

# TOWN OF PARADISE

## WASTEWATER MANAGEMENT PLAN

### PHASE II REPORT

1985

*TOWN OF PARADISE  
PLANNING DEPT.  
5555 SKYWAY  
PARADISE, CA 95969*

**R.A. RYDER & ASSOCIATES**  
**CONSULTING ENGINEERS**  
**ENVIRONMENTAL • ENERGY • CORROSION**  
**LARKSPUR CALIFORNIA**



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**R.A. RYDER & ASSOCIATES**  
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September 9, 1985

Mr. Jon Lander, P.E.  
Town Engineer  
Town of Paradise  
5555 Skyway  
Paradise, CA 95969

Subject: Paradise Wastewater Management Plan -  
Phase II Final Report (4029)

Dear Mr. Lander:

The Final Report of the Paradise Wastewater Management Plan conducted as Phase II of the Step I Clean Water Grant Program is herewith submitted. This report, together with the Phase I Report completed several years ago, has comprehensively studied the conditions, evaluated alternatives and provides recommendations for the Town of Paradise to manage wastewater disposal for the community in the future in a manner first to protect the public health and water quality of the streams and wells, while also retaining and enhancing social and economic vitality.

This final report represents the joint efforts of our consulting engineering group as well as citizens and staff of the Town of Paradise, the Butte County Department of Health Services, and the Central Valley Region Water Quality Control Board. It has been the subject of intense but harmonious efforts by all involved over the past nine months. Now it will be the challenge and responsibility of the citizens of Paradise to proceed henceforth in a timely manner to implement improved wastewater management. It has been our genuine pleasure to be of service to the Town of Paradise in this assignment and we remain available to discuss and interpret the data in this report as well as assist in implementing the improved wastewater management systems and monitoring recommended therein and approved in concept by the citizens' task force and the regulatory authorities.

Very truly yours,

  
Robert A. Ryder, P.E.

RAR:clm







## TABLE OF CONTENTS

<u>Number</u>	<u>Title</u>	<u>Page</u>
I	INTRODUCTION	I-1
	A. Background	I-1
	B. Objectives	I-1
	C. Schedule	I-2
	D. Organization & Project Study Team	I-3
	E. Public Participation	I-3
	F. Abbreviations	I-4
	References	I-7
II	SUMMARY AND RECOMMENDATIONS	II-1
	Chapter III - Study Area Characteristics	II-1
	Chapter IV - Wastewater Flow and Characteristics	II-3
	Chapter V - On-Site Wastewater Mangement System	II-4
	Chapter VI - Central Wastewater Collection & Disposal	II-7
	Chapter VII - Septage Treatment & Disposal	II-12
	Chapter VIII - Hazardous Waste Management	II-13
III	STUDY AREA CHARACTERISTICS	III-1
	A. Study Base	III-1
	B. Land Use	III-1
	C. Regional Land Use	III-3
	D. Population Projections	III-5
	E. Regional Population	III-6
	F. Overview of On-Site Wastewater Disposal Considerations	III-7
	G. Previous Studies	III-8
	H. Soils	III-8
	I. Geology	III-11
	J. Hydrology	III-13
	K. Butte Creek Hydrology	III-15
	References	III-17
IV	WASTEWATER FLOW AND CHARACTERISTICS	IV-1
	A. Unit Flow Factors	IV-1
	B. Infiltration-Inflow	IV-2
	C. Peak Flows	IV-3
	D. Central Wastewater Collection Area Flows	IV-3
	E. Wastewater Quality Characteristics & Loading	IV-5
V	ON-SITE WASTEWATER SYSTEM MANAGEMENT	V-1
	A. Needs Analysis	V-1
	B. History of On-Site Management Entities	V-2
	C. Basin Capacity and Cumulative Impact	V-3
	D. Wells and Groundwater	V-6



# TABLE OF CONTENTS (Continued)

<u>Number</u>	<u>Title</u>	<u>Page</u>
	E. Ordinance 103 and Proposed Amendments	V-6
	F. Water Quality Monitoring Program	V-6
	G. Water Conservation	V-10
	H. Creation of a Management Zone	V-11
	I. On-Site Management System Costs and Budget Proposal	V-13
	J. Staffing and Organization	V-15
	K. Alternative to Public Agency	V-17
	L. On-Site Management District Resolution	V-18
	M. Conclusions and Recommendations	V-18
	References	V-19
VI	CENTRAL WASTEWATER COLLECTION AND DISPOSAL	VI-1
	A. Background	VI-1
	B. Previous Central Wastewater System Plans	VI-1
	C. Community On-Site Disposal	VI-2
	D. Wastewater Collection System	VI-4
	E. Pump Stations	VI-9
	F. Wastewater Treatment	VI-10
	G. Effluent Pipeline	VI-17
	H. Reclaimed Water Reservoirs	VI-17
	I. Wastewater Disposal	VI-18
	J. Connection to Chico	VI-21
	K. Other Disposal Alternatives	VI-25
	L. Financing Alternatives	VI-25
	M. Apparent Best Alternative	VI-31
	N. Background and Scope of Financing Program	VI-31
	O. Construction and Operation and Maintenance Costs	VI-32
	P. Cost Analysis Factors	VI-34
	Q. Revenue Program	VI-35
	R. Financial Planning	VI-41
	References	VI-42
VII	SEPTAGE TREATMENT AND DISPOSAL	VII-1
	A. Septage Characteristics	VII-1
	B. Existing Septage Disposal at Paradise	VII-1
	C. Septage Quantities	VII-1
	D. Regulatory Considerations	VII-4
	E. Septage Handling Alternatives	VII-7
	F. Development of Septage Handling Methods	VII-15



# TABLE OF CONTENTS (Continued)

<u>Number</u>	<u>Title</u>	<u>Page</u>
VIII	HAZARDOUS WASTE MANAGEMENT PLAN FOR COMMERCIAL ESTABLISHMENTS	VIII-1
	A. Introduction	VIII-1
	B. Methodology	VIII-1
	C. Management Plan	VIII-2
APPENDIX		
V-A	Suggested Amendment of Ordinance No. 103 Sludge Disposal Ordinance	
V-B	Proposed Inspection Procedures for On-Site System	
V-C	Proposed Ordinance Regulating Use of On-Site Wastewater Disposal Systems	
V-D	California Health and Safety Code Chapter 3, Section 6950-6981	
V-E	Water Wells in Town of Paradise	
V-F	Rules and Regulations - Town of Paradise Waste- water Management Program	
VIII-I	Draft Ordinance - Commercial Hazardous Waste Management	
VIII-II	Commercial Hazardous Waste Generators	
VIII-III	Hazardous Waste Listing	
R-1	Central Valley Region Water Quality Control Board Ltr. of 8/15/85 Commenting on Phase II Draft of Paradise Wastewater Management Plan	
R-2	Dr. George Tchobanoglous Review Comments on Phase II Draft - 8/15/85	
R-3	Priscilla Hanford Review Comments on Phase II Draft - 8/16/85	
R-4	Alma Theis Review Comments on Phase II Draft	
R-5	R.A. Ryder & Associates Ltr. to Town of Paradise Summarizing Paradise Wastewater Management Plan Findings & Recommendations - 8/6/85	

# LIST OF TABLES

<u>Table Number</u>	<u>Title</u>	<u>Page</u>
I-1	Adhoc Wastewater Study Advisory Task Force	I-4
III-1	Land Use in The Town of Paradise	III-2
III-2	Present Land Use in Paradise	III-2
III-3	Paradise Regional Area	III-3
III-4	Paradise Regional Area Land Use	III-4
III-5	Commercial, Industrial & Multi-Family Unit Wastewater	III-5
III-6	Population Projections in Paradise	III-6
III-7	Population Projections in Paradise Regional Area	III-7
III-8	Physical and Chemical Characteristics of Soils	III-10
III-9	Climate of Durham-Pentz Road Vicinity	
	Wastewater Storage and Disposal Sites	III-14
III-10	Flow Discharge in Butte Creek	III-15
IV-1	Wastewater Flows for Commercial, Industrial and Multi-Family Areas in Northern California	IV-1
IV-2	Infiltration-Inflow Occurrence and Allowance at Western Communities	IV-3
IV-3	Wastewater Flows Projected for Paradise Central Areas	IV-4
V-1	Proposed Groundwater and Surface Water Sampling Program	V-8
V-2	On-Site Wastewater System Management Zone Annual Budget Proposal	V-14
V-3	Weighting Method of Allocating Zone Management Cost by Subbasin	V-16
VI-1	Possible Community On-Site Disposal Facilities	VI-3
VI-2	Estimated Cost of Wastewater Collection System - Central Areas	VI-5
VI-3	Estimated Costs of Central Area Waste- water Collection System	VI-6
VI-4	Proposed Wastewater Pump Stations	VI-9
VI-5	Wastewater Pump Station Costs	VI-10
VI-6	Capital Cost of Alternative Secondary Wastewater Treatment Processes	VI-14
VI-7	Capital Cost of Wastewater Treatment	VI-14
VI-8	Operation and Maintenance Costs of Wastewater Treatment Facilities	VI-15
VI-9	Total Annual Costs of Wastewater Treat- ment Facilities for Town of Paradise	VI-15
VI-10	Cost Effective Comparison of Alternative Treatment Processes	VI-16
VI-11	McKnight Ranch Parcels Proposed for Use In Reclaimed Water Town of Paradise Irrigation System	VI-19



LIST OF TABLES (Continued)

<u>Table Number</u>	<u>Title</u>	<u>Page</u>
VI-12	Comparative Costs of Conveying Peak or Average Flows from Central Area of Paradise to the Chico WWTP	VI-23
VI-13	Estimated Costs for Paradise Central Area Wastewater to be Connected to and Served by Chico	VI-24
VI-14	Comparison of Local Land Disposal to Chico Service	VI-25
VI-15	Estimated Costs of Apparent Best Project for the Town of Paradise Central Area Wastewater System	VI-33
VI-16	Zoning Weighting Factors and Assessment Codes	VI-36
VI-17	Paradise Central Area - Total and Annual Sewerage Assessment Charges for Various Zoning Classifications	VI-38
VI-18	Estimated Annual and Monthly Costs for Wastewater Service - Paradise Central Area	VI-40
VII-1	Typical Septage Characteristics	VII-2
VII-2	Paradise Septage Hauled to Neal Road Landfill In 1983	VII-3
VII-3	Land Disposal Characteristics	VII-10
VII-4	Septage Treatment at Wastewater Treatment Plants	VII-12
VII-5	Independent Septage Treatment Facilities	VII-13
VII-6	Design Parameters - Septage Handling Alternatives	VII-17
VII-7	Septage Volume from Paradise Market Area	VII-16
VII-8	Total and Annual Costs of Septage Handling Alternatives	VII-18

# LIST OF FIGURES

<u>Number</u>	<u>Title</u>	<u>Page Following</u>
III-1	Projected Population Increases	III-5
III-2	Proposed Commercial-Industrial Multi-Family Sources	III-6
V-1	Rainfall Contour Map	V-1
V-2	Soil Depths	V-2
V-3	General Geology	V-3
V-4	Well Locations	V-4
V-5	Water Balance Schematic	V-5
V-6	Proposed Water Quality Sampling Locations	V-6
VI-1	Central Area Project Conventional Gravity Sewer Collection System	VI-4
VI-2	Central Area Proposed Small Diameter Gravity Collection System	VI-4
VI-3	Proposed Central System Wastewater Treatment and Disposal Facilities	VI-5
VI-4	Aerated Lagoon Alternative	VI-12
VI-5	Oxidation Pond Alternative	VI-12
VI-6	Oxidation Ditch Alternative	VI-12
VI-7	Alternative to Central System Wastewater Connection to Chico	VI-21
VII-1	Septage Handling Alternatives - Lagooning	VII-16
VII-2	Septage Handling Alternatives - Aerobic Digestion	VII-16
VII-3	Septage Handling Alternatives - Anaerobic Digestion	VII-16
VIII-1	Commercial Potential Hazardous Waste Dischargers	VIII-1
VIII-2	Schematic Showing Proposed Hazardous Waste Management Plan	VIII-3

# **CHAPTER I**

## **INTRODUCTION**





## I. INTRODUCTION

### A. Background

The Town of Paradise has been engaged in studying improved wastewater management for the past several years. This report is Phase II of Step I of the Clean Water Grant Program supported by grants from the Federal EPA and State Water Resources Control Board. This is the final phase of the planning process that began with the Phase I Report (Montgomery 1983), followed by a supplementary Phase I Report (Tchobanoglous 1984), and taken together provide a basis for community decisions on improved wastewater management.

This report provides an analysis and recommendations for:

- ° Improved on-site wastewater management;
- ° A long range plan for sewer service and off-site disposal of wastes from the central business-commercial-industrial and multi-family housing areas;
- ° A long range septage handling and disposal plan; and
- ° A management plan for handling and disposal of toxic and hazardous wastes that are generated by many small commercial and industrial establishments.

The steps for implementation and costs are outlined for each of these elements in this report. It should provide a sound basis for the Town of Paradise to proceed further in the future to implement those programs as the community desires for public health and environmental protection as well as continuing prosperity and responsibility for and by the citizenry.

### B. Objectives

The Town of Paradise and the State Water Resources Control Board listed certain objectives that this report should include that should complete requirements of the Step I Clean Water Grant Program (Wasserman 1984). The Town of Paradise may elect, with concurrence by the State Department of Water Resources, to proceed into the design phase, Step 2, and the construction stage, Step 3, of the Clean Water Grant Program for the Central Area Wastewater System and institutional implementation of the on-site wastewater management program. Estimates are provided herein this report of the probable portion of funding support from this source of Federal and State grants. Alternatives for local funding and possibilities of other grant funding sources are also described and decisions regarding this economic phase of implementation is of probable immediate concern to the community. The objectives of this study include:

1. Development of an on-site wastewater management district, including rules, regulations and financing.

- in this in  
7. population  
will #1?*
2. Develop regulations for new construction consistent with new on-site wastewater disposal ordinances.
  3. *why long range?* Development of long range plans for the possible sewerage of selected locations along the Central Commercial areas, Skyway and Clark Roads, including financing.
  4. *effluent standards* Develop regulations for the commercial development in the Central Areas consistent with ordinances.
  5. Development of long range plans for disposal of septage.
  6. Develop regulations for the containment and disposal of hazardous wastes from commercial activities.

There were, in addition, supplemental considerations that were included in the general scope of the study. These included:

7. */* Land use, population and demand projections that would incorporate the Town's recently adopted General Plan and ~~proposed~~ Housing Element.
8. Consideration of the Paradise Regional Area and Butte County planning objectives for a regional approach to septage, hazardous wastes, and on-site wastewater management.
9. Water conservation recommendations to increase reliability and service of on-site wastewater systems and reduce capacity and costs of central area wastewater off-site disposal systems.
10. Development of financing and revenue plans for the on-site wastewater management, septage and hazardous waste handling and central area wastewater system.
11. Evaluation and recommendation of a continuing stream and ground water quality monitoring program in Paradise.
12. Encourage and respond to public participation in discussing, understanding, and evaluating all aspects of this wastewater planning study.

The consultant group attempted to meet all of these objectives during the course of this study and what is reported herein is the summary and evaluation of a planning process that has taken place over a six month period and is hoped to be informative and meaningful.

#### C. Schedule

The consultant group was selected by the Town of Paradise in July 1984. Definition of the contract and review of scope, fees, etc., occupied the next several months by the Division of Water Quality of the State Water Resources Control Board.



Authorization to proceed with this study was received in December 1984 and was scheduled for completion within seven months.

Preliminary reports and discussions with staff of the Town of Paradise, Butte County Department of Environmental Health, the Central Valley Region Water Quality Control Board, and a Task Force of citizens proceeded from February, 1985, through the final report. In this way, there has been a high level of communication, interaction and comprehension of the study and its recommended plans.

D. Organization and Project Study Team

The project study team consisted of a consultant group that included the following organizations and persons responsible for various phases of the report:

- ° Principal Consultant:  
R.A. Ryder & Associates, Kentfield, California  
Project Manager - Robert A. Ryder, P.E.  
Central Area Wastewater Plan - William A. Taplin, P.E.  
Hazardous Waste Management - James D. Steele, P.E.  
Drafting - Victor D. Erickson  
Kenneth Houston
- ° On-Site Wastewater Management and Land Disposal Consultant:  
Storm Engineering, Winters, California  
David W. Storm, P.E.
- ° Septage Management Subconsultant:  
Emilio de La Fuente, P.E., Mill Valley, California
- ° Financing and Revenue Plan Subconsultant:  
Walters Engineering, Sacramento, California  
Brien B. Walters, P.E.  
Eric Beyer, P.E.  
James Hatter, Financial Consultant
- ° On-Site Wastewater Management District Implementation Subconsultant:  
Andrea Di Marco, Stinson Beach, California

Project liaison with the Town of Paradise was conducted by Mr. Jon Lander, P.E., Town Engineer, the Town Manager, Mr. George F. Irving, and the Town Council. Dr. George Tchobanoglous, of the University of California, Davis, reviewed the report as an independent consultant to the Town of Paradise.

The Project Coordinator for the State Water Resources Board was Mr. Joseph J. Henao, Staff Engineer, of the Central Valley Region Water Quality Control Board, Sacramento, California.

#### E. Public Participation

A Wastewater Study Advisory Task Committee was formed in March 1985 for the purpose of review and comment on various aspects of this wastewater management planning study. This Task Force met thereafter every several weeks to the end of the study in July 1985. The Task Force provided valuable insight and direction to the Town staff and consultants as to important community concerns and objectives. This Committee was comprised of the following:

TABLE I-1

#### Town of Paradise Adhoc Wastewater Study Advisory Task Force

<u>Organization</u>	<u>Person</u>
Paradise Irrigation District Representative	Phil Kelly, Manager
Butte County Division of Environmental Health	Henry Martin, Sanitarian Alternate: Lynn Van Hart, Director
Paradise Chamber of Commerce	Dick Ryan, Birr Wilson & Co. Dr. Arthur Layton, Optometrist
Downtown Merchants Association	Jim Flood, KRIJ Alternate: Mike Pavis, La Comida Restaurant
RMBA	Ronald Z. Harris, Allied Brokers Alternate: Mel Peterson, Trophies & Treasures
Paradise Tax Payers Association	Brownie Jacques Alma Theis
Community at Large	Monte East, PG&E Priscilla Hanford Hap Penn Sharon Babick, Fashion Optical
Town Council	Curt Campion, Mayor Joe Smith, Councilman

#### F. Abbreviations

In order to conserve space and improve readability, the following abbreviations have been utilized throughout this report.

A	acres
AF	acres-feet
ADWF	Average Dry Weather Flow
BOD	5-Day Biochemical Oxygen Demand at 20°C

County	Butte County
°C	degrees Celsius
CBD	Central Business District
du/ac	dwelling units per acre
EDU	equivalent dwelling units
EPA	Federal Environmental Protection Agency
ET	Evapotranspiration
°F	degrees Fahrenheit
ft	feet
gal	gallons
gpad	gallons per acre per day
gpcd	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
G/CC	grams per cubic centimeter
h	heat-feet
hr	hour
HUD	Federal Housing & Urban Development Department
I/I	infiltration-inflow
in	inch
KW	Kilowatt
KWH	Kilowatt hours
lbs/day	pounds per day
LF	lineal feet
mg	million gallons
mgd	million gallons per day
mg/l	milligrams per liter
min	minutes
ml	milliliters
mo	month
MPN/100 ml	Most Probable Number per 100 millileters
MSL	mean sea level
N	Nitrogen
NO <sub>3</sub>	Nitrate
O&M	Operation & Maintenance
pH	Hydrogen Ion Concentration
PDWF	Peak Dry Weather Flow
PID	Paradise Irrigation District
ppcd	pounds per capita per day
PWWF	Peak Wet Weather Flow
Q	Flow In GPM
Res	Residential
RWQCB,	California Regional Water Quality Control Board,
CVRWQCB	Central Valley Region
SCS	U.S. Soil Conservation Service
sq ft	square feet
State Board	State Water Resources Control Board
TDS	Total Dissolved Solids
Town	Town of Paradise
TSS	Total Suspended Solids
umhos/cm	micromhos per centimeter
u/ac	units per acre
yr	year



## Zoning Classifications

RR	Rural Residential - 2/3 A/DU
RR-3	Rural Residential - 3 A/DU
SF	Single Family Residential - 4 DU/A
MF	Multi-Family Residential - 7 DU/A
MF-P	Multi-Family Professional - 10 DU/A
NC	Neighborhood Commercial
CC	Community Commercial
CB	Central Business
IS	Industrial Services
RC	Resource Conservation
CF	Community Facilities

## REFERENCES

1. James M. Montgomery Consulting Engineers, Inc., Town of Paradise Wastewater Management Study - Phase I Report, Walnut Creek, CA, 1983.
2. Tchobanoglous, G., Town of Paradise Wastewater Management Study Supplementary Phase I Report, Davis, CA, 1984.
3. Wasserman, K., Chief Engineering Branch, Clean Water Grant Program, Division of Water Quality, State Water Resources Control Board, Letter to George Irving, Town Manager, Paradise, Wastewater Management Study and Supplementary Report Phase I, Step I, Approval to Proceed With Step II, Sacramento, CA, May 15, 1985.



