.
2. Retain animal migration corridors to other habitat areas.
3. Retain understory.

c. Project Design Suggestions for Individual Native Trees

1. **Avoidance.** The preferred method of protecting native trees is to avoid any disturbance within the area 6 feet away from their driplines (the outermost edge of a tree's foliage) and drainage patterns above and below the tree. Although the stabilizing structural roots generally occur within the dripline, numerous and highly significant "feeder roots" which facilitate gas and water exchange and uptake of nutrients occur outside the dripline.

For management purposes, it is useful to think of a tree's root zone as being one third larger than the drip line area (University of California Cooperative Extension, no date). As a general rule, avoid grading and impervious surfaces within 6 feet of the dripline of all significant trees where ever feasible. This may be adjusted upwards or downwards depending on the size of the tree. It is advisable to include a margin of safety to account for unintentional errors during the construction phase of the project. The most vulnerable parts of a mature tree are the root crown (at the base of the trunk) and the entire root zone.

2. **Broad Scale Irrigation.** Avoid irrigation with rainbirds beneath previously unirrigated oaks because it is likely to create conditions favorable to oak root fungus. It is advised that irrigation water, if necessary, be infrequent (i.e., once a week), be done by hand or drip method (Semonsen 1992, Doud 1992), and be no closer than 6 to 10 feet (depending on the size) from the trunk of the tree.
3. **Hard Surfaces.** Any hard surfaces under oaks would better consist of paving blocks or other material which will allow air and rain water to reach the roots.
4. **Ground Disturbance.** As a general guideline, disturb no more than 20% of the total area beneath the dripline of any one tree.

d. **Project Design Guidelines for Non-Native Trees**

1. Monarch butterfly wintering sites can be preserved by keeping the grove of trees in a state so that shelter from wind and temperature extremes are retained. This may include other trees outside the main grove that affect wind exposure.
2. Where possible, preserve other non-native trees that have value to important wildlife species.

D. BIOLOGICAL MITIGATION MEASURES

September 1994

The following are biological mitigation measures taken from the Santa Barbara County Standard Conditions of Approval and Standard Mitigation Measures Manual. This is a listing of model measures containing standard language used when such measures are applied as conditions of permit approval. Please note that these measures are not applicable to all cases and projects. In addition, the wording of measures may be customized as appropriate to address specific project circumstances. Also note that the Standard Conditions and Mitigations Manual is updated on an ongoing basis and may contain updated wording.

TREES:

- I. A tree protection and replacement program, prepared by a P&D-approved arborist/biologist shall be implemented. The program shall include but not be limited to the following components:
 - A. **Program Elements to be graphically depicted on final grading and building plans:**
 - a) The location and extent of dripline for all trees and the type and location of any fencing.
 - b) Construction envelopes shall be designated on all parcels located outside the driplines of all _____ trees. All ground disturbances including grading for buildings, accessways, easements, subsurface grading, sewage disposal and well placement shall be prohibited outside construction envelopes.
 - c) Equipment storage and staging areas shall be designated on approved grading and building plans outside of dripline areas.
 - d) In the event access roads or driveways encroach within ___ feet of a _____ tree's dripline, the paving shall be pervious material (i.e., gravel, brick without mortar).
 - e) Permanent tree wells or retaining walls shall be specified on approved plans and shall be installed prior to issuance of grading permits. A P&D qualified arborist shall oversee such installation.
 - f) Drainage plans shall be designed so that oak tree trunk areas are properly drained to avoid ponding. These plans shall be subject to review and approval by P&D or an P&D qualified biologist/arborist.
 - g) All utilities shall be placed within or directly adjacent to roadways and driveways or in a designated utility corridor in order to minimize impacts to trees. All utilities shall be placed within construction envelopes.

B. Program elements to be printed as conditions on final grading and building plans:

- a) No grading or development shall occur within the driplines of oak trees which occur in the construction area.
- b) All ___ trees within 25 feet of proposed ground disturbances shall be temporarily fenced with chain-link or other material satisfactory to P&D throughout all grading and construction activities. The fencing shall be installed six feet outside the dripline of each _____ tree, and shall be staked every 6 feet.
- c) No construction equipment shall be parked, stored or operated within 6 feet of any _____ tree dripline.
- d) No fill soil, rocks, or construction materials shall be stored or placed within six feet of the dripline of _____ a tree.
- e) No artificial surface, pervious or impervious, shall be placed within a six (6) feet of the dripline of any _____ tree. *[Only use if this is feasible for access roads, Note any exceptions.]*
- f) Any roots encountered that are one inch in diameter or greater shall be cleanly cut and sealed with a tree-seal compound. This shall be done under the direction of a P&D approved arborist/biologist.
- g) Any trenching required within the dripline or sensitive root zone of any specimen tree shall be done by hand. Any native tree roots greater than one inch in diameter exposed in trench shall be cut and sealed with approved sealant immediately after trench is excavated.
- h) No permanent irrigation shall occur within the dripline of any existing oak tree.
- i) Any construction activity required within three (3) feet of a _____ tree's dripline shall be done with hand tools.
- j) Only designated trees shall be removed.
- k) Any _____ trees which are removed and/or damaged (more than 25% of root zone disturbed) shall be replaced on a __:1 basis with _____ gallon size saplings grown from locally obtained seed. Where necessary to remove a tree and feasible to replant, trees shall be boxed and replanted. A drip irrigation system with a timer shall be installed. Trees shall be planted prior to _____ and irrigated and maintained until established (five years). The plantings shall be protected from predation by wild and domestic animals, and from human interference by use of staked, chain link fencing and gopher fencing during the maintenance period.