# **CHAPTER II**

## **SUMMARY & RECOMMENDATIONS**





## II. SUMMARY AND RECOMMENDATIONS

A summary and the principal recommendations of each chapter of the report are as follows:

### Chapter III - Study Area Characteristics

1. The Study Area was primarily for the 18 square mile Town of Paradise, but regional considerations for long range planning of on-site wastewater management, septage and toxic-hazardous wastes was included for the Paradise Market Area of 192.4 square miles on Eden Ridge from Highway 99 to Stirling City.
2. Population, land use and the planning boundaries for a Central Area Wastewater System were developed from the General Plan, the recently adopted Zoning Ordinance, and the Draft Housing Element.
3. About 85% of the land in Paradise is classified for single family residential with present and planned wastewater disposal by on-site systems. A central wastewater system with off-site disposal has been planned for 11.5% of the land that is used for or zoned for commercial, industrial and multi-family purposes.
4. There are presently 24,500 persons who reside in Paradise. A declining growth rate initially projected at 2.1% per year has been used to predict future populations of 32,300 by 1995, 35,400 by 2005, and a saturation population of 47,500 to fully occupy all land to the present zoning classification, a condition that might occur in fifty or more years.
5. The commercial-industrial multi-family housing portion of the population is presently 6,950 persons; that has been projected to grow at 2.5% per annum and increase to 10,500 by 1995, 14,400 by 2005, and 20,100 at saturation.
6. The population in the Paradise Regional Area outside of the Town limits is 8,600 at present. A growth rate somewhat higher than within Paradise is anticipated by Butte County, and is expected to be 12,800 by 1995, 28,000 by 2005, and 53,600 at saturation.
7. On-site wastewater systems using septic tanks and leaching fields are exclusively used at Paradise for wastewater disposal. The original design concepts, developed 60 years ago, for this type of disposal were for it to be a semi-permanent disposal until the soil became clogged and no longer useful, and then either a new leachfield or sewers would be constructed. The Town of Paradise has within the past five years taken measures to limit waste disposal in new systems to no more than

900 gpad and to much less than that in the thinner, less permeable soils of the lower elevations. These measures, as well as consideration of effective management for scheduled periodic septage pumping, leaching field inspection and necessary rehabilitation, are planned to provide as much permanency in on-site systems as possible.

8. The predominant soil in Paradise is an Aiken clay loam that has moderate permeability; but with an iron content, low pH and moderate cation exchange capacity that suggest decreasing permeability over a period of time as a result of chemical interaction with wastewater. Continuing surveillance to prolong and extend the effectiveness of on-site subsurface disposal systems is warranted.
9. The soils of the Durham-Pentz Road area being considered for off-site irrigation disposal are acidic, sandy loams and cobbly loams of one to two feet thickness overlying basaltic rock. These soils can be irrigated by reclaimed wastewater for shallow rooted pasture grasses, although the moisture retaining capacity is relatively low, and frequent water applications will be necessary.
10. The soils in Paradise vary from 2 to 20 feet thick, and overlie highly fractured water bearing volcanic rock, the Tuscan Formation. There are areas in town where there are rock outcroppings and/or soils of excessive permeability, less than five minutes per inch, that should not be utilized for conventional on-site subsurface disposal.
11. The water supply of most of the Town of Paradise is from the surface source of the Paradise Irrigation District. However, there are more than 200 wells within Paradise drawing water from the Tuscan formation primarily for irrigation purposes. Although ground water contamination has not yet been detected, it is recommended that a ground water quality program be conducted as a part of the On-site Wastewater Management System to determine if there is degradation in certain basins that would necessitate different means of wastewater treatment and disposal.
12. The rainfall in the Paradise Area ranges from an average of 26 inches per year in the vicinity of the Durham-Pentz Road area proposed for off-site wastewater disposal to 35 inches at the lower and 70 inches per year at the upper Town limits. Seasonal variations can be as much as fifty percent in wet or dry seasons. The selection of the Durham-Pentz Road area for off-site disposal is favored by being able to effectively apply a reclaimed water irrigation rate of fifty percent more than in Paradise. On the other hand, the critical periods for on-site



disposal in Paradise is the winter wet seasons and special precautions must be taken to avoid parallel leach trench stacking uphill that would exceed the hydraulic assimilative capacity of the soil and cause surfacing of leachate.

13. The normal runoff of Butte Creek would allow a seasonal discharge of highly treated effluent from Paradise that would provide a 100:1 dilution during the periods from November through April, and a 10:1 dilution for either Little Dry or Clear Creeks. Although discharge of any effluent to Butte Creek is not presently allowed due to environmental and health concerns of Butte County, it is possible that this alternative for winter disposal must be reconsidered if other disposal options are not possible. The extreme wet season overflow from impoundments of reclaimed water into Little Dry or Clear Creeks should be considered as measures to be taken for the off-site disposal system in the Durham-Pentz Road area.

#### Chapter IV - Wastewater Flow and Characteristics

1. The unit wastewater flows have been projected at:

Single Family Residential - 2.36 person/du - 75 gpcd  
175 gpd/du  
Multi-Family Residential - 1000 gpad  
Multi-Family Professional - 1333 gpad  
Commercial Areas - 2000 gpad  
Industrial Areas - 2000 gpad

- The flow allowances have been used to develop flow projections in the Central Area long range plan for a wastewater system.

2. A relatively low infiltration-inflow allowance of 200 gpad has been utilized in planning the Central Area Wastewater System and would amount to a total of 260,000 gpd of the 2,400,000 gpd projected for the entire area at saturation development.
3. A peak flow allowance of two times the average daily flow and a sewer capacity of four times the average daily flow have been utilized to size the Central Area Wastewater System.
4. The Central Area Wastewater System has been planned in two phases - initially for an average daily flow of 1.2 MGD that will occur between 1995 and 2000 and an ultimate flow of 2.4 MGD at saturation development. The Skyway portion of the total is 1.25 MGD and Clark Road at 1.15 MGD.

5. The planned Central Area Wastewater System capacity of 2.4 MGD is two thirds of the total flow projected in 1979 for the entire Town of Paradise. Utilizing the flow equalizing capacity of the single family septic tanks to reduce peak flows, there would be sufficient capacity in the planned wastewater system to handle many residential areas of the community if the need for off-site disposal would develop in the future as a result of too many failed leaching systems or water quality degradation of some of the stream basins within the Town. Strict and effective water conservation, if adopted community wide, can provide an additional 20-40% excess capacity in the planned system for future use by the residential community.
6. The organic and solids characteristics of the wastewater have been projected as typical values for a residential community of 0.17 and 0.19 pounds/capita/day. The concentration in the wastewater would be 270 and 300 mg/l respectively. The mass emission total loading at saturation development of the Central Area would be 5,425 and 6,060 pounds/day, respectively.
7. Other characteristics including oil and grease, toxicity, pH, nitrogen, phosphorus, dissolved solids, temperature, etc., will be regulated by ordinance to be within the range of the average for a domestic wastewater. Pre-treatment will be required for any unusually strong commercial or industrial wastewater before discharge into the wastewater system.

#### Chapter V - On-Site Wastewater System Management

1. The several Phase I Wastewater Management Reports generally concluded that individual on-site wastewater management systems should be retained for the predominantly residential areas of Paradise instead of a very costly area-wide wastewater collection and treatment system. The conclusions of this Phase II Report generally support those earlier findings.
2. In response to the objective of continuation of on-site subsurface wastewater disposal, the Town has within the last year adopted Sanitation Ordinance 103 to limit discharge to no more than 900 gpad, and in certain locations of less suitable soils, a lesser degree of density and wastewater application.
3. State law now provides regulations wherein a community can retain on-site systems in lieu of sewerage and through a public agency can inspect, monitor, and rehabilitate failing systems.
4. The inventory of existing systems and the establishment of hydraulic and chemical loading limits for each Town

subbasin would be an important precursor to the implementation of an on-site wastewater management program in Paradise.

5. The monitoring of twenty surface stream locations quarterly, and ten ground water wells semi-annually is proposed as a part of an on-site wastewater management system to provide advanced warning of the approach to prescribed limits for surface and ground water resources. The estimated cost of this water quality monitoring program is \$12,000 per year.
6. A water conservation program with financial benefits of reduced service fees for either on-site or Central Area wastewater system is proposed to encourage and reward water savings in excess of twenty-five percent of historic or normal usage.
7. It is recommended that the Town of Paradise create an on-site Wastewater Management Zone in accordance with State law for the entire Town area to provide for effective long range use of these disposal systems.
8. The estimated cost for establishment of an On-Site Wastewater Management Zone is \$4.00 per dwelling unit for the initial two years, with possible reduction to \$2.50 per month thereafter based on current 1985 prices. These fees will produce a fund of \$475,000 in each of the initial two years to be used for initial system checking at each on-site disposal facility and for a Basin Cumulative Impact Study to determine chemical and hydraulic loading capacity of each subbasin. Thereafter, the fees would be used for inspection of systems at a proposed frequency of 4, 3, 2 and 1 years, respectively, for residential, multi-family, commercial-industrial and restaurant, laundromat properties. The frequency may be increased or decreased for specific types of dischargers later as conditions dictate.
9. The costs of on-site wastewater management at Paradise is estimated to be far less than the \$12.00 to \$20.00/month service fee at Stinson Beach, the Georgetown Divide, and San Lorenzo Valley due to a much larger population and service areas, and less severe soil and structural problems.
10. The present estimated daily applied wastewater flow attributable to on-site disposal systems in Paradise is about 3.3 million gallons per day. This is an overall average of 287 gallons per acre per day in the community; a unit application rate of less than a third of the maximum amount recommended in the Phase I Report. However, certain basins presently exceed or approach the recommended maximum application rate. These include the Upper



and Middle Honey Run, the Upper Roe and Upper Clark Basins. These basins of higher density development and wastewater application are within areas of the planned Central Area Wastewater Systems for collection of off-site treatment and disposal.

11. An alternative considered but not recommended to a public agency conducting the on-site wastewater management, is to license and schedule septage haulers to conduct the periodic pumping and inspection functions as an extension of their present County Environmental Health Department Permits. It is anticipated that this plan would cost homeowners half of that for the public agency, but would be at a reduced level of service and could have responsibility and liability difficulties. The concept has no historic precedent in California and there could be difficulty in implementation.
12. A draft On-Site Management District Resolution and Ordinance is included in the Appendix to and the community in implementing these measures to improve the long range prospect of continuing septic tank leachfield wastewater disposal in most areas of Paradise.
13. There are now more than one hundred on-site systems that need repairs annually and many more chronically malfunctioning systems. A thorough survey and inventory of all systems in the Town is one of the prevailing reasons that an On-Site Wastewater Management Zone concept should be initiated.
14. A water quality monitoring program should be undertaken as an initial stage of the On-Site Wastewater Management System.
15. Further definition of the geohydrologic relationship of wastewater discharge to near surface soils and the 200 active wells in Paradise should be undertaken also as an initial stage of the On-Site Wastewater Management System with possible additional fiscal support from the U.S. Geological Survey and/or the State Department of Water Resources.
16. A water conservation and financial incentive program is recommended to reduce wastewater loading and extend the capability of on-site wastewater disposal. As proposed, the incentive program will be a reduction in service fee charges for the on-site wastewater management program.

#### Chapter VI - Central Wastewater Collection and Disposal

1. The previous Phase I studies found some evidence of water quality degradation in Honey Run and Neal Creeks that

drain the Skyway Central business area of densest development in Paradise. Concern on this situation led the Regional Water Quality Control Board to request development of a long range wastewater system plan for this area.

2. Although there was no indication of water quality degradation in the Little Dry Creek and Clark Basins, this is an area where there have been a number of failed on-site systems as well as zoning for extensive commercial, industrial and multi-family uses, and as such, was included at the request of the Town in the Central Area wastewater system plan.
3. Preliminary planning and construction of one hundred sewer laterals and 800 feet of sewer line occurred in 1973 along Skyway between Neal and Elliott Roads as part of the Skyway Assessment District No. 1. This existing system has been incorporated into the current plans for a wastewater collection system in the Skyway area.
4. The prospect of community on-site wastewater disposal systems is very limited for the Skyway area, and to a lesser extent, in the Clark area. Two possible sites - south of Skyway at the west Town limits and between Neal and Roe Roads identified in previous reports - were found to have insufficient soil depths or would destroy a pine forested area to make them suitable for community on-site systems for the 350,000 gpd estimated discharge capacity. Even this would be far less than the estimated 1,250,000 gpd wastewater flow projected for the Skyway area.
5. The prospect for community on-site wastewater disposal systems is a little better for the Clark area. It is estimated that a potential for disposal of 150,000 gpd exists at community and public facility areas. Although again, this is far less than the ultimate wastewater disposal needs for 1,150,000 gpd. It would appear that some initial community systems as at the Golf Course could be incorporated with water reclamation and consequent water savings for the Paradise Irrigation District.
6. A conventional gravity sewage collection system directly connected by laterals to the buildings is more cost effective than the alternative of using septic tanks and a smaller diameter collection system as could be allowed by reduced peak flows. The moderately sloping terrain and the minimal number of pump stations, only two for lower Skyway and Clark areas, produce favorable terrain and the minimal number of pump stations, only two for lower Skyway and Clark areas, produce favorable terrain for higher velocities and smaller diameter piping than might be the case for a conventional system in flatter or more bisected terrain.

- 3,847,000
- 76,000
- 303,000  
147,000  
90,700  
41,800
7. The planned overall length of the Skyway wastewater collection system is 69,700 lineal feet and for the Clark area, 66,600 lineal feet. These systems should be constructed in their entirety in an initial phase of construction as there is some building in all areas to be served. The present estimated construction cost of these collection systems is \$3,847,000.
  8. Maintenance costs for the Central Area Wastewater Collection System have been estimated to be \$75,000 per year for cleaning, rehabilitation and administration exclusive of depreciation.
  9. Two pump stations will be required for the Central Area Wastewater System - a Clark Road Pump Station for an initial capacity of 2 MGD at 60 feet head and ultimate capacity of 4.3 MGD located at the south Town limits, and a Lower Skyway Pump Station of 0.37 MGD at 200 feet head to serve all of the Skyway area west of Neal Road.
  10. Each pump station will utilize submersible open impeller lift pumps and will have a small structure that will enclose controls and an emergency electric generator to provide service continuity in the event of a power failure.
  11. The capital cost of these pump stations <sup>is</sup> estimated to be \$303,000 for Clark Road and \$147,000 for Lower Skyway. The annual maintenance and operation costs are estimated to be \$90,700 for Clark Road and \$41,800 for the Lower Skyway Pump Station when operating at design capacity.
  12. Four alternatives were evaluated for wastewater treatment and disposal:
    - (a) Wastewater treatment at the south Town limits and reclaimed water storage and disposal by irrigating pasture on the McKnight Ranch along the Durham-Pentz Road.
    - (b) Similar to (a) except for reclaimed water storage in Corry Canyon and irrigation disposal at Butte College and the adjacent Lucky 7 Ranch.
    - (c) Treatment and disposal of reclaimed water in summer by terraced irrigation in Neal Canyon and winter disposal into the gravel spoil along Butte Creek.
    - (d) A gravity sewer line to the City of Chico's wastewater system for conveyance to and treatment in the Chico facilities and discharge to the Sacramento River.



- reclamation*
13. Land disposal of reclaimed water to irrigate range land in the Durham-Pentz Road area will provide 21 inches of water seasonally and the nutrients of 120 pounds of nitrogen, 24 pounds of phosphorus/acre that will greatly enhance the livestock productivity of this land and not be excessive in water or nutrients.
  14. Four types of wastewater treatment to provide a reduction of 65% of organic and solids matter from the wastewater were evaluated. The land requirements and costs of each are shown for the Phase I capacity of 1.2 MGD.

<u>Process</u>	<u>Land Requirements Acres</u>	<u>Capital Cost (\$)</u>	<u>Operation &amp; Maintenance Cost - \$/Yr.</u>
a) Aerated Lagoons	10	\$ 825,000	\$153,000
b) Oxidation Ditch	5	1,540,000	143,000
c) Rotating Biological Contactors	5	1,845,000	138,000
d) Facultative Oxidation Ponds	70	1,495,000	92,000

- only for 12 11 years after that Ponds (d) is more cost effective*
15. The aerated lagoon treatment process is the overall most cost effective and the apparent best project utilized for the financial and revenue analysis. Other types of low capital and operation cost processes with reliable performance such as batching activated sludge treatment should be considered at the time of final design.

16. A five mile long diameter, 12-inch effluent pipeline to convey treated wastewater down McKay Ridge with a 150 KW energy recovery hydraulic turbine, expanded to 300 KW in Phase II is proposed to convey the treated wastewater to a storage reservoir.

17. The capital cost of the pipeline is \$780,000 and for the hydraulic turbine installation \$300,000 initially and \$420,000 ultimately. The value of the recovered electric energy is \$80,000 in Phase I and \$160,000 annually in Phase II. A recovery of capital expenditure in less than five years, and producing more energy than consumed in pumping and wastewater treatment.

18. There is a "Box" canyon on the McKnight Ranch or in Corry Canyon in the Butte College-Lucky 7 that can be used for construction of an initial 650 AF capacity reservoir for winter storage of reclaimed water. A second 650 AF capacity reservoir can be constructed downstream for Phase II at either site.

19. The construction cost of the dam and appurtenances at each site is approximately \$975,000.

20. Wastewater disposal would be provided by irrigation of the ranches for year-round green pasture for cattle. It is proposed that a 2638.2 acre portion of the south-westerly portion of the McKnight Ranch be purchased for the reservoir site and irrigation. Overall, there is a need to irrigate about 760 acres in Phase I and 1520 acres in Phase II. However, the additional land purchase is recommended to provide a buffer along roads and creeks, some of the hillsides are too steep and rocky for irrigation and so as not to sever or adversely affect the operation of the remaining portion of the Ranch. The McKnight Ranch is zoned by Butte County for agricultural uses with minimum 40 acre parcel sizes and is presently in Williamson Act agricultural preserve, and has an assessed value of \$56.31/acre. It is anticipated that the desired portion may be purchased for approximately \$250/acre, an overall cost of \$660,000. The owners are only interested in a sale and not a lease to the Town of Paradise, so purchase seems to be the only option for securing suitable land for disposal at this site.
21. The benefit value of irrigated pasture in Butte County is presently about \$115/acre. There is a potential of recovering \$72,500 in costs in Phase I and \$145,000/year in Phase II from the nutrient containing reclaimed water use for irrigating these pastures.
22. The Butte County-Lucky 7 alternative would be more complex and costly than the McKnight Road alternative as more than a dozen parcels would have to be acquired and the reclaimed water system would be spread over a larger non-contiguous area.
23. The alternative of terraced irrigation in Neal Canyon Road and winter disposal to the Butte Creek gravel spoil banks was not estimated due to complexity of land acquisition and improvement costs as well as social and environmental difficulties to have Butte County rescind a prohibition of any effluent discharge to Butte Creek.
24. The City of Chico currently is developing a Master Plan for providing wastewater collection and treatment to the adjacent County areas and could accept the additional wastewater from the Central Areas of the Town of Paradise for treatment and effluent discharge to the Sacramento River.
25. The costs of trunk sewers from Paradise down the Skyway and connecting into the Chico system are \$4,265,000 for the recommended ultimate capacity of 2.4 MGD.
26. The cost of conveyance and treatment connection charges based on current rates of the City of Chico are \$1,616/dwelling unit and would be assessed to the Central Area of Paradise on an equivalent dwelling unit basis.

27. A comparison of the apparent best project for land disposal or the connection to Chico is as follows for Phase I.

	<u>Paradise Area Land Disposal</u>	<u>Chico Connection</u>
Capital Costs	\$8,827,000	\$16,533,800
O&M Costs	192,400	391,600
Total Annual Costs	1,004,800	1,913,400

28. The recommended method of financing the Central Area Wastewater System is by an Assessment and Bond proceedings under the California Improvement Act of 1913 and Improvement Bond Act of 1915.
29. The total capital and operation and maintenance costs of the apparent best project that include a 25% contingency, engineering, administration, legal and discount costs are:

	<u>Phase I</u>	<u>Phase II</u>	<u>Total</u>
Capital Costs (1985)	\$11,033,750	\$2,648,750	\$13,682,500
Total Costs for Assessment Financing (1987)	14,331,000	3,449,000	17,780,000
O&M Costs/Year (1985)	192,400	180,700	180,700

30. A serious health hazard has not been found and under this condition the Town of Paradise is not eligible for an EPA Clean Water Grant that could provide 35 to 50% of capital costs. There are other possible sources of grant funding for lesser proportions that should be pursued to lessen the cost of assessments.
31. A cost of connection to the proposed Central Area Wastewater System on the basis of local assessment funding and without grant support would initially be \$1,500/du that would then rise to \$3,000/du after the initial solicitation.
32. The estimated costs of wastewater service to the Central Area would be \$18.00/month for debt service and \$11.25/month for operation and maintenance, an annual cost of \$350/du.
33. It is recommended that the Town of Paradise retain a financial advisor with expertise in the bond market and grant funding to further assist the Central Area Wastewater System plan into actual accomplishment.

## Chapter VII - Septage Treatment & Disposal

1. The Butte County Neal Road Sanitary Landfill presently serves as the depository for septic tank pumpers and haulers for all of Butte County including the four that serve the Town of Paradise. Septage is air dried in lagoons at this site and then mixed with solids wastes and placed into the fill.
2. Septage being hauled to the Neal Road site has been increasing in recent years from about 400,000 gallons per year to 1,200,000 gallons in 1983. Considering that there are approximately 10,000 septic tanks in Paradise, the frequency of pumping may on the average be every ten years and far less than the four year average found typical for single family residences.
3. The Neal Road site is operated by a private contractor whose contract expires in 1987, and has expressed that the current tipping fee of 1/2 cent per gallon is inadequate, and will negotiate a higher price or may discontinue receiving septage at this site in the future.
4. The Neal Road Landfill septage handling facility does not meet recently adopted State Requirements for land disposal, Subchapter 15 of the California Administrative Code. The new regulations require improved facilities.
5. A regional facility to provide long range septage disposal for the Town of Paradise and the Paradise Regional Area is a possible alternative to a changed Neal Road disposal facility and can be incorporated into the On-Site Wastewater Management Zone and the proposed land disposal facility.
6. Three alternatives for septage stabilization were evaluated in conjunction with the McKnight Ranch land disposal site for the saturation population and the approximately 45,000 septic tanks that would be in the Paradise regional area. The alternatives were lagooning, aerobic and anaerobic digestion with effluent being discharged to the storage reservoir and solids composted for a soil conditioner.
7. The costs of these alternatives are as follows and compared to the tipping costs projected for pumping each septic tank at least on four year intervals:



<u>Capital Alternative</u>	<u>Cost</u>	<u>Annual O&amp;M Cost</u>	<u>Cost</u>	<u>Rank</u>
Lagooning	\$531,000	\$ 7,000/yr.	\$55,900/yr.	1
Aerobic Digestion	425,000	12,000	52,000	2
Anaerobic Digestion	562,500	8,000	57,600	3
Neal Road	-	-	130,000	4

8. All of the alternatives for septage disposal at the proposed McKnight Ranch land disposal area are considerably more economical than the tipping fee at Neal Road. A lagooning treatment and sludge composting process recommended as the apparent best project for long range septage handling for the Town of Paradise.
9. Sludge produced at the Town's Wastewater Treatment facility as well as certain neutralized classifications of toxic and hazardous wastes are included in the considerations and costs for septage handling.

#### Chapter VIII - Hazardous Waste Management Plan for Commercial Establishments

1. There has been concern of the periodic discharge to drainage courses and septic tanks of various chemical hazardous wastes including acids, caustics, toxic and flammable and explosive substances from a number of small commercial enterprises in Paradise.
2. Recently adopted Federal and State hazardous waste regulations will apply to all generators producing over one hundred gallons per month, and require appropriate storage and disposal in approved sites by later this year.
3. There are nearly one hundred commercial establishments in Paradise that generate small quantities of hazardous wastes, and all are presently below the regulated minimum generation volume. These establishments include auto service stations and repair shops, machine shops, painters, roofers, pest control operators, photo finishers, dental laboratories, hospitals and school laboratories.
4. Current disposal practices include:
  - (a) Untreated discharge to soil and water courses.
  - (b) Waste containerization and landfill.
  - (c) Septic tank disposal and subsurface leaching.
  - (d) Contact with recovery/recycling companies for off-site hauling.

5. A management plan is proposed that will include all small commercial generators as well as others including residences who occasionally need to dispose of a toxic container or substance to provide a convenient and economical method of waste disposal and thereby minimize the current dumping and disposal practices within the Town. This could be accomplished by construction of a local hazardous waste storage and transfer facility that could be at the Central Area Wastewater System disposal site, and administered by the On-Site Wastewater Management Zone.
6. The hazardous wastes transported to this site can then be either combined with septage for evaporation if suitable, or stored for pick up and ultimate disposal into a Class II landfill or hazardous waste final treatment and disposal facility.
7. The On-Site Wastewater Management Zone personnel can inspect for compliance, and facilitate local homeowners, etc., by publicity and later receptacle bins to dispose of hazardous wastes in a manner that will minimize indiscriminant dumping to drainage courses or soils within the Town.

# **CHAPTER III**

## **STUDY AREA CHARACTERISTICS**







### III. STUDY AREA CHARACTERISTICS

#### A. Study Base

The study area characteristics have been described in considerable detail in the two previous Montgomery Engineers (1979, 1983) and Tchobanoglous (1984) reports. These described physical site data including climate, soils, population, land use, geology, hydrology, hydrogeology, and water quality. Reference should be made to these reports provided as EPA funded 208, Phase 1 and supplemental Phase 1, as they are not repeated herein. There have been, however, some changes in land use planning by the Town of Paradise and Butte County within the past year that are incorporated into the considerations of the study reported herein. Also, there was an expression of interest by Town and County Public Works, Planning and Health staffs that a more comprehensive overview of what is termed the Paradise Market Area that extends basically up Eden Ridge from Highway 99 to Stirling City should be incorporated into considerations of septage and hazardous waste handling as well as a possible On-site Wastewater Management District for these areas of Butte County contiguous to the Town of Paradise.

#### B. Land Use

The planning documents that indicate the present and projected land use for the Town of Paradise have been utilized for this analysis and include the General Plan (Collins 1981), and the more recently adopted Zoning Ordinance, Map and Draft Housing Element (Paradise Planning Department 1984).

The land use and zoning planned for Paradise was influenced to a large extent by the previous wastewater plans and recommendations of continuation of on-site wastewater disposal as influenced by soil and related leaching field characteristics. The projected land use for the Town of Paradise is shown in Table III-1. The residential character of the community is evident in that 85% of the total land use is in the single family category; and in addition, there is another 6% in multi-family zoning. The commercial and industrial zoned land constitutes 6.5% of the total. Open space is not only reserved in the extensive rural residential zoning, but by resource conservation and community facilities that include the golf course, schools, hospital grounds and cemetery.

An estimate of present land use in Paradise is shown in Table III-2. About 30% of the land that can potentially be built upon is vacant, another 24% is utilized in transportation thoroughfares, and that some land is still in agriculture, primarily apple orchards, of which Paradise is famous in the local region.

The occupied commercial and industrial land comprise about 2.5 percent, or perhaps half of the net areas designated for those uses.

TABLE III-1

Projected Land Use in the Town of Paradise

<u>Zoning</u>	<u>Classification</u>	<u>Maximum Density</u> <u>Acre</u>	<u>Total Acres*</u>	<u>Percent</u> <u>of</u> <u>Total</u>
R-R	Rural Residential	1.5 DU/A	4,938	42.6
R-R-3	Rural Residential		3,189	27.5
SF	Single Family Res.	0.33 DU/A	1,730	14.9
MF	Multi Family Res.	7DU/A		
M-F-P	Multi Family Prof.	10DU/A	696	6.0
N-C	Neighborhood Comm.			
C-C	Community Commercial		580	5.0
C-B	Central Business			
I-S	Industrial Services		174	1.5
R-C	Resource Conservation		174	1.5
C-F	Community Facilities		116	1.0
	Total		11,597	100.0

\*Gross Acreage

REF: Paradise General Plan  
Paradise Zoning Map

TABLE III-2

Present Land Use in Paradise

<u>Land Use Class</u>	<u>Acreage</u>	<u>Proportion of Total</u> <u>(%)</u>
Residential	4,419	38.1
Commercial	266	2.4
Industrial	20	0.2
Agricultural	282	2.4
Public & Institutional	243	2.1
Parks	68	0.6
Streets and Lanes	2,720	23.5
Railroad Right of Way	74	0.6
Vacant	3,487	30.1
Total	11,597	100.0

REF: Paradise General Plan - 1980 Estimate

### C. Regional Land Use

The Paradise Market Area on "the Ridge" is comprised of three areas and a portion of a fourth in the Butte County Land Use Plan. These include, besides the Town of Paradise, the Upper Ridge Area of Megalia and Paradise Pines, the Stirling City area and the upper quarter of the Central Butte Area that lies on the lower slopes of the Ridge south and west of the town. All of these areas presently utilize on-site wastewater disposal system and this practice is expected to continue. The septic tank pumpers that serve Paradise also serve all of the Ridge. The size of these areas in comparison to that within the town limits is shown in Table III-3 and indicates that in terms of area, the Town of Paradise is the smallest entity of the planning areas. The Stirling City area is presently and expected to remain as mountain forests, while most of the Central Butte area of the lower foothills is rocky, thin soils that are zoned for agricultural grazing land.

TABLE III-3

#### County Planning Areas in The Paradise Region

<u>Planning Area</u>	<u>Area Square Miles</u>	<u>Proportion of total - %</u>	
		<u>with Stirling City</u>	<u>without Stirling City</u>
Town of Paradise	18.1	9.4	26.6
Upper Ridge	21.4	11.1	31.4
Stirling City	124.3	64.6	-
Central Butte (38%)	<u>28.6</u>	<u>14.9</u>	<u>42.0</u>
Total	192.4	100.0	

The current and projected land use for the Paradise Regional Area is as shown on Table III-4.

TABLE III-4

Paradise Regional Area Land Use

<u>Planning Area</u>	<u>Present Conditions</u>			<u>Planned Conditions</u>		
	<u>Open Space</u>	<u>Residential</u>	<u>Commercial Industrial</u>	<u>Open Space</u>	<u>Residential</u>	<u>Commercial Industrial</u>
Town of Paradise	6,892	4,419	296	3,479	7,364	754
Upper Ridge	12,655	922	119	9,408	3,968	320
Stirling City	79,469	80.7	2	79,464	84.6	3
Central Butte (38%)	18,075	21.3	16	15,192	2,637.7	474
Totals	117,091	5,634.7	423	107,543	14,054.3	1,551
Proportion with Stirling City %	95	4.6	0.4	87.3	11.4	1.3
Proportion without Stirling City %	86.3	12.7	1.0	64.4	32.0	3.6

The Town of Paradise presently has nearly 80% of the residences and 68% of the commercial area at the present time. However, at saturation zoning conditions, these will reduce to 53% of the residence and 49% of the commercial-industrial areas. This also shows that potential growth in the County areas can be larger than for the Town of Paradise and the desirability of regional condition of on-site wastewater management, septage and hazardous waste handling. Also, of regional concern is the growth of commercial-industrial areas in the thin soils of the Central Butte region, where central sewers, treatment and disposal would probably also be necessary. The Upper Ridge area lies in an area where much of the drainage is tributary to the water supply reservoirs of the Paradise Irrigation District. As a consequence of these considerations, the proposed central wastewater collection, treatment and disposal system should be expandable, and effective on-site wastewater management is needed for the entire region.



#### D. Population Projections

The population of the Town of Paradise is currently about 24,500 people and in the outlying region another 8,600 for a total of 33,100. The historic growth in the Town of Paradise is shown on Figure III-1, and projections are shown in the envelopes of expected maximum and minimum rates to the saturation population of all currently zoned residential, commercial and industrial land on the basis of gross acreage. The maximum growth rate is based on the Town of Paradise Planning Department estimate of 2.5% per year in the next five years. The low projection is based upon extrapolation of the most recent growth rate, 1.3%, between 1983 and 1985. The intermediate projection has been used for planning for expected population ten and twenty years in the future.

The commercial-industrial and multi-family areas are of particular interest because it is within these areas that wastewater flows presently and will continue to exceed the long range on-site wastewater disposal recommendation of 900 gpd/acre, (Montgomery 1983). Unit flows for these areas have been projected at rates shown on Table III-5.

TABLE III-5

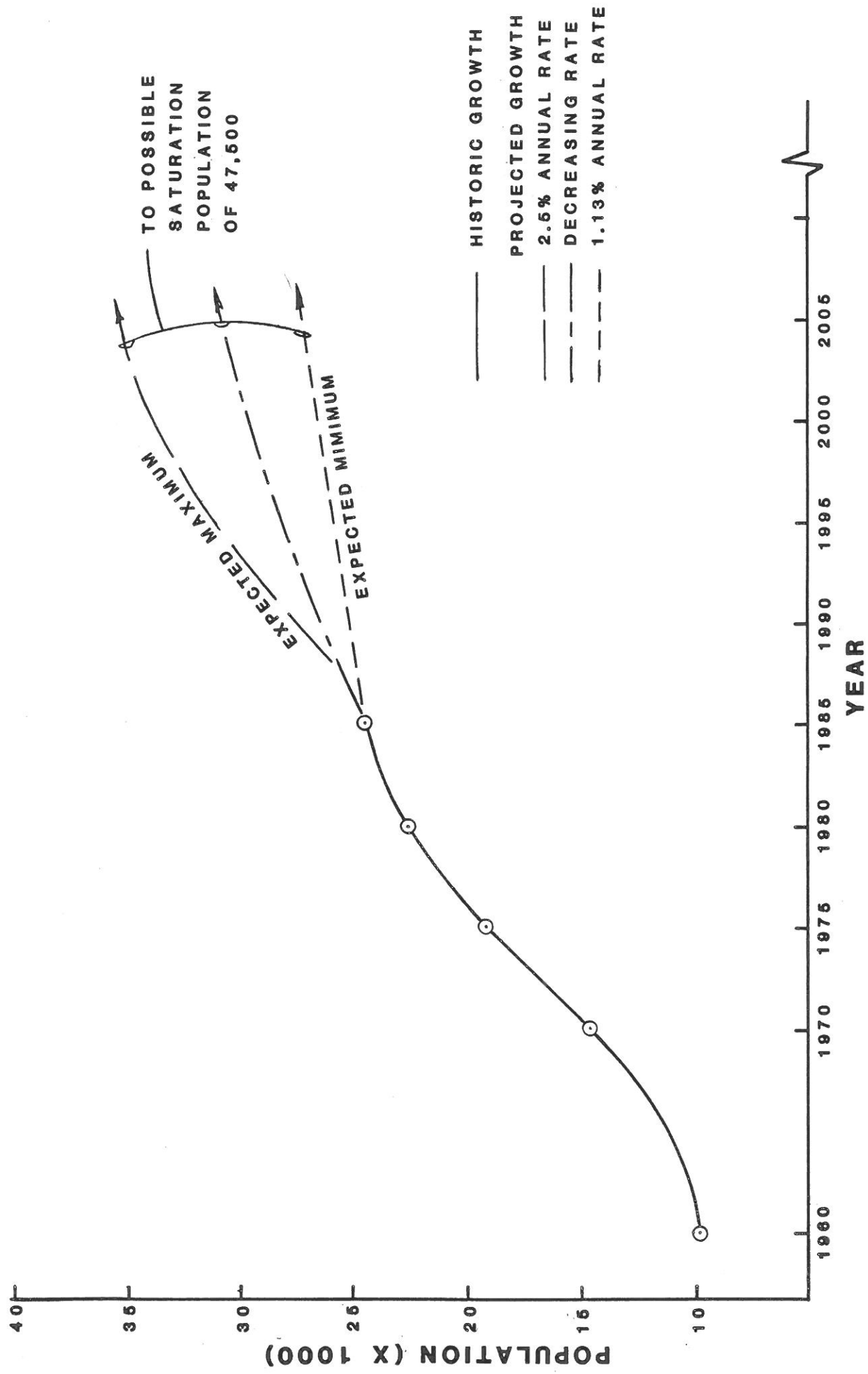
#### Commercial, Industrial & Multi-Family Unit Wastewater Flows

<u>Zoning</u>	<u>Classification</u>	<u>Wastewater Flow GPD/Acre</u>	<u>Population Equivalent Per Acre*</u>
MF & PD	Multi-Family Residential	1000	13.3
MFP	Multi-Family Professional	1333	17.8
CC & CB	Commercial & Central Bus.	2000	26.6
IS	Industrial Services	2000	26.6
-	Infiltration	200	2.7

\*Basis - Average Wastewater Flow = 75 gallons/capita/day.

The criteria to assign to the non-residential classifications can vary considerably based upon the type of community, urban density, land values, etc. The criteria for commercial and industrial areas are two to three times that listed in Table III-5 in the Bay Area and Los Angeles with multi-level buildings. While at Chico, the commercial-industrial unit flow has been measured at 1000 gpad and is used in the fee schedule for new connections on that basis. The use of a more conservative factor at Paradise for this planning considers more restricted and higher value land as well as an allowance for future development or land use changes.

The growth of commercial-industrial and multi-family areas are based upon the higher 2.5% annual rate for the next twenty years then declining.



**PROJECTED POPULATION INCREASES**

**FIGURE III-1**

**PARADISE WASTEWATER MANAGEMENT PLAN**

**R.A. RYDER & ASSOCIATES**  
CONSULTING ENGINEERS

**MAY 1985**

A projection of overall population in Paradise used as a basis of planning is shown in Table III-6

TABLE III-6

Population Projections In Paradise

<u>Year</u>	<u>Overall</u>	<u>Multi-Family</u>	<u>Commercial-Industrial</u>	<u>Total MF &amp; C-I</u>	<u>MF &amp; C-I Proportion of Total (%)</u>
1985	24,465	1,800	5,150	6,950	28.4
1995	32,315	4,330	6,200	10,530	33.0
2005	35,430	7,440	7,000	14,440	40.1
Saturation	47,500	10,900	9,200	20,100	42.3

The populations shown in Table III-6 are not additive. Only reflect that the population is not static. Many people leave Paradise during the day to work in Chico, Oroville, etc., while others enter from other nearby residential areas, or spend portions of each day in commercial and industrial areas. In planning for both on-site wastewater management and central system wastewater collection and treatment of the area, the service must include in an additive sense both residential and non-residential populations because wastewater treatment and disposal are provided for both. However, only the non-residential population is planned for an initial wastewater collection system, and in that instance what would remain on the on-site management system is only diminished by the multi-family and not the commercial-industrial increments. The areas that would be served by a central wastewater system lie along Skyway and Clark Roads as shown on Figure III-2.

E. Regional Population

The population projections for the Paradise Regional Area are based upon forecasts of the Butte County Planning Department. They estimate that during the next twenty years the growth rate in Paradise will be 2.1%, the Upper Ridge at 4.8%, Central Butte at 10.3%, and Stirling City at only 0.2%. The overall population projections for the next twenty years and at saturation zoning density are shown on Table III-7.