- l) Maintenance of tree type shall be accomplished through water-conserving irrigation techniques.
 - m) Trees scheduled for removal [*Specify which trees by type or size, or identify individual trees*] shall be boxed and replanted [*State location*].
 - n) Any unanticipated damage that occurs to trees or sensitive habitats resulting from construction activities shall be mitigated in a manner approved by P&D. This mitigation may include but is not limited to posting of a performance security, tree replacement on a 10:1 ratio and hiring of an outside consultant biologist to assess the damage and recommend mitigation. The required mitigation shall be done immediately under the direction of P&D prior to any further work occurring on site. Any performance securities required for installation and maintenance of replacement trees will be released by P&D after its inspection and approval of such installation.
 - o) All trees located near proposed buildings shall be protected from stucco or paint during construction.
 - p) A P&D approved arborist shall be onsite throughout all grading and construction activities which may impact trees located _____.
2. The applicant shall hire a P&D-qualified arborist/biologist to evaluate all proposed native tree and shrub removals within 25 feet of potential ground disturbances. The arborist report shall present biologically favorable options for access roads, utilities, drainages and structure placement taking into account native tree and shrub species, age, and health with preservation emphasized. All development and potential ground disturbances shall be designed to avoid the maximum number of natives possible.
 3. The applicant shall plant 10 ___ gallon size valley oak trees obtained from locally occurring saplings or seed stock on each proposed parcel. The trees shall be planted, gopher fenced and irrigated (drip irrigation on a timer) for a ___ year maintenance period.

OPEN SPACE:

4. An open space easement reviewed and approved by P&D and County Counsel for the _____ shall be dedicated to _____. A _____ foot high fence suitable to preclude encroachment into the preserve area shall be constructed. Appropriate signage shall be required to prevent encroachment. Final zoning clearance shall not be issued until the easement is recorded on the property title and fencing is installed.

CREEKS AND ESH AREAS

5. All ground disturbances and vegetation removal shall be prohibited in a ___ foot setback from either side of the top-of-bank of _____creek, a sensitive riparian habitat area. The area shall be temporarily fenced with a fencing type and in a location acceptable to P&D.
6. No alteration to stream channels or banks shall be permitted until the Department of Fish and Game has been contacted to determine if the drainage falls under its jurisdiction.
7. Sedimentation, silt, and grease traps shall be installed in paved areas to act as filters to minimize pollution reaching downstream habitats. The filters shall be maintained in working order.
8. The minimum distance from ground level to any fence's first rung shall be 18 inches. Barbed-wire fencing shall not be installed between lots or along property boundaries.
9. The applicant shall implement a creek restoration plan. The plan shall include, but not be limited to the following measures: *[Customize this if necessary]*
 - a) Landscaping shall be with native riparian species such as _____, at a density of ___ plants per square foot. Species shall be from locally obtained plants and seed stock.
 - b) The new plantings shall be irrigated with drip irrigation on a timer, and shall be weaned off of irrigation over a period of two to three years.
 - c) The creek area along the _____ boundary shall be fenced with _____ fencing _____ feet high, staked every _____ feet.
 - d) Removal of native species in the creek shall be prohibited.
 - e) Non-native species _____, shall be removed from the creek.
 - f) The plantings shall be in place, and non-natives removed prior to _____.
10. Excavation work within or adjacent to sensitive habitats including native trees shall be avoided to the maximum extent feasible. Where excavation must be performed within sensitive areas (as determined by P&D) it shall be performed with hand tools only. If the use of hand tools is deemed infeasible by P&D, excavation work may be authorized by P&D to be completed with rubber-tired construction equipment weighing 5 tons or less. If significant large rocks are

present, or if spoil placement will impact surrounding trees, then a small tracked excavator (i.e., 215 or smaller track hoe) may be used as determined by P&D staff.