# PARADISE WASTEWATER MANAGEMENT PLAN

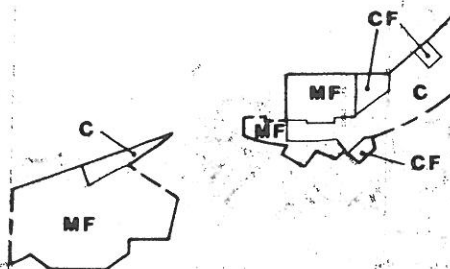
MAY 1985

TOWN of PARADISE

---	SKYWAY AREA BOUND
---	CLARK ROAD AREA B
C	COMMERCIAL ZONING
CF	COMMUNITY FACILITY
MF	MULTIFAMILY RESIDE
I	INDUSTRIAL ZONING

## PROPOSED COMMERCIAL- INDUSTRIAL MULTI-FAMILY SOURCES

SKYWAY



SCALE 1"= 2600'

FIGURE III-2

**R.A. RYDER & ASSOCIATES**  
CONSULTING ENGINEERS  
LARKSPUR, CALIFORNIA



TABLE III-7

Population Projections in Paradise Regional Area

<u>Year</u>	<u>Town of Paradise</u>	<u>Upper Ridge</u>	<u>Stirling City</u>	<u>Central Butte</u>	<u>Total</u>	<u>Paradise Proportion (%)</u>
1985	24,465	6,530	570	1,515	33,080	74.0
1995	31,315	8,260	580	4,035	44,190	70.9
2005	35,430	16,690	590	10,750	63,460	55.8
Satura- tion	47,500	28,100	600	24,900	101,100	47.0

F. Overview of On-Site Wastewater Disposal Considerations

The subsurface discharge of wastewaters in the Town of Paradise is a complicated resource problem encompassing soils, geology, vegetation and surface and groundwaters.

Almost twenty million housing units, representing about twenty-nine percent of the United States population, dispose of domestic waste through individual onsite disposal units. About eighty-five percent of these units are septic tanks and cesspools, which discharge approximately 3 billion cubic meters (800 billion gallons) of waste per year to the soil, (EPA 1975).

Septic tank systems (onsite systems) were introduced into the United States nearly one hundred years ago, but the major growth in use of these systems took place after World War II due to the combined effects of rural electrification and explosive development of suburban areas around major cities. Although the relative percent of newly constructed homes utilizing septic tanks is decreasing each year, the total number is increasing at a rate of about one-half million per year, (NTIS 1982).

The basic septic tank system consists of a buried tank where water-borne wastes are collected, scum, grease and settleable solids are removed from the liquid by gravity separation, and a subsurface drain system where effluent still containing significant amounts of organic matter, nutrients and microorganisms percolates into the soil where it undergoes further biological (and chemical) purification. There has been increased research and design modification in the past several decades. These include the recognition of trench side wall area as more effective than bottom, and the need for maintenance of periodic aeration, plastic perforated pipe replacement of vitrified clay drain tile and more conservative design criteria with intermittent use and resting for restoration and set aside areas have been adopted to prolong septic or onsite system useful life. There is by no means concurrence among onsite wastewater disposal system researchers, health officials and regulators as to the criteria and performance of various subsurface disposal systems.

Although the concept and design are relatively simple, the septic tank system is a complex physical, chemical and biological system. Performance is essentially a function of the design of the system components, construction techniques employed, characteristics of the wastes, rate of hydraulic loading, climate, areal geology and topography, physical and chemical composition of the soil mantle, and care given to periodic maintenance.

Septic systems have performed a vital function of environmental sanitation, particularly in rural and sparsely developed suburban areas. However, some estimates indicate that less than one-half of all systems in use today perform satisfactorily for the entire design life of fifteen to twenty years. Many public health authorities feel that conventional septic systems are suitable only where population density is strictly limited and soil conditions are suitable for effective absorption. Otherwise, these systems may contaminate ground and surface waters and result in sanitary nuisances and health hazards.

In spite of their limitations and potential for pollution, millions of conventional onsite systems will continue to be used throughout the United States.

#### G. Previous Studies

A number of engineering studies have been performed to assess the long-term future of onsite sewerage systems in the Town of Paradise (Montgomery 1983 and Tchobanoglous 1984).

Basic data on solid, hydrology and geology was compiled and reference is made to those reports for a complete picture on regional resource inventories and interpretations.

This report contains a database update on source materials that supplement these previous studies.

#### H. Soils

The soils of the Paradise region have been mapped in considerable detail by a cooperative effort of the University of California, Davis, Department of Agronomy and Range Science and the U.S. Forest Service and Soil Conservation Service. Figure V-2 depicts soil depths in one (1) foot increments as abstracted from these maps.

Except for small areas of Supan, Englebright, Toomes, Weitchepec and Cohasset, the soils in the Town of Paradise are of the Aiken series representing about eighty percent of the gross town site.

While the soil generally exhibits reasonably good hydraulic conductivity in its native state, the high iron content and moderately high cation exchange capacity suggest that chemical changes, as a result of interaction with wastewater, could reduce soil permeability over time.



Other soil clogging mechanisms in septic leachfield trenches are surficial in nature and result from a layer of organic material which builds up on the sides and bottoms of the trenches. Failure to periodically pump the solids from septic tanks can produce a carry-over of solid material to the leachfields, greatly accelerating the soil clogging process.

Ferric sulfite, a black iron salt, is formed at the trench interface and is a very effective soil clogging agent that reduces the percolative capacity. The Aiken soil tends to be moderately acidic (pH = 6) from 15 to 30 inches in depth to strongly acidic from 30 inches to 50 inches (pH = 5.1 to 5.5), (Powell 1985). This in itself promotes the formation of ferric sulfite.

The cation exchange capacity of the Aiken soils is in the range of 20 to 30 millequivalents per 100 grams of soil, (Rabey 1985). This index identifies the potential of the soil for sodium-ion adsorption, which further reduces porosity and hydraulic conductivity.

In summary, the absorption capacity for the majority of the soil types in the Paradise Township has a potential of eventually decreasing over design values and continuing surveillance to prolong and extend the effectiveness of onsite disposal systems is warranted.

Another potential problem with clogging of leachfields is the native and landscape vegetation within the Townsite environs. The deep rooted species such as the Ponderosa Pine and other conifers are not likely to seek the moisture and nutrients afforded by an active leachfield or be a problem. However, the phreatic plants, such as willows and many landscape species will and do intrude in leaching trenches and the perforated pipe of the leaching systems and clog systems.

The soils in the vicinity of Durham-Pentz Road are of interest as this is an area that can beneficially use reclaimed wastewater for irrigation. The soils are classified as Pentz sandy loams, Toomes cobbly loam, and Peters Clay. The depth of the soil is very thin, varying from less than a foot to two feet in depth, overlying bedrock. The Peters clay soil is somewhat deeper, but is found only in limited areas along Clear Creek in the vicinity of Butte College and south of Durham-Pentz Road. Most of the possible irrigation sites are comprised of Pentz and Toomes soils. The physical and chemical characteristics of these soils are as shown on Table III-8.

TABLE III-8

Physical and Chemical Characteristics of SoilsIn Vicinity of Durham-Pentz Road

<u>Soil Classification</u>	<u>Units</u>	<u>Pentz</u>		<u>Toomes</u>		
Depth	Inches	0-6	6-9	0-3	3-9	9-18
Gradation	%					
Gravel		11.9	29.1	23.5	21.4	16.7
Sand		54.9	50.0	42.9	35.1	38.5
Silt		29.5	26.4	41.9	45.9	44.4
Clay		15.6	17.6	15.3	19.0	17.1
Texture		Fine	Silty			
		Sandy Loam	Clay	Loam	Loam	Loam
Bulk Density	G/CC	1.7	1.8	1.6	1.9	1.7
Moisture Rentention	%					
Air Dry		2.9	2.5	3.1	3.2	3.2
Maximum		17.0	24.5	24.7	22.2	22.3
Available		5.9	16.0	12.3	10.0	10.0
pH	Units	5.6	5.9	6.1	6.3	6.3
Extractable Cations	PPM					
Phosphorus		1.4	1.2	2.8	0.9	1.7
Calcium		6.8	9.6	10.2	11.6	12.7
Magnesium		4.3	3.8	8.7	7.6	6.3
Sodium		0.2	0.3	0.1	0.1	0.1
Potassium		0.3	0.3	0.6	0.3	0.3
Cation Exchange Capacity		17.0	18.4	23.2	24.8	24.8
Basic Saturation	%	68.1	75.8	84.1	79.1	78.5
Organic Carbon	%	0.59	0.32	1.56	0.34	0.42
Organic Nitrogen	%	0.060	0.054	0.136	0.055	0.039
Carbon/Nitrogen Ratio	:	10	6	12	6	11

REFERENCE: University of California, Davis - Soil Morphology Laboratory  
Pentz Soils Sampled 5/4/72 - SW/4, SE/4, S29, T21N, R3E, MDM,  
Butte County  
Toomes Soils Sampled 5/4/72 - NW/4, SE/4, S20, T22N, R2E, MDM,  
Butte County

These soils are acidic loams. The Pentz soils predominate on the disposal sites. These have a lower moisture retention, cation exchange capacity and base saturation than the Toomes soils that lie at somewhat higher elevation toward Paradise. Overall, both soils can beneficially be irrigated by reclaimed wastewater; however, because of the shallow depth of soils a rate less than the potential evapotranspiration is more suitable. An average irrigation rate in the order of 24 inches annually would appear to be properly conservative.

## I. Geology

The geology of Paradise is very important in defining the relationship between subsurface disposal of sewage effluent in the shallow soil zone (2-20 feet) and the water bearing volcanic rock of the underlying Tuscan formation. Figure V-3 is a general geologic map, which outlines the so-called contacts between different rock types accompanied by a description of each mapping unit. An interesting geologic mapping discovery was an unpublished (incomplete) map of Paradise made in the mid-1960's which recorded the location of an intrusion to or near the surface of post-Tuscan basalt, which can be seen in the road cuts on Pearson, Elliott and Buschmann Roads. Construction of onsite systems along this surfaced rib of highly jointed rock is one of the more challenging areas in Paradise for achieving long-term success with onsite systems.

Soils with excessively high percolative capacity usually do not correlate with the capacity of soils to remove pollutants from infiltrating wastewater. Many soils, of high hydraulic capacity (permeability) can be rapidly overloaded and do not provide effective removal of pollutants. A proposed modification of the acceptable percolation rates in the Town of Paradise Ordinance 103, would eliminate soils which percolate more rapidly than 5 minutes per inch (See App. V-A).

Whether pollutants moving from the leachfields through the soil reach the groundwater depends to a large extent on the type of subsurface material involved and the thickness. Figure III-3 depicts the seepage paths in volcanic basement rock masses.

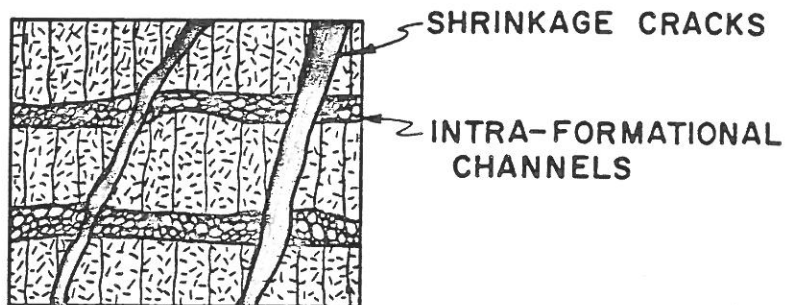
In volcanic rock the seepage paths are too large to provide significant filtration. The detention time and active surface areas available are not great enough for appreciable adsorption or microbial degradation to occur.

The type and thickness of soils overlying these rock types then becomes critical. Various research efforts in the past have demonstrated that most of the known contaminants in septic tank effluent -- suspended solids, BOD, bacteria, and viruses -- can be removed by movement through a few feet of soil under proper conditions. The amount of soil required is dependent on the particular contaminant; the pH, moisture, temperature, and oxidation-reduction potential of the soil; the size, shape, and interstitial voids of

FIGURE III-3

SEEPAGE PATHS  
IN VOLCANIC ROCK

VOLCANIC ROCK:  
LAVA FLOWS





the soil; and the velocity of flow through the voids. Higher percentages of fine material such as clays in the soil provide more surface area and generally result in reduced mobility of pollutants. Viruses, for example, are known to be adsorbed more readily on soils of high clay content and low pH.

Some other constituents are not easily removed. Chlorides and nitrates are essentially unaffected by movement through most soils. However, nitrogen requires special consideration. Most nitrogen from septic tank effluents occurs in the organic and ammonia forms which are readily adsorbed to soil particles within short distances. In anaerobic conditions are maintained in the soil, there is little nitrogen movement. However, under favorable moisture, temperature and oxygen conditions such as generally occur in well-drained soils, soil bacteria will oxidize the nitrogen compounds to the more mobile nitrates.

The need for an assessment of cumulative impact of onsite systems is described in another subsection of this report. The monitoring of some of the 200 active wells in the Town of Paradise is suggested later herein as a corollary activity to the cumulative impact assessment and establishment of a future onsite wastewater system management zone.

#### J. Hydrology

Rainfall records for the past 26 years are shown in Table III-9. of interest is the magnitude of rainfall in calendar year 1983 which is 180 percent of the long-term average. Figure V-1 shows the distribution of average annual rainfall which ranges from 70 inches near the northern extremity to as low as 35 inches in the southwest corner of the Town. The significance of the "wet" climate and the operation of onsite wastewater systems is that for 3 to 4 months of the year the soils in Paradise are at or near a saturation condition. Thus, the addition of septic tank leachate to a soil which periodically has little or no absorptive capacity can produce "failures" by inducing the surfacing of effluent. Rainfall does have a distinctive water quality benefit in that it dilutes the added waste loading to the soil body and its seepage discharge into the many stream courses through the Town.

Several of the wastewater disposal alternatives for the central wastewater collection area propose land disposal by irrigation of grasslands in the lower foothills near Durham-Pentz Road. The elevations of these areas is between 200 and 500 feet, and the rainfall is considerably less than at the higher elevations of Paradise itself. The rainfall amounts are comparable to that of Chico and the rainfall, temperature, evaporation and evapotranspiration for these areas are as listed on Table III-9. The average rainfall in this area is about 26 inches per year, considerably less than in Paradise, while the temperature and evaporation rates are somewhat higher than in Paradise. The effect of elevation is an important function and the rainfall is approximately half as much at these lower elevations than at the 1700 foot elevation in the center of Paradise.

TABLE III-9

## Climate of Durham-Pentz Road Vicinity Wastewater Storage and Disposal Sites

Month	Temperature of			Precipitation			Evaporation Mean	Evapotranspiration		Precip.-ET Inches
	Mean	Daily		Mean	Maximum	Inches Month		Maximum	Day	
		Minimum	Maximum							
January	44.8	36.0	53.6	5.75	11.78	3.53	0.8	1.2	+4.55	
February	49.5	39.1	59.9	3.94	10.94	2.14	1.0	1.7	+2.24	
March	52.6	40.5	64.6	3.07	8.89	1.97	3.7	3.1	0	
April	57.8	43.9	71.7	2.04	5.77	2.36	4.8	4.4	-2.36	
May	65.8	50.7	80.8	0.72	2.01	0.84	7.7	5.9	-5.18	
June	73.0	56.8	89.2	0.42	1.97	1.07	9.0	7.2	-6.78	
July	78.1	60.8	95.4	0.05	1.02	0.94	11.2	7.9	-7.85	
August	76.4	59.0	93.6	0.17	1.48	0.92	10.0	6.8	-6.63	
September	72.1	54.8	89.3	0.43	2.82	2.20	6.0	5.3	-4.87	
October	63.2	47.8	78.6	1.61	9.86	4.46	3.7	3.5	-1.89	
November	52.2	40.8	63.5	3.55	14.44	3.40	1.3	1.6	+1.95	
December	45.5	36.5	54.4	4.18	11.71	3.88	0.8	1.0	+3.18	
Yearly	60.9	47.2	74.6	25.93	14.44	4.46	60.0	49.6	-28.93	

Averages  
Extremes  
or Totals

The advantage of disposal at these lower elevations is that there would be less precipitation to increase winter storage requirements. There would also be a greater need for irrigation water in summer due to higher evaporation and plant transpiration rates. The consumptive use of irrigated pasture in the Durham-Pentz Road area is approximately 30 inches per year, half again as much as the 20 inch per year average requirement for grasses in Paradise. The net effect is that a storage allowance for precipitation is half the need for the higher elevation of Paradise and that irrigation with reclaimed water needs only two thirds as much land as in Paradise.

#### K. Butte Creek Hydrology

One alternative studied for wastewater discharge from Paradise is summer irrigation and winter discharge under suitable conditons of high dilution in Butte Creek. This concept could avoid the cost and management of a storage reservoir and is an approved practice for wastewater discharge if provided at least a secondary level of treatment, disinfection, and removal of toxic substances for a number of communities in the Sacramento River Basin. The subsurface discharge into placer tailings could further eliminate direct discharge although there would be subsurface discharge to the Creek.

The runoff conditions as measured in Butte Creek at the gaging station immediately below Little Butte Creek are as shown in Table III-10.

TABLE III-10  
Flow Discharge In Butte Creek

<u>Month</u>	<u>Butte Creek Discharge Mean - CFS</u>	<u>Possible Effluent Discharge at 100:1 Dilution in MGD</u>
January	262	3.4
February	550	7.0
March	621	8.0
April	545	7.0
May	566	-
June	245	-
July	152	-
August	160	-
September	109	-
October	115	-
November	126	1.6
December	118	1.5

The column of possible discharge of treated effluent assumes a 100:1 dilution condition. Some storage would be needed for a low flow conditions which seasonally may be less than half of the mean. Or another possibility is to provide a tertiary degree of treatment and discharge at a 10:1 dilution limit if sufficient substantiation of non-degradation can be proved. Because Butte County has a prohibition against discharge of any effluent into Butte Creek, and the relatively high degree of recreational and residential uses in the lower canyon, this concept was not evaluated in detail. It appeared that the only possible discharge could be into Butte Creek in the vicinity of Highway 99, perhaps from a pipeline on the abandoned railroad right-of-way. However, there are substantial environmental, esthetic, and social objections to a seasonal Butte Creek discharge, and consideration should only be reactivated if the other alternatives cannot be achieved.

The hydrology of the small creeks into which overflow from the storage reservoirs might occur in extreme wet seasons, Little Dry Creek, Clear Creek and Dry Creek, would exhibit similar seasonal flow variations to Butte Creek. However, discharge into them would only be in seasons of abnormally heavy rainfall, exceeding fifty percent of normal, and when dilution would exceed 10:1 in late winter or spring. These streams all flow into Butte Creek or the Sacramento River considerably south of the Paradise-Chico area. The overflow could occur from the storage reservoirs as an infrequent emergency spill. It would be of a dilute effluent discharged concurrently with high storm runoff in the creeks. From a practical matter of dam safety, the planning of a discharge during a season when rainfall can exceed the 1:100 year recurrence frequency is necessary. The location of the storage reservoir sites were chosen to minimize local runoff, yet they are planned to contain only the wastewater effluent and runoff precipitation at a 1:100 year recurrence frequency. It will be necessary to indicate this condition for the wastewater permit and EIR that will be required for these facilities.



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# **CHAPTER IV**

## **WASTEWATER FLOW & CHARACTERISTICS**







#### IV. WASTEWATER FLOW AND CHARACTERISTICS

##### A. Unit Flow Factors

The wastewater flows for the Central Areas along Skyway and Clark Roads have been calculated to provide a basis for estimating sewer sizes, treatment and disposal capacity. The per capita flows for Paradise were originally estimated to be 75 gpcd, (Montgomery 1979), based upon water consumption records.

It is necessary to select a reasonable, but appropriate, conservative flow criteria to provide a basis of system sizing. The 75 gpcd unit flow value is chosen because of its more rational basis of development at Paradise. If, in the future, the implementation of water conservation is effective, then the typical 20-40% wastewater flow reduction can be realized. The effect will be to provide reserve capacity for any other areas of Paradise that may need to be served by a central sewer system because of difficulties with long term success of on-site disposal systems. This condition can arise because of density, poorer soil or unfavorable ground water levels in certain basins.

It is usual to estimate the wastewater flow from commercial and industrial areas on the basis of unit flows per acre. A listing of criteria found in other Northern California communities is shown on Table IV-1.

TABLE IV-1

Wastewater Flows For Commercial, Industrial  
and Multi-Family Areas in Northern California

Average Dry Weather Flows - Gallons/Acre/Day

<u>Community</u>	<u>Zoning</u>			
	<u>Commercial</u>	<u>Industrial</u>	<u>Multi-Family Residential</u>	<u>Single Family Residential</u>
San Jose	6,100	11,500	6,900	4,600
Merced	5,900	11,700	4,725	2,760
Los Banos	3,800	-	4,000	2,335
Santa Nella	2,500	2,200	3,375	1,735
Chico	1,000	1,000	-	-
Paradise (1)	2,000	2,000	1,000-1,333	900 (2)

(1) Proposed criteria used for preliminary design herein.

(2) Criteria for maximum on-site wastewater disposal in Paradise.

The values selected for Paradise are on the lower range of values measured for many Northern California communities, but higher than being utilized at Chico, which are unusually low and may reflect a more substantial allowance for on-site parking, lower land values, and disperse development. Another factor is that flows for multi-family housing are projected at lower rates than for single family residential units. This is because the probable average occupancy per dwelling unit is lower in the smaller multi-family units. Where the occupancy per dwelling unit has been estimated at 2.326 in the 1980 census when single family units predominated. The wastewater flow per single family residential dwelling unit (du) is on this basis:  $2.326 \text{ p/du} \times 75 \text{ gpcd} = 175 \text{ gpd/du}$ . The unit flows on occupancy of multi-family units if projected lower, i.e.:

MF & PD at 1000 gpad & 7 du/Acre would mean

$1000 \text{ gpcd} / 7 \text{ du/acre} = 143 \text{ gpd/du}$

and either:  $143 / 75 = 1.9 \text{ persons/du}$

or a unit per capita flow of  $143 / 2.326 = 61.5 \text{ gpcd}$

MFP at 1333 gpad & 10 du/acre would mean

$1333 \text{ gpad} / 10 \text{ du/acre} = 133 \text{ gpcd/du}$

and either:  $133 / 75 = 1.77 \text{ persons/du}$

or a unit per capita flow of  $133 / 2.326 = 57.2 \text{ gpcd}$

In either case, it is logical to expect that both the per capita occupancy and flows decrease with increasing density of development.

#### B. Infiltration-Inflow

Another factor to consider in the compilation of wastewater flows is the actual or allowance for clean water infiltration and inflow entry due to storms or high seasonal ground water tables. This can be a major factor in older communities where pipe materials and joining were susceptible to leakage and/or roof or basement drains were discharged into wastewater collection systems. The range of infiltration-inflow measurements and allowances; and that selected for critiera at Paradise are shown on Table IV-2.

TABLE IV-2

Infiltration-Inflow Occurrence and Allowance At  
Western Communities (ASCE MOP NO. 60)

<u>Community</u>	<u>Infiltration-Inflow Allowance</u> Gallons/Acre/Day
Austin, Texas	1,000
Seattle, Washington	1,100
Honolulu, Hawaii	2,000
Reno, Nevada	500
Range (All Cities)	146-2,000
Paradise (1)	200 (Proposed Criteria)

(1) Used for basis of design planning.

An infiltration-inflow allowance of 200 gpad for Paradise is again in the lower portion of the range. However, it should be achievable in a new collection system designed and constructed of materials that can provide a very tight system with reduced susceptibility to leakage or deterioration. This, coupled with a condition at Paradise where the water table is primarily below the depth that sewers would be constructed, is favorable to a low infiltration allowance. It will be necessary that sewer and lateral construction be tested to meet this criteria. The current EPA criteria of 500 gallons/inch diameter/mile of sewer/ per day must be utilized for new sewer and lateral construction, testing, and acceptance standards.

C. Peak Flows

A maximum flow allowance of two times the average daily flow has been provided for the proposed sewer collection system as a whole. The sewers have also been planned for being only half full at this peak flow rate, so in effect there is an overall allowance of 4:1 for instantaneous peak flows.

D. Central Wastewater Collection Area Flows

The Central Wastewater Collection Area includes both the Skyway and Clark Road areas. Each has been divided into two subareas. The wastewater flows that are projected for these areas are as shown on Table VI-3.

TABLE IV-3

## Wastewater Flows Projected for Paradise Central Areas(1)

Area	Zoning Classification	Flow Allowance Gal/Acre/Day	Subarea 1		Subarea 2		Total	
			Area Acres	Flow GPD x 10 <sup>3</sup>	Area Acres	Flow GPD x 10 <sup>3</sup>	Area Acres	Flow GPD x 10 <sup>3</sup>
			Below Wagstaff	Below Wagstaff	Above Wagstaff	Above Wagstaff	Total	Total
1. Skyway	MF	1,000	165.0	165.0	75.1	75.1	240.1	240.1
	PD	1,000	76.1	76.1	0	0	76.1	76.1
	MFP	1,333	9.8	13.1	10.7	14.3	20.5	27.4
	CC	2,000	233.7	467.4	43.3	86.6	277.0	554.0
	CB	2,000	102.8	205.6	0	0	102.8	205.6
	Infiltration	200	587.4	117.5	129.1	25.8	716.5	143.3
<u>Total</u>			587.4	1044.7	129.1	201.8	716.5	1246.5
2. Clark	MF	1,000	47.7	47.7	113.9	113.9	161.6	161.6
	PD	1,000	0	0	34.1	34.1	34.1	34.1
	MFP	1,333	0	0	86.7	115.6	86.7	115.6
	CC	2,000	22	44.0	191.1	382.2	213.1	426.2
	IS	2,000	139.4	278.8	0	0	139.4	278.8
	Infiltration	200	209.1	41.8	425.8	85.2	634.9	127.0
<u>Total</u>			209.1	412.3	425.8	731.0	634.9	1143.3
3. Total Central Area			-	796.5	1457.0	554.9	932.8	2389.8

(1) Average dry weather flows.



The total average flow for the entire Central Area at saturated development is approximately 2.4 MGD. This equates to a flow of 1775 gallons per day/acre. Phasing either in terms of area served, or by development growth is possible. However, this provides the flow data requested for long range planning for the collection system, pump stations, treatment and disposal facilities that are discussed in Chapter VI.

The projected overall wastewater flows for the Town of Paradise developed by Montgomery Engineers (1979) indicated a flow of 3.56 MGD for a population of 45,000. The current projection for the Central Area is about two-thirds of that previously projected for the Town as a whole, and much larger than the 0.2 MGD projected for the commercial area alone by 1990. The apparent large discrepancy in the commercial area allowance is the more recent zoning authorizations approved by the Town for commercial as well as industrial areas; and the inclusion of the relatively extensive multi-family residential zoned areas to be served by a proposed Central Wastewater Collection System.

The equivalent single family residential dwelling unit construction can be made for the 2.4 MGD of ultimate flow on the basis of 175 gpd projected per dwelling unit. The equivalent dwelling units and population would be:

$$2,400,000 \text{ gpd} / 175 \text{ gpd/du} = \underline{\underline{13,715}}$$

#### E. Wastewater Quality Characteristics and Loading

The wastewater quality characteristics of primary interest in determining the sizing of treatment facilities are the solids and organic matter expressed in terms of total suspended solids (TSS), and biochemical oxygen demand (BOD). These may be expressed in terms of concentration to the wastewater flow or as unit loadings per capita per day.

Unit per capita loadings for suspended solids and BOD for primarily residential communities range from 0.14 to 0.23 pounds/day, with suspended solids usually about ten percent greater than BOD. Communities that have a large proportion of garbage grinders tend to have higher values.

The unit loading factors projected for Paradise are mid range values for domestic wastewater and are:

$$\begin{aligned} \text{TSS} &= 0.19 \text{ pounds/capita/day} \\ \text{BOD(5)} &= 0.17 \text{ pounds/capita/day} \end{aligned}$$

The total loading for the saturation population would be:

$$\begin{aligned} \text{TSS} &= 13,715 \times 2.326 \times 0.19 = 6,060 \text{ pounds/day} \\ \text{BOD} &= 13,715 \times 2.326 \times 0.17 = 5,425 \text{ pounds/day} \end{aligned}$$



# **CHAPTER V**

## **ON SITE WASTEWATER MANAGEMENT**







## V. ONSITE WASTEWATER SYSTEM MANAGEMENT

### A. Needs Analysis

The Town of Paradise encompasses some 18 square miles and has a current population of approximately 24,000. Adjacent to, but outside the Town boundaries, are topographically and hydrologically related areas designated as Upper Ridge, Central Butte and Stirling City. These areas account for about another 7,000 inhabitants.

Sewerage in the area for residential, commercial, institutional and industrial discharges is all conventional septic tanks and leachfields. Previous studies (Montgomery 1979 and 1983) have identified the problem of:

- ° continued growth;
- ° site limitations due to high groundwater, shallow soils and excessively slow percolation rates; and
- ° system failures and repairs due to system age, excessively high dwelling density, soil clogging in leachfields and/or improper septic tank maintenance.

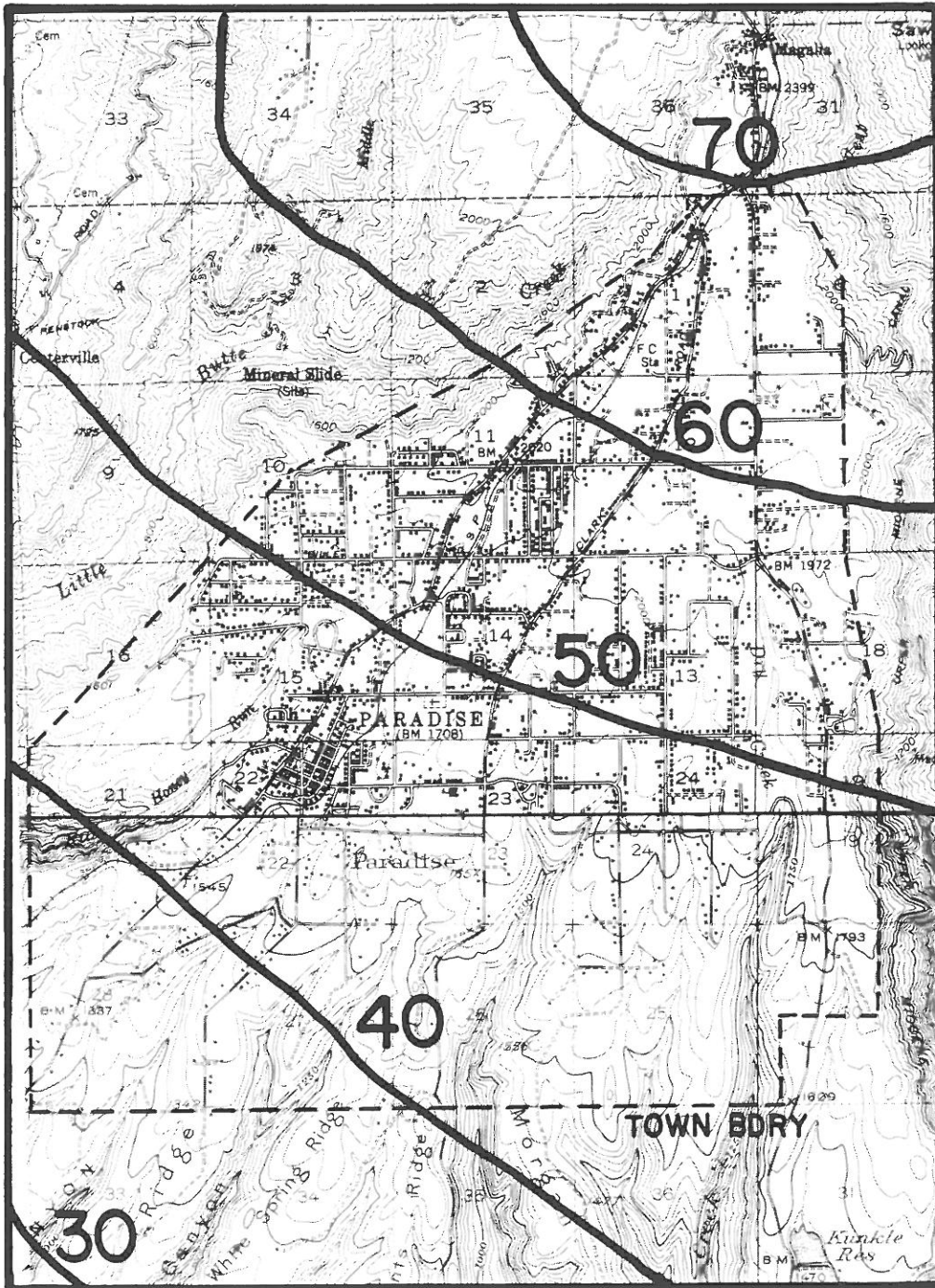
The demographics of the Town do not favor large capital expenditures which would place an unusually high tax or use fee burden on the moderate income level population. The median age for the community is reported as 47, placing it well within the retirement category for U.S. communities (U.S. Dept. of Housing and Urban Development, Demographics of Retirement Communities in the U.S., 1982).

State law provides the mechanism by which unsewered communities can select another sewerage option and retain septic systems (onsite systems). The statute, Onsite Wastewater Disposal Zones, Chapter 3, Section 6950, allows the creation of onsite wastewater disposal zones for the purpose of inspecting, monitoring and requiring repair or replacement of failing onsite systems (Section 6979).

Management of onsite systems would permit the orderly growth of the community to occur without creation of public debt for a sewerage system and would further provide the controls by means of pre-set subbasin hydraulic/chemical limits to prevent the degradation of groundwater and surface water resources.

The inventory of existing systems and the establishment of hydraulic loading/chemical loading limits for each Town subbasin would be an essential precursor to the implementation of the onsite wastewater management program.

Partial sewerage of selected zones of the high density commercial areas along the Skyway and Clark Road would be early candidates for implementation. Plans and costs will be set



SCALE: 1" = 1 MILE

DATA IN: INCHES/YEAR

DATA TAKEN FROM:  
Mean Annual Precipitation  
in the California Region.  
U.S.G.S. (Compiled by  
S.E. Rantz, 1975.)

R.A. RYDER & ASSOCIATES  
CONSULTING ENGINEERS

## TOWN OF PARADISE WASTEWATER FACILITIES PLAN

# RAINFALL CONTOUR MAP

## STORM ENGINEERING

15 MAIN ST. WINTERS, CA 95695

# FIGURE V-1

forth to identify conveyance routes, effluent storage and effluent irrigation sites. Operation and maintenance of the sewers, trunk-line, interceptor sewers and disposal system can be a corollary function of the Onsite Management District as administered through the Town organization.

#### B. History of Onsite Management Entities

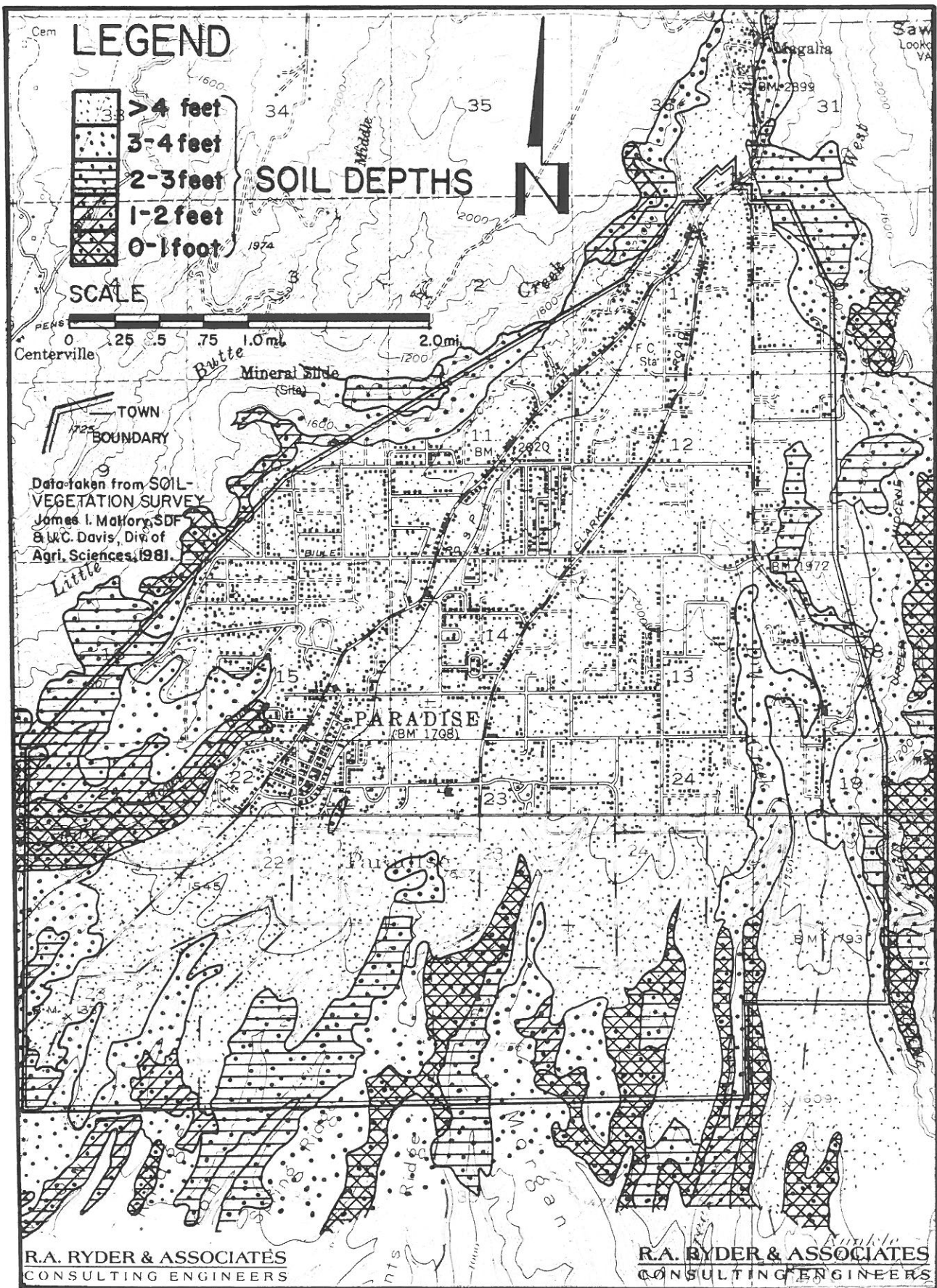
The first two publicly managed groups of septic tank systems in California were for the Town of Stinson Beach, California (Stinson Beach County Water District) and Auburn Lake Trails Subdivision (Georgetown Divide Utility District). Stinson Beach had in the post-World War II years gone from a purely summer resort community to year-round occupancy by a broad cross-section of working commuter-professionals, retirees and local commercial enterprise operators. The combination of increased wastewater loading, average age of the onsite systems and general lack of septage pumping and system maintenance produced approximately 107 documented failures out of the 486 community residences. Sewerage consisting of secondary treatment and ocean disposal was rejected by the voters in the District on two occasions as being too costly (\$3.6 million at 1972 price levels). Monthly costs per residential connection were projected to be approximately \$27.<sup>1</sup> A permanent building ban for the community was promulgated by the Regional Water Quality Control Board. Nearly four more years of planning and agency negotiations were required to establish the framework for the first legislatively mandated Onsite Wastewater Management District. The largest single fiscal impact in the community was for those residences for which onsite system repair and rehabilitation was specified.

The average repair cost for the failed systems was about \$2,400. Other costs to the community at large were for a surface and groundwater monitoring program for the special staffing and operation within the Water District framework to cope with the additional workload of inspections and record keeping. Monthly costs per residence are \$12.00.

Auburn Lake Trails established an onsite wastewater management system for some 350 residential units in that El Dorado County subdivision. The first 10 years of operation were under a special legal interpretation of Public Utility District Act powers. It is now in the process of conversion to an Onsite System Management Zone under Section 6950 of the State Health and Safety Code. The Auburn Lake Trails (ALT) experience is slightly different from Stinson Beach in several ways:

1. The ALT onsite systems are relatively new with an average age being something around 7 years. (Average age of onsite systems in Stinson Beach was 14 years as surveyed in 1977.)<sup>2</sup>
2. The ALT region is typified by steep slopes, shallow soils and seasonal high groundwater. (Stinson Beach had





# TOWN OF PARADISE WASTEWATER FACILITIES PLAN

SOIL  
DEPTHS

[STORM ENGINEERING]

15 MAIN ST. WINTERS, CA. 95695

FIGURE V-2



moderately good soils, 30 percent of developed area in steep slopes and perennial high groundwater levels in 20 percent of the area.)<sup>2</sup>

3. Auburn Lake Trails has 350 units constructed out of a build-out of 1,100. (Stinson Beach is at 98 percent of total build-out and is restricted from growth by the surrounding Golden Gate National Recreation Area.)

ALT has an annual budget for sewerage of about \$80,000.

Other onsite system management programs in California are in various stages of planning, approval or implementation.

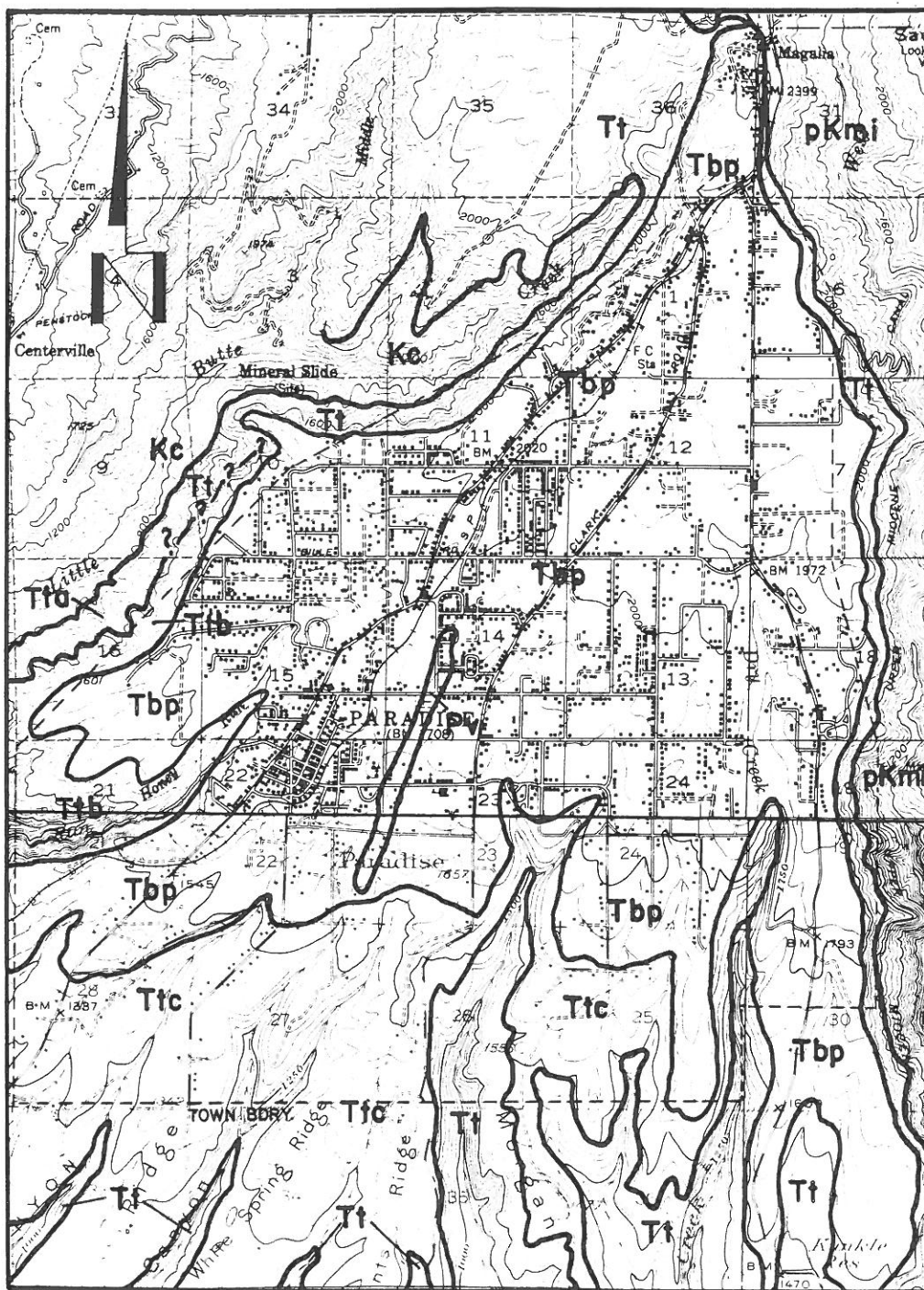
- ° Portola Valley, San Mateo County
- ° San Lorenzo Valley, Santa Cruz County
- ° Inverness, Marin County
- ° Black Point, Marin County

#### C. Basin Capacity and Cumulative Impact

Septic tanks and soil adsorption systems (leachfields) have been used successfully for liquid waste disposal in the U.S. since their introduction in about 1890.<sup>3</sup> Because they are underground and not visible to the owner/discharger they are often forgotten or neglected until failure occurs. "Management" means periodic inspection and an assessment by a qualified sanitarian or wastewater technician that the system is functioning as it was designed. The modes of onsite system failure can be:

- a. soil clogging in leachfield
- b. poor leachfield design (old design or improper construction)
- c. inadequate or no septic tank pumping (removal of septage)
- d. high groundwater
- e. undersized septic tank

The Stinson Beach inventory of failures indicated the following percentages by category of failure ("a" through "e" above).



## LEGEND

TUSCAN FORMATION (Pliocene)—Divided into:

**Tfc** Unit C—Predominantly lahar deposits composed of angular to subrounded volcanic fragments, as much as 3 m in diameter, in a matrix of gray-tan volcanic mudstone. Composition and texture of fragments and ratio of fragments to matrix are highly variable. Scattered irregularly shaped masses of brick-red and gray massive to flow banded volcanic breccia occur within the lahar deposits throughout the area. Gray monolithic hornblende andesite volcanic breccia occurs as irregularly shaped pods in lahar deposits of the unit north of Little Antelope Creek. Lahar deposits are reversely graded and range in thickness from about 0.5 m to 10 m; upper and lower contacts are sharp. Poorly sorted polymict volcanic conglomerate, sandstone, and siltstone are interlayered with the lahar deposits and increase in abundance toward the west and south. Unit C is at least 150 m thick in the western part of Antelope Creek.

**Ttb** Unit B—Interbedded lahar deposits, volcanic conglomerate, volcanic sandstone and siltstone similar to rocks of unit C. Volcanic conglomerate and volcanic sandstone more abundant in unit B. Lahar deposits and volcanoclastic rocks interbedded in approximately equal proportions, giving a more regularly layered sequence than in the lahar-rich unit C. Maximum thickness of conglomerate layers about 15 m. Coarse cobble and boulder conglomerate predominant in the eastern and northern part of unit; crossbedded and channelled volcanic sandstone increases in abundance to the west and south. Unit B is about 130 m thick.

**Tta** Unit A—Interbedded lahar deposits, volcanic conglomerate, volcanic sandstone and siltstone all containing scattered fragments of metamorphic rocks. Metamorphic fragments, up to 20 cm in diameter, include white vein quartz, green, gray, and black chert, greenstone, greenish-gray slate, and serpentinite. Metamorphic cists usually make up less than 1 percent of the rock the remainder being basaltic and andesitic volcanic fragments. The top of the member is defined by the highest lahar deposit or volcanic conglomerate layer that contains metamorphic fragments. Unit A is about 65 m thick.

**Tt** TUSCAN FORMATION, UNDIVIDED—Interbedded lahar deposits, volcanic conglomerate, volcanic sandstone, siltstone, and pumiceous tuff.

**Tbp** OLIVINE BASALT OF PARADISE—Gray slightly vesicular glomerophyritic olivine basalt. Aggregates of plagioclase, as much as 15 mm in length, form abundant white phenocrysts; aggregates of olivine as much as 10 mm in diameter form glassy yellow-green phenocrysts in gray matrix of plagioclase microlites and intergranular clinopyroxene. Plagioclase phenocrysts have well-developed oscillatory zoning and pronounced sieve texture with abundant inclusions of clinopyroxene in the middle zones. Edges of plagioclase microlites are crowded with black dustlike opaque inclusions and clear fluid inclusions. Magnetite occurs with intergranular clinopyroxene. Maximum thickness in the map area is about 25 m.

**Kc** CHICO FORMATION (Cretaceous)—Tan, yellowish-brown to light-gray fossiliferous marine sandstone with lenticular beds of pebble to fine cobble conglomerate and minor siltstone. Clasts in the conglomerate include rounded to well-rounded red, green, and black chert, white vein quartz, quartzite, granite, and greenstone. Caliche cement and fossil fragments common. Sandstone is composed of fine to medium-grained angular to subrounded grains of quartz, plagioclase feldspar, alkali feldspar, lithic fragment, and detrital chert. Chico Formation is about 650 m thick in Big Chico Creek.

**pKmi** METAMORPHIC AND IGNEOUS ROCKS—Undivided slate, quartzite, metaconglomerate, marble, metamorphosed volcanic rocks, serpentinite, metamorphosed gabbro, diorite, and monzonite (see Creely, 1965, and Hietanen 1973, 1976).

**Pv** POST TUSCAN BASALT (mapped by John L. Burnett, 1965–67)

## SCALE

0 .25 .5 .75 1.0 mi. 2.0 mi.

## TOWN OF PARADISE WASTEWATER FACILITIES PLAN

GENERAL  
GEOLOGY

STORM ENGINEERING

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FIGURE V-3

Data taken from GEOLOGIC MAP OF THE CHICO MONOCLINE AND NORTHEASTERN PART OF THE SACRAMENTO VALLEY, CALIFORNIA (U.S.G.S., 1981)

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ENVIRONMENTAL • ENERGY • CORROSION  
LARKSPUR CALIFORNIA

Stinson Beach  
Percent of Total Failures<sup>2</sup>

- a. 44
- b. 26
- c. 15
- d. 10
- e. 5

100

While "management" can reduce the number of onsite system failures, it cannot prevent them entirely, but it is the least costly sewerage alternative. The areas in Paradise which have the highest probability of long-term success with onsite systems are in regions of low land use density. The areas with the highest probability of failure are in the dense, high water use/waste discharge commercial zones along Clark Road and the Skyway.

The physiographic and demographic variables which make up the onsite system "equation" for Paradise are less than ideal:

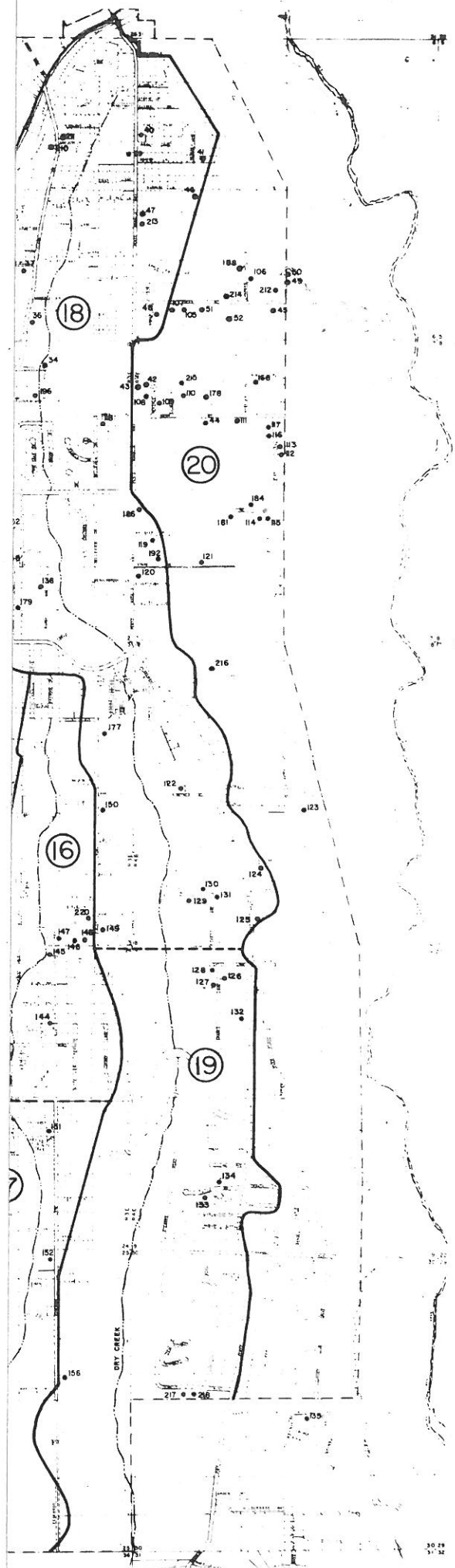
- ° pressure for more property development and growth.
- ° average rainfall from 70 inches near Magalia to 45 inches at Town's southern boundary. (See Figure V-1)
- ° Aiken soils (SCS Classification) make up about 80 percent of the Town's gross area -- high in iron; moderately high cation exchange capacity; moderately to strongly acidic. (See Figure V-2)

Many factors enter into the dynamics of soil adsorption systems for wastewater. For ease of illustration and analysis, the Town can be subdivided into 20 subbasins or drainage areas. Figure 4 depicts the watershed limits of each of the 20 subbasins. Each one is associated with its own geometry, rainfall, tree cover, soil depth and type, and land use pattern. Figure V-5 is a 2 dimensional schematic diagram of the balance or accounting of water entering, leaving and remaining in a typical subbasin. Once this equation of hydrologic variables is described and the terms quantified, it is possible to develop a second group of equations which define the transport and fate of non-conservative and conservative elements (those that do and do not become chemically altered with time, respectively). These mathematical tools can then be used to predict when the level of nitrate, for example, will reach a critical stage and constitute a pollution hazard.

The inputs for the dynamic modeling of the 20 subbasins would require monitoring of surface water and groundwater to establish









the existing or base condition. The chemical characteristics of typical residential and commercial wastewaters are reasonably well known which would reduce the overall monitoring effort for the Paradise program.

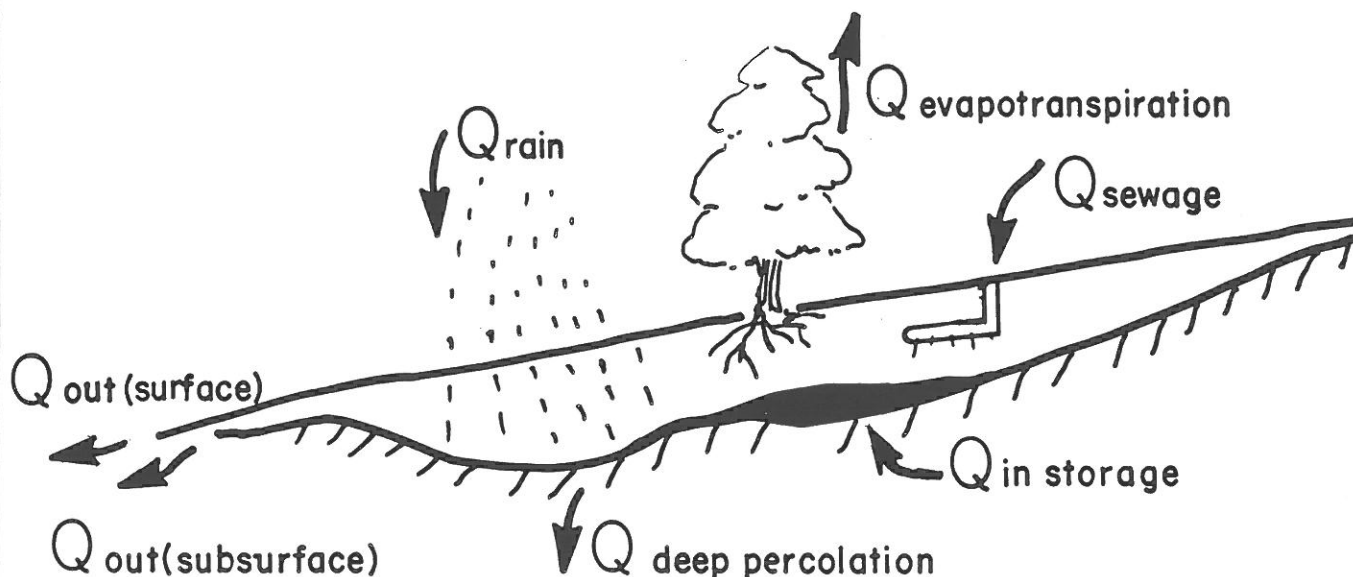
The net result of a subbasin by subbasin water balance and chemical transport model would be outputs of rational numbers, and an analysis of water quality trends upon which the Town could program future sewerage planning. Reasonable judgements to achieve the objectives of the Town's General Plan could be evolved within the State's guidelines for water quality control and pollution abatement.

The aggregate product of dynamic water quality modeling is often used to develop so-called cumulative impact analyses. For example, in a subbasin where limits are set for the quantity of total nitrogen that can be introduced, the future development pattern for that land area can include "nitrogen credits" for land that is unsuitable for septic tanks (too steep, shallow soil, high groundwater). Those nitrogen credits can be applied against other potential development in the subbasin, and if zoning permits, then higher densities could be accommodated without compromising the goals of the cumulative impact criteria. In practice, if the Town observed that a subbasin was getting close to its pre-specified limit for nitrate, chloride, TDS (total dissolved solids) or other chosen chemical parameter, the basin would be restricted for new development and/or be given the option to construct sewers and connect to the central waste treatment and disposal facility.

Cumulative impact analyses for onsite systems have been performed for other areas:<sup>4</sup>

- Carmel Valley, Monterey County, CA
- Inverness, Marin County, CA
- Black Point, Marin County, CA
- Region I, North Coast Regional Water Quality Control Board (Sonoma, Mendocino, Humboldt and Del Norte Counties)

One possible simplification to the basin modeling approach would be to establish wastewater to groundwater ratio limits. This method of subbasin water quality control would not reflect the dynamics of the basin but would consider each basin as a large, completely mixed reactor. When the volume of wastewater from leachfields began to exceed a predetermined amount and a predicted limiting concentration of nitrate, chloride or TDS, the same controls would be exercised that were described previously, i.e., building ban or sewers and connection to the Town's central treatment and disposal facility. The wastewater/groundwater basin volume ratio option would be likely to predict limiting values on the conservative side, which for purposes of early prevention of groundwater quality deterioration might be of significant benefit.



## TYPICAL SUBBASIN

$$Q_{rain} + Q_{sew.} - Q_{out(surf.)} - Q_{out(subs.)} - Q_{d.perc.} + Q_{stor.} = 0$$

R.A. RYDER & ASSOCIATES  
CONSULTING ENGINEERS

TOWN OF PARADISE WASTEWATER FACILITIES PLAN

WATER  
BALANCE  
SCHEMATIC

STORM ENGINEERING

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FIGURE V-5



It is estimated that this cumulative impact analysis will include the development of the chemical transport model and will cost approximately \$150,000. This sum is included in the budget for the initial two years of operation of an Onsite Management Entity.

#### D. Wells and Groundwater

One of the issues that serves to add weight to the need to create an onsite wastewater system management zone is the existence of some 200 private domestic and irrigation wells within the Town boundaries. The wells have been located from data supplied by the Paradise Irrigation District and are shown in their relationship to the 20 Town subbasins on Figure V-4. An analysis of the implications of well depths, well age (casing condition), well seals and the like are beyond the scope of this study. If the cumulative impact analysis is undertaken, the future operation of domestic and irrigation wells and their relationship to deep percolation of septic tank leachates should be defined by a competent geohydrologist.

In summary, the long-term use of private wells in each of the 20 subbasins in the Paradise area and the management of onsite wastewater systems should be evaluated in light of the cumulative impact elements cited previously herein.

#### E. Ordinance 103 and Proposed Amendments

Ordinance 103 was adopted by the Town council on January 17, 1984. This ordinance was an outgrowth of the previous sewerage studies and associated recommendations to reinforce permitting and construction features for individual onsite systems.

County Sanitarian, Henry Martin, has in the approximately 14 months of Ordinance 103 enforcement, observed several ways by which the regulations could better fit the special circumstances of the Paradise situation. The authors of this report have also suggested ordinance changes based upon their observations and analyses of local construction practices and the highly variable site characteristics. The draft of an amended Ordinance 103 is included as Appendix V-A. Amendments are noted in prestige elite type character (smaller letters).

The proposed ordinance amendments will require further refinement and review by the County Sanitarian, the Town Engineer and Attorney.

#### F. Water Quality Monitoring Program

Monitoring of surface and groundwaters in the Paradise region is an essential part of any onsite wastewater system management scheme. As described previously herein, the analysis of trends in selected water quality parameters can give advanced warning of the approach of prescribed chemical limits for streams and usable groundwater resources. Any impairment of beneficial uses of

# PROPOSED WATER QUALITY SAMPLING LOCATIONS

FIGURE V-6

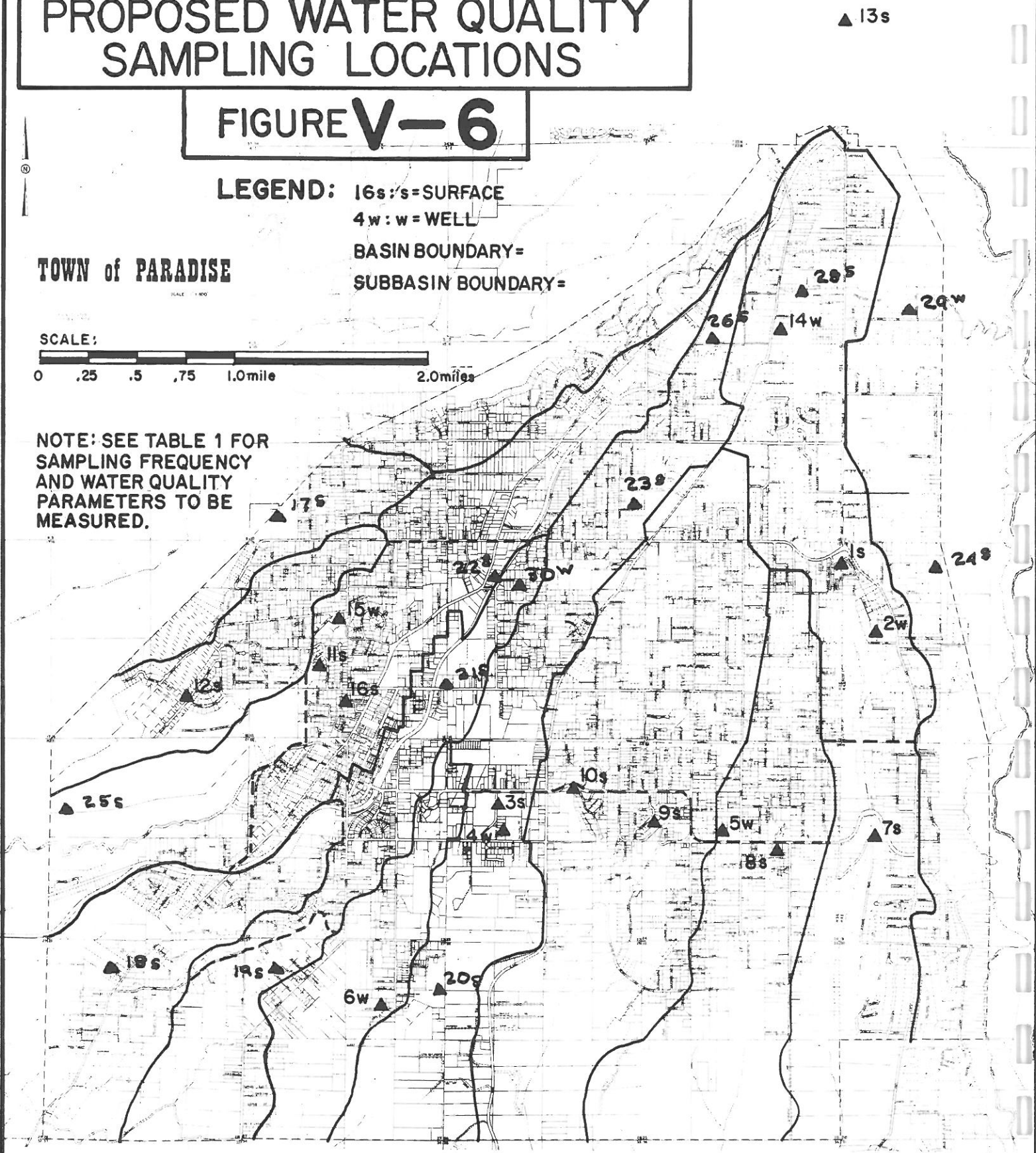
**LEGEND:** 16s:s= SURFACE  
4w:w= WELL  
BASIN BOUNDARY=  
SUBBASIN BOUNDARY=

**TOWN of PARADISE**

SCALE:



NOTE: SEE TABLE 1 FOR  
SAMPLING FREQUENCY  
AND WATER QUALITY  
PARAMETERS TO BE  
MEASURED.



surface or groundwater (high bacterial, nitrate, or toxic heavy metal concentrations limiting use for drinking water, high total dissolved solids, boron or chloride concentrations limiting use for irrigation purposes) would constitute pollution in the legal sense. [Water quality monitoring will be an additional expense undertaking for the Town.] Sampling can be performed by a trained technician, but analyses of the samples must be performed by a State certified laboratory.

Previous water quality sampling, analyses and interpretation have been reported.<sup>5,6,7</sup> Insofar as possible in structuring the monitoring program, the sampling locations with the longest records were retained. Two other key locations where both surface and groundwater can be monitored, i.e., the Lakeview Mobile Home Park (the lake) and the lake below the Junior High School just north of Buschmann Road, were also included in the monitoring network.

The frequency of sampling has been kept to a minimum, but still permitting enough data to be acquired to assess trends and radical changes in the water quality profiles for both surface and groundwaters. Because the frequency of sampling is not great and the locations and timing of sampling can be staggered, it is believed that a staff technician could accomplish all sampling and delivery to the selected laboratory with an expenditure of only 15 to 20 days per year. The per sample analytical costs would be about \$100 (April 1985 prices not including Greyhound or other shipping costs). Total annual analytical costs less shipping and sampling would be about \$10,000, and an overall current annual cost of about \$12,000.

The monitoring program, when implemented, should be re-evaluated after each year's results are analyzed and reviewed by the County Sanitarian, Town Engineer and the Regional Water Quality Control Board to determine if greater frequency, and/or more sampling stations should be included.

TABLE V-1

PROPOSED GROUNDWATER AND SURFACE WATER SAMPLING PROGRAM  
TOWN OF PARADISE

<u>No.</u>	<u>Station Description</u>	<u>Frequency</u>	<u>Analyze For</u>	<u>Remarks</u>
1s	Lakeview Circle	Quarterly	Total coliform FC, FS, Cl, B Nitrate, Sp. Cond. pH	Small land- scape lake in center of mobile home park
2w	Well #122 (See Figure 4)	Semi-Annually (March and August)	"	Well downstream from Lakeview Circle
3s	Lake below junior high school off Buschmann Road	Quarterly	"	Landscape lake below junior high school
4w	Well #208 (See Figure 4)	Semi-Annually (March and August)	"	Well downstream from landscape lake
5w	Well #153 (See Figure 4)	Semi-Annually (March and August)	"	Well previously sampled (1976- 77)
6w	Well #209 (See Figure 4)	Semi-Annually (March and August)	"	" "
7s	Dry Creek	Quarterly	"	Surf. waters prev. sampled (1974-78)
8s	Sawmill Creek	"	"	" "
9s	Clark Creek	"	"	" "
10s	Little Dry Creek	"	"	" "
11s	Middle Honey Run	"	"	" "
12s	Valley View Tranquil	"	"	" "
13s	Upper Pentz	"	"	" "
14w	Well #36	Semi-Annually (March and August)	"	" "



TABLE V-1 (Continued)

<u>No.</u>	<u>Station Description</u>	<u>Frequency</u>	<u>Analyze For</u>	<u>Remarks</u>	
15W	Well #102 (Fig V-4)	Semi-Annually (March and August)	"	"	"
16s	Middle Honey Run at Elliot	Quarterly	"	Previously sampled by Tchobanoglous May-Sept. 1983	
17s	Tributary to Little Butte Creek	Quarterly	"	Sampled by Montgomery 1981	
18s	Lower Neal Creek	"	"	"	"
19s	Lower Roe Creek	"	"	"	81-82
20s	Lower Little Dry Creek	"	"	"	"
21s	Upper Roe Creek	"	"	"	"
22s	Upper Honey Run Creek	"	"	Sampled by Tchobanoglous 1983	
23s	Little Dry Creek	"	"	Sampled by Montgomery 1981-82	
24s	Tributary to West Branch	"	"	"	"
25s	Lower Honey Run Creek	"	"	Not previously sampled	
26s	Upper Little Dry Creek				
27w	Well 2 Prospect Lane	Semi-Annual	"	Sampled by Montgomery 1982	
28s	Upper Pentz	Quarterly	"	"	"
29s	Well #106 (Fig. V-4)	Semi-Annual	"	"	"
30w	Well #169 (Fig. V-4)	"	"	"	"

TABLE V-1 (Continued)

- NOTE: (1) Monitoring program to be re-evaluated annually after review of results by Town Sanitarian and RWQCB.
- (2) Flow to be estimated and recorded for each surface sampling location.
- (3) See Figure 5 for sampling locations.

FC = Fecal coliform organisms  
FS = Fecal streptococci organisms  
Sp. Cond. = Specific conductance  
Cl = Chloride  
B = Boron

#### G. Water Conservation

A water conservation program has been previously proposed to reduce the hydraulic loading on the subbasins of the community.<sup>5,6</sup> Reference is made to pertinent sections of those reports for the details of hydraulic and mechanical devices for decreasing water consumption.

Rather than having a required conversion in the Town to low water using fixtures, it seems more prudent to publicize and encourage the use of water conservation fixtures in existing structures, but to require a retrofit only in new construction and in older residences when they change ownership.

There can also be an incentive program created whereby a homeowner can be given a discount on the onsite wastewater system management zone fee low water using fixtures are installed. The fee reduction would only be allowed if the homeowner's water meter readings showed a 25-30 percent reduction for 3 months following the installation of the fixtures then a twenty-five percent discount in service charges would be provided. The period of the fee reduction could be extended long enough to give enough savings to amortize at least 50 percent of the homeowner's cash expenditure for water conservation. Commercial enterprises could also be included with comparable rewards for reducing water use. There is also a California State Income Tax credit that can provide for a saving that will offset much of any remaining costs for water conservation fixture retrofit.

#### H. Creation of a Management Zone

State law provides for the creation of onsite wastewater management zones. The studies that have been made previously and those in progress on sewerage options and alternatives are all necessary to meet the provisions of Health and Safety Code 6950, Appendix V-D. The "zone" does not get created without a vote of the Town's citizens. A simple order of events in the establishment of an onsite system management zone would be as follows:

1. Town declares intent to create zone.
2. Zone or zones are defined and mapped. Public benefits are identified. Types and numbers of onsite wastewater systems in the zone are described by commercial, industrial and residential category.
3. Town holds hearing(s) on intent to create zone.
4. Resolution of intent filed with Butte County, the Regional Water Quality Control Board, and other public entities within the Town's sphere of influence.

5. Health Officer reviews intent "package" and reports findings to Town Council.
6. Regional Water Quality Control Board reviews intent "package" and reports findings to Town Council.
7. LAFCO reviews intent package and reports findings to Town Council.
8. Steps 5, 6 and 7 must be in the affirmative before the zone formation can proceed.
9. Town Council receives evidence, protests on exclusions from proposed zone (more than 50% of the voters residing in the proposed zone object, the zone formation is abandoned).
10. Resolution of findings prepared (number of systems and types to be included, boundaries after adjustment for exclusions, if any, operation of zones not in conflict with general plan or other land use regulations).
11. If 35% or more of voters protest, a zone formation election must be held (none required if less than 35%).
12. Normal election procedure followed, if election required.
13. Zone shall have power, among other things, to levy taxes and assess fees to operate and maintain the onsite wastewater systems.

The costs for operating and maintaining the "zone" will be those required to carry out the objective of the State law -- "collect, treat, reclaim or dispose of wastewater without the use of community-wide sanitary sewers or sewage systems and without degrading water quality within or outside the zone." -- "To acquire, design, own, construct, install, operate, monitor, inspect and maintain onsite wastewater disposal systems . . ."

If the Governing Board of the "zone" is the Town Council, many of the existing resources of the Town could be utilized. The major activities of the zone requiring management/staff inputs are:

1. periodic inspections of onsite systems in the zone (approximately 2,500 per year as described in Appendix V-B at frequencies of 4, 3, 2 and 1 years, respectively for residential, multi-family, commercial-industrial and restaurant or laundromat properties);
2. sewer, sewage pump station, treatment works and reclamation system maintenance;
3. record keeping;



4. monthly and annual report preparation (Town Council, Regional Water Quality Control Board);
5. monitoring surface and groundwater (sampling and delivery to analytical laboratory);
6. review of system repair designs and new system designs;
7. coordination and continuing analysis of basin cumulative-impact analysis and modeling.

A proposed ordinance for regulation of onsite wastewater disposal system is provided in Appendix V-C. The inspection procedures including proposed frequency, routine inspections, failed system investigations, remedial measures and special monitoring are listed in Appendix V-B.

#### I. Onsite Management System Costs and Budget Proposal

The approximate costs of the proposed water quality monitoring segment of the onsite system management program have been described previously.

Table 2 is a budget proposal that would fit the "zone" concept as prescribed by Health and Safety Code Section 6950.

The annual cost per residence, if uniformly applied throughout the Town, would be \$4.00/month on start up and \$2.50/month on the ongoing program after the initial inspection, testing and evaluation of all systems and basins to be conducted in the first two and possibly extending into a third year. A sliding scale could be applied to reflect volume of wastewater produced by commercial, institutional and industrial customers. At the present time, it is estimated that the commercial and industrial portion of the wastewater contribution amounts to approximately 25% of the total, then on that basis, they would be charged \$4.00/month per equivalent dwelling unit flow of 175 gallons per day. The residential dwelling units would be charged \$3.25/month, while those dwelling units with persons over 65 would be charged \$3.00/month. Costs for the ongoing program would be more economical, with commercial-industrial establishments charged at \$2.50/month per equivalent dwelling unit, residential customers at \$1.50/month, and dwelling units with senior citizens \$1.25/month. A further reduction of 25% could occur for those who have installed water conservation devices realizing that amount of water consumption reduction.

A third fee scheme could reflect the degree of severity in management of septic systems from one Town subbasin to another.

TABLE V-2

ONSITE WASTEWATER SYSTEM  
MANAGEMENT ZONE ANNUAL BUDGET PROPOSAL

<u>Personnel</u> <sup>2</sup>	<u>On-Going</u>	<u>Start-Up</u> <sup>1</sup>
Manager: One Senior Sanitarian, Grade II (full time)	\$ 29,500	\$ 29,500
Field Inspectors: 3 P.H., Grade II Sanitaricians (step 1); (full time)	74,500	74,500
Monitoring Program Technicians: 1/8 time on-going; 1/4 time start-up	4,000	7,500
Secretary/Clerical: 1 full time	18,000	18,000
Bookkeeper/Record Custodian (with computer skills): 1/2 time on-going; 1 full time start-up	7,900	15,800
Field Inspector/Helper: 4 full time start-up	-	48,000
<u>Outside Services</u>		
Legal: 1/15 time ongoing; 1/5 time start-up	2,400	7,200
Laboratory Fees (monitoring program)	12,000	12,000
Audit Fee (CPA), once annually	1,000	3,000
Engineering	6,000	12,000
Basin Cumulative Impact-Consultant	-	75,000
<u>Equipment/Tools</u>		
Computer/Terminal with access to Town mainframe	2,500	2,500
<u>Transportation</u>		
4 vehicles ongoing; 6 vehicles start-up	8,000	12,000
Mileage	7,800	12,000
<u>General Overhead (allocated share)</u>		
Rent	6,000	6,000
Other travel	600	1,200
Insurance	7,300	9,500
Utilities	2,400	3,000
Office supplies	2,400	3,600
Postage	5,000	10,000
Benefits @ 25% salary cost	27,000	38,600
Overtime @ 10% salary cost	10,800	15,400
Miscellaneous @ 15%	29,400	54,700
Total Annual	\$266,600	\$475,000

1. Initial 2 years of operation to inventory all systems and conduct Basin Cumulative Impact Studies
2. Personnel salaries listed at 25% over current 1985 rates to provide a contingency.

Undeveloped parcels in the Town should be assessed a reduced fee to begin gaining equity in the monitoring and onsite system management program.

Table V-3 suggests a possible apportionment of costs based upon sewage flow contribution per subbasin. The sub-allocation of costs within the subbasins could be calculated by using average monthly water meter readings for two to three consecutive years. If sewerage of any portion of the subbasin should occur, the cost apportionment would change to reflect the reduced sewage flow to the subbasin soil body.

#### J. Staffing and Organization

The responsibility for onsite system inspections, permitting and design review is under the Butte County Department of Environmental Health, Paradise Division. While there might be advantages to integrating a new Onsite Wastewater System Management Zone (OWSMZ) activity into the County's existing facility and resources, (assuming the County's condescension to such a scheme), it would appear to be more efficient in a long-term sense to center the OWSMZ functions at the Town Center, where access to computer hardware, mobile communications, Town Engineer, Town Planning and other shared resources might be of significant economic benefit. The County's Environmental Health Office, Paradise would remain, as food service inspections and onsite system design functions outside of Paradise would continue under their aegis.

TABLE V-3

FLOW WEIGHTING METHOD OF ALLOCATING ZONE MANAGEMENT COST BY SUBBASIN

Subbasin	(1) (Acres)	(2) Average Wastewater Application Rate (gpad)	(3) Estimated Daily Sewage Production by Subbasin (gpd)	(4) Flow Weighted Apportionment of Zone Annual Opera- ting Costs (%)
Butte Creek Tributary	480	230	110,400	83.67
Little Butte	300	240	72,000	83.67
Valley View/Tranquil	490	240	117,600	83.67
Upper Honey Run	390	780	304,200	271.90
Middle Honey Run	600	910	546,000	317.07
Lower Honey Run	440	90	39,600	31.40
Neal	320	150	48,000	52.30
Lower Skyway	390	160	62,400	55.78
Upper Roe	370	710	262,700	247.53
Lower Roe	330	90	29,700	31.40
Pearson	460	160	73,600	55.78
Upper Pearson/ Little Dry Creek	700	340	238,000	118.53
Lower Pearson/ Little Dry Creek	610	100	61,000	34.86
Upper Clark	860	500	430,000	174.32
Lower Clark	920	110	101,200	38.35
Upper Sawmill	340	330	112,200	115.05
Lower Sawmill	700	110	77,000	38.35
Upper Pentz	1,120	290	324,800	101.11
Lower Pentz	620	140	86,800	48.80
West Branch	<u>1,060</u>	<u>190</u>	<u>201,400</u>	66.23
TOTALS	11,500 acres	287 (Average)	3,298,600 gallons per day	

Notes: Col. (1) and (2) - After Ref. 5

Col. (3) = (1) x (2)

Col. (4) - % of Average  $3,298,600/11,500 = 286.83$



#### K. Alternative to Public Agency

An idea was presented by the Town's Wastewater Advisory Committee Task Force, suggesting that the local septic tank pumper contractors could be certified to not only conduct periodic pumping of accumulated septage at not to exceed frequencies and also provide an overall inspection of septic tank and leachfield. In return for this effort a surcharge would be added on to the pumping charges, such funds to be used by the Town to initiate the water quality monitoring program and begin the management of onsite systems on a Town/private enterprise partnership arrangement. This alternative could possibly save a considerable amount of cost as compared to the inspection function being performed by a public agency somewhat in duplication of correct practice.

On the positive side this would permit the Town to begin a modest monitoring and inspection program without "staffing up" and would create a source of capital for the ongoing activities in onsite wastewater management.

It is estimated that the cost of these inspections may be less than half of the probable costs of a public agency program and it could be a start and a step to providing an effective long-term satisfactory utilization of individual onsite systems at Paradise. The positive aspect is that it could represent the most economical means of implementing an inspection, preventative maintenance and monitoring program. The private contractors are licensed by and could be further regulated by the Health Department. Furthermore, periodic check inspections would be required. Under this plan, a fee of \$30 per equivalent dwelling unit would be collected, \$20 for the septage hauler and \$5 each to the County Health Department and Town to maintain records, monitor the streams and wells, and for the checking of problem situations. Under this plan, the cost to homeowners, checked each four years, would be just half of the public agency onsite management district.

On the negative side the following is observed:

1. A relatively untrained person would be in the position of certifying the "health" of onsite systems to the County Sanitarian.
2. Can a community proceed with such a sewerage plan under existing provisions of the Water Code, Health and Safety Code and Administrative Code?
3. Would the septic tank pumping contractor be able to or want to assume the additional paperwork load that the inspections would entail?
4. Is there an underlying liability risk on the part of the Town and the contractor to certify a system that is directly related to public health.

5. Could the six (6) septic tank pumping contractors make a significant "dent" in the onsite system inspection inventory?
6. To make the periodic inspections meaningful, an initial inventory of all systems in accordance with the guidelines given in Appendix V-B would be required.

L. Onsite Management District Resolution

Should the Town elect to proceed under the provisions of Health and Safety Code Section 6950, a draft resolution has been included as Appendix V-C. Also a copy of Section 6950 has been inserted as Appendix V-D.

The fiscal shock of the initial inspection could be reduced substantially if the enabling "zone" ordinance contained a provision that would require no on-site system rehabilitation (assuming no health hazard exists and with the approval of the Town Sanitarian) until the property changed ownership. For example, a system that was found to have an undersized septic tank for the number of bedrooms might be operating successfully because of a small number of occupants. With resale and a larger family occupancy, the ordinance would require an upgrading of the system to Code 103 standards.

M. Conclusions and Recommendations

1. With 60 onsite system repairs conducted per year on demand, many more chronically malfunctioning systems surely exist in Paradise and a survey and inventory of all systems in the Town should be undertaken, and this is one of the prevailing reasons that an Onsite Wastewater System Management Zone concept be initiated.
2. The proposed water quality monitoring program or a modification thereof should be undertaken without delay and when funding permits as an initial stage in an Onsite Wastewater Management System.
3. Further definition of the geohydrologic relationship of wastewater discharge to near surface soils and the 200 active wells in the Paradise area should be undertaken possibly with the fiscal support of the USGS on a special study or the State Department of Water Resources.
4. If the Onsite Wastewater System Management Zone concept is adopted, serious consideration should be given to the establishment of water quality and/or sewage flux limits set for each subbasin using cumulative impact techniques described in this report. A method of funding this in the initial start up program by increased fees is proposed.

5. The proposed amendments to Ordinance 103 should be reviewed by the Town Sanitarian, Town Engineer, refined and redrafted for the Town Council's consideration.
6. If an Onsite Wastewater System Management Zone program is initiated, an equitable allocation formula for user fees should be adopted such as that proposed in Table V-2 and V-3, or a modification thereof. Undeveloped land in Paradise should be required to carry a reduced equity fee until such time as they are developed.
7. A water conservation education and incentive program should be initiated to reduce the hydraulic loading on the region's subbasin.

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PARADISE WASTEWATER  
MANAGEMENT PLAN

MAY 1985

CENTRAL AREA  
PROPOSED  
CONVENTIONAL GRAVITY  
SEWER COLLECTION  
SYSTEM

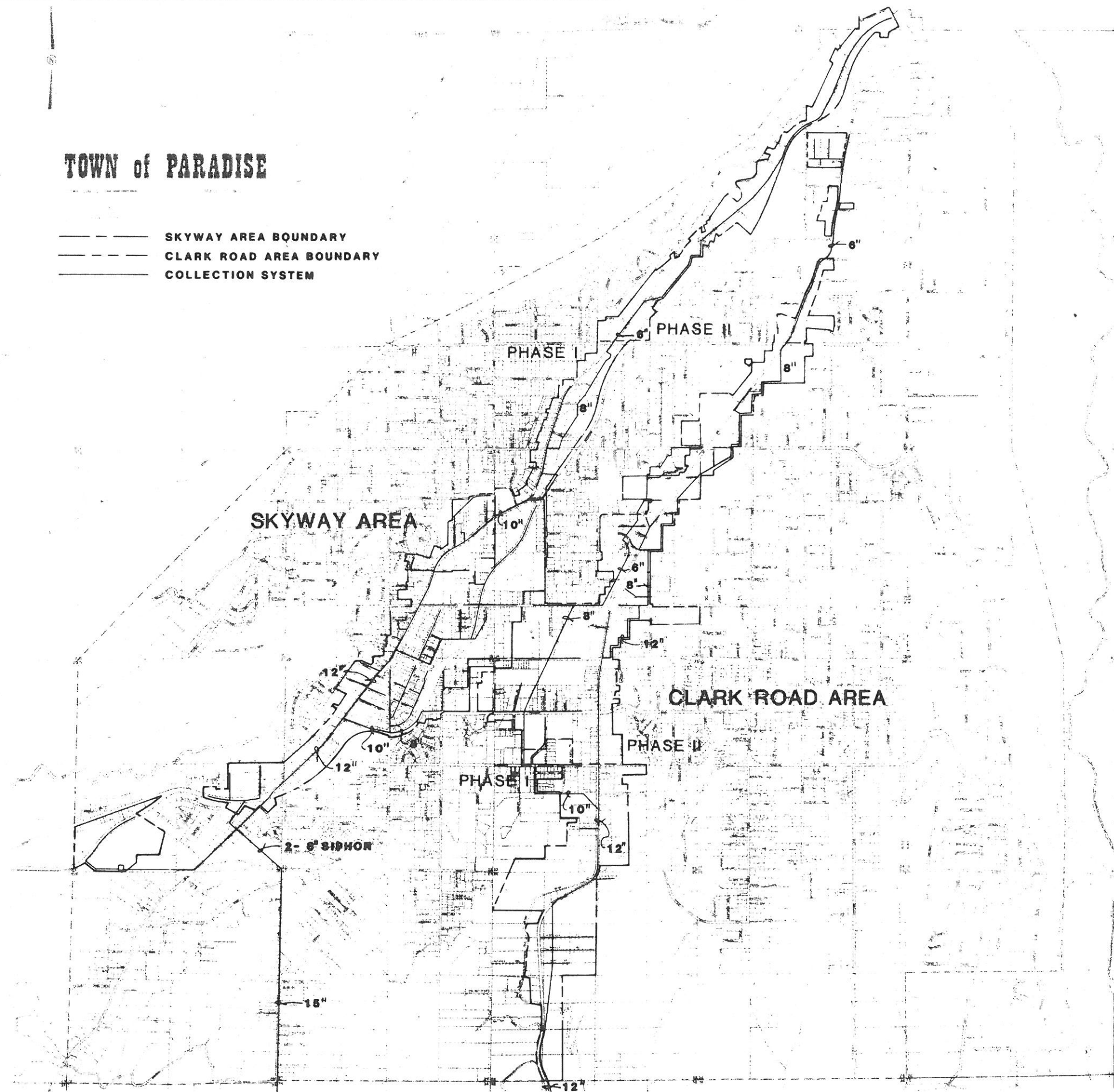
SCALE 1" = 2600'

FIGURE VI-1

R.A. RYDER & ASSOCIATES  
CONSULTING ENGINEERS  
LARKSPUR, CALIFORNIA

TOWN of PARADISE

--- SKYWAY AREA BOUNDARY  
--- CLARK ROAD AREA BOUNDARY  
--- COLLECTION SYSTEM



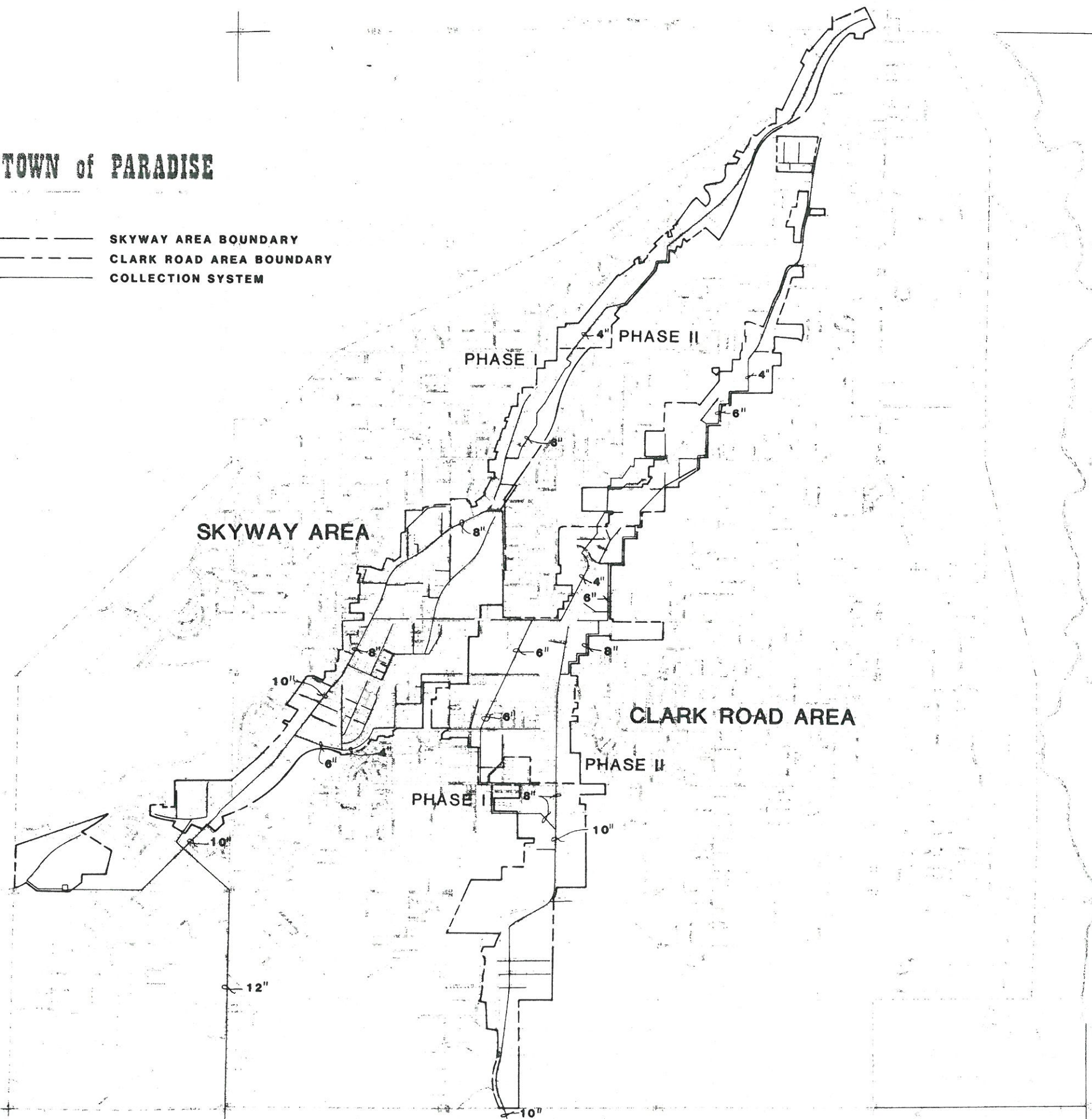
PARADISE WASTEWATER  
MANAGEMENT PLAN

MAY 1985

CENTRAL AREA  
PROPOSED SMALL  
DIAMETER GRAVITY  
COLLECTION SYSTEM

TOWN of PARADISE

--- SKYWAY AREA BOUNDARY  
--- CLARK ROAD AREA BOUNDARY  
--- COLLECTION SYSTEM



SCALE 1"=2600'

FIGURE VI-2

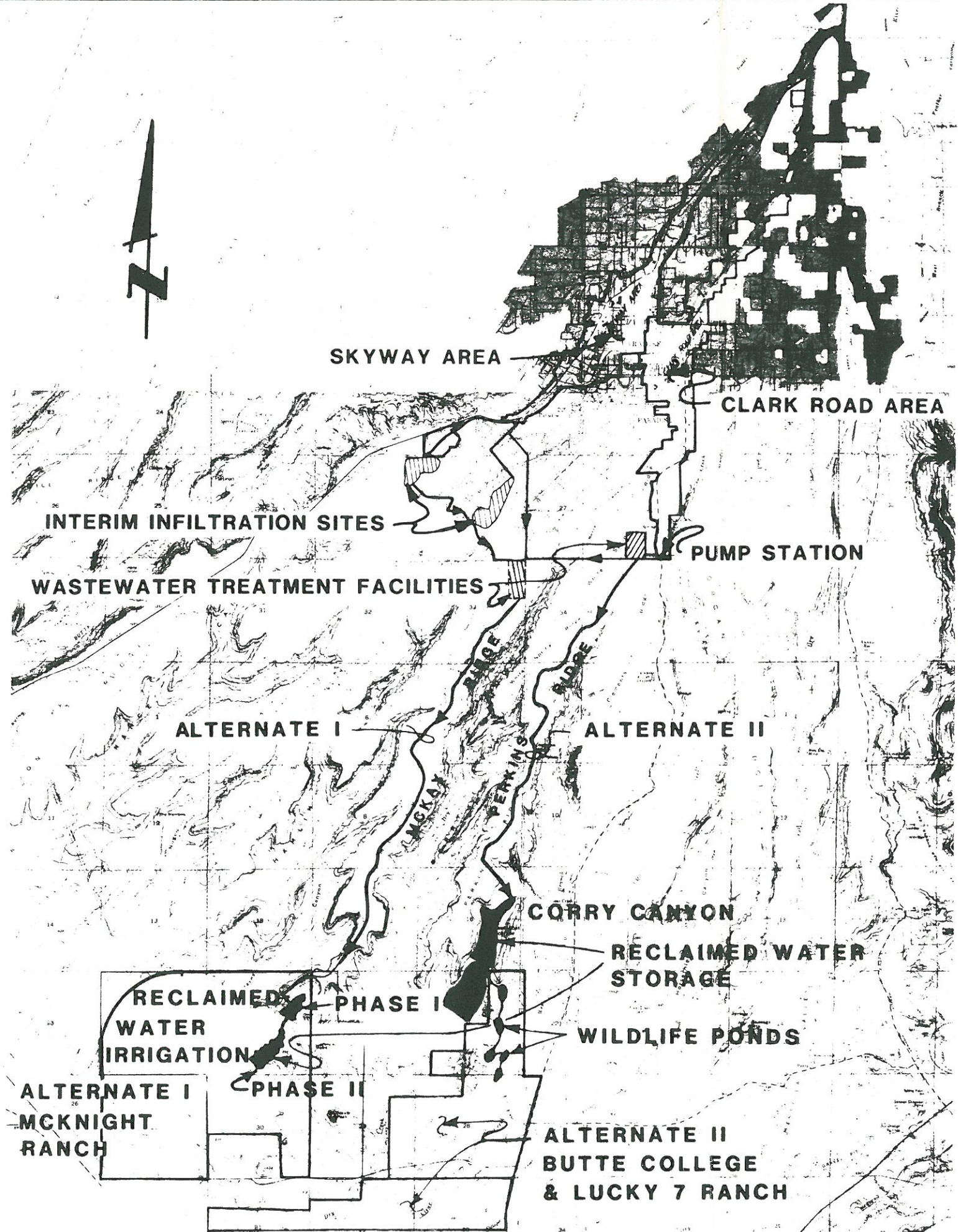
R.A. RYDER & ASSOCIATES  
CONSULTING ENGINEERS  
LARKSPUR, CALIFORNIA



PARADISE WASTEWATER  
MANAGEMENT PLAN

MAY 1985

PROPOSED CENTRAL  
SYSTEM WASTEWATER  
TREATMENT &  
DISPOSAL FACILITIES



SCALE 1"= 6000'

FIGURE VI-3

R.A. RYDER & ASSOCIATES  
CONSULTING ENGINEERS  
LARKSPUR, CALIFORNIA



# **CHAPTER VI**

## **CENTRAL WASTEWATER COLLECTION & DISPOSAL**







## VI. CENTRAL WASTEWATER COLLECTION AND DISPOSAL

### A. Background

One of the tasks mandated by the State Water Resources Control Board in the Phase II wastewater management study for the Town of Paradise is the development of long-range plans for wastewater collection and offsite treatment and disposal of selected areas along the Central Skyway including financing. This area, as well as the Clark Road area, is zoned for commercial, industrial and multi-family uses as discussed in Chapter III, and as such, can, and in some instances, have wastewater discharges in excess of the overall 900 gallons per acre accepted as the long range sustained loading for on-site disposal systems in Paradise.

The Phase I Report, (Montgomery 1983), found that the most severe water quality degradation occurs in the upper Honey Run and lower Skyway Basins. The principal objective of the subsequent supplementary Phase I Report, (Tchobanoglous 1984) was to document the need for centralized wastewater management facilities along the Skyway corridor. In this latter study conducted along Honey Run and Neal Creeks, a serious pollution problem was not found to exist, but there was evidence of localized deterioration of water quality. It was also suggested in this report that as the Town of Paradise continued to develop, centralized facilities should be located along portions of the Central Skyway area. This is primarily due to the hydrogeological limitations of this area.

The Supplementary Phase I Report also cited the discharge of wastes from industrial and commercial establishments as runoff into the creeks. This is discussed in Chapter VIII for managing hazardous wastes, but apparently is not an isolated instance.

Although the principal area of concern and planning is for a central rather than an on-site wastewater management system for Skyway, more recently a similar, albeit not as high priority, need occurs for the Clark Road area. This area has the only industrial site zoning in the community as well as a number of failed and/or replaced on-site systems in the rather shallow depth soils south of Pearson. Water quality sampling conducted as a part of the Phase I Study did not find a general condition of sewage-related pollution in either the Little Dry Creek or Clark basins. There were isolated examples of possible failed on-site disposal systems, but overall not to the degree as along the Skyway. This may be due to the newer and considerably lower density of development in the Clark Road area as compared to Skyway. Nevertheless, the current planning of the Town indicates that this area can receive the most rapid growth of non-residential development in the next several decades in Paradise.

### B. Previous Central Wastewater System Plans

There has been a rather extended history of planning for a sewer system to serve Paradise. In 1969 as a part of the Butte County General Plan Water & Sewer Element a preliminary sewerage

system plan for Paradise and adjacent Upper Ridge communities was developed. This developed into a more comprehensive plan called the Eden Ridge and Basin Sewer Service Area Plan, (Cook 1972). This proposed a gravity sewer system connected to trunk sewers located on Clark and Magalia-Pentz Roads with treatment by aerated lagoons and effluent disposal by land irrigation in the vicinity of Butte College.

A few years later as a part of the general improvements to the Skyway, the beginning of a central wastewater collection system was begun. The sanitary sewer portion of this project was for properties fronting on Skyway between Rochelle Lane and Pine Haven Drive, a distance of 2.4 miles. There were 385 parcels in the 242 gross area acreage of this area. The major improvement constructed was laterals to the street from the parcels and a short section of 8 inch sewer in Skyway near Elliott Road. The reason for providing the laterals was so that they would not interfere by subsequent construction the paving, curbs, gutters, storm drainage and underground utilities constructed as a part of the overall assessment district. The cost of these sanitary sewer improvements was \$76,034, of which \$4,468 was paid by Butte County and the remainder by property owners on the basis of \$6.14 per lineal foot of property fronting on Skyway. This Assessment District was set up using the 1911 Act General Obligation Bonds and costs for the sewer system and the laterals are still being paid by annual tax levies on the properties that will continue to be paid through 1989.

Portions of this original Skyway Assessment can be incorporated into newly-planned facilities and at least for those property owners save the cost of construction of laterals estimated to be about \$1,000 per property at current construction costs.

Overall, the 0.8 MGD capacity of the original Skyway Assessment District trunk sewers is about a third of that projected for ultimate saturation development as now planned. It may be possible to retain use of the 765 feet of 8 and 10 inch diameter trunk