NOTE: Pressure per square inch applied to ground surface by a 20 ton excavator with street pads is less than that applied by a 5 ton backhoe. This is due to the entire weight of the backhoe resting on its two outriggers and front bucket. Also, a backhoe has a 90 degree available movement of its boom, and is unable to shift its body once a load of material has been removed from the ground. A tracked excavator has a 360 degree range of boom movement, and can "walk" away from the stream bank with a full load in its bucket. This allows the excavator to remove spoils from among trees without having to place any material under the dripline.

11. The applicant shall implement a revegetation or restoration plan. The plan shall utilize native, fast growing, vining plants that will quickly cover the outlet structure, and thrive in a rocky environment. Local native species shall be utilized first, followed by these suggested species: California Wild Rose (Rosa californica), Wild Blackberry (Rubus ursinus), Chaparral Morning Glory (Calystegia macrostegia, subspecies cyslostegia), Mugwort (Artemesia douglasiana), Creek clemantis (Clemantis ligusticifolia). Species selection shall be dependent upon the nature of the habitat. (*Species list may be modified*)
12. Outlet structures shall minimize disturbance to the natural drainage and avoid use of hard bank structures. Where such structures must be utilized, natural rock or steel gabions shall be used for bank retaining walls. If concrete must be used, then prefabricated crib wall construction shall be used rather than pouring concrete. Rock grouting shall only be used if no other feasible alternative is available as determined by P&D.
13. Erosion control measures shall be implemented to prevent runoff into creek bottom. Silt fencing, straw bales, or sand bags shall be used in conjunction with other methods to prevent erosion and siltation of the stream channel.
14. The creek bottom shall not be disturbed or altered by installation of any drain or outlet structure. Undisturbed natural rocks imbedded in the stream bank shall be utilized as a base to tie in rip-rap if available. Outlet shall be designed to end at the edge of the creek bank rather than entering the stream channel.
15. Drainage shall be designed to have the exiting flow of water enter sub-parallel (60 degrees or less) to the existing stream flow in order to avoid eddy currents that would cause opposite bank erosion.

16. An energy dissipator over the end of the drain pipe shall be installed, or a similar device such as trash racks or baffles, to insure minimal erosion during storm events and to prevent children from entering the storm drain system.
17. A grease trap and/or silt basin shall be installed in all drop inlets closest to the creek to prevent oil, silt and other debris from entering the creek. Such traps/basins shall be maintained and cleaned out every Spring and Fall to prevent overflow situations and potential mosquito habitats from forming.
18. All proposed drainage devices shall be placed in the least environmentally damaging locations. The least environmentally damaging locations shall be identified in a report prepared by a P&D-approved biologist.

VERNAL POOLS

19. The following conditions apply to all vernal pools and vernal pool complexes clusters designated on exhibit ____.
 - a. Construction shall be restricted within 250'⁴ of the pool.
 - b. The pools and pool complexes shall be fenced 250' from edge prior to construction.
 - c. No grass cutting shall be permitted
 - d. A permanent fence shall be installed around each pool [**state where**] to protect the pools and pool complexes against humans, vehicles and pets. The fence shall have signs posted to explain this requirement and discourage vandalism. No recreation shall be permitted within the fenced pool area.
 - e. CC&R's shall contain information regarding the sensitivity of vernal pool habitats and explaining all restrictions on pools and surrounding area.
 - f. No disking for fire control or any other use shall be permitted.
 - g. No mosquito control shall be permitted mosquito fish.

GENERAL

20. During construction, washing of concrete, paint, or equipment shall occur only in areas where polluted water and materials can be contained for subsequent removal from the site (i.e., location). Washing shall not be allowed near sensitive biological resources. An area designated for washing functions shall be identified.

⁴The 250' designation comes from Article II discussion of Environmentally Sensitive Habitat. The LCP cites the minimum distance for protection as 100'. Specific mitigation for the site should be determined by a biologist.

21. Native specimen plants and seed stock from locally obtained sources shall be utilized for landscaping purposes.
22. The applicant shall install landscaping comprised of native species and shall install water-conserving irrigation. Landscaping shall be maintained for the life of the project.

BUILDING ENVELOPES

Note: the two conditions below are very restrictive. Please modify it if your project cannot be built within these parameters:

23. Construction envelopes shall lie outside all [*choose: biologically sensitive vegetation on site (as defined), and/or all vegetation on less than 20% slopes and/or slopes of ___%, and/or known or potential biologically sensitive sites.... AND note special studies where applicable*]. No construction or construction equipment shall occur outside of these areas. Subsurface structures including septic systems and utilities and access ways including roads, driveways and utilities shall not be placed in these areas. Envelope boundaries shall be staked in the field.
24. Construction envelopes shall be restricted to those areas shown on exhibit ___ in order to reduce scope of environmental review. No construction or construction equipment shall occur outside of these areas. Subsurface structures including septic systems and utilities and access ways including roads, driveways and utilities shall not be placed in these areas. Envelope boundaries shall be staked in the field.

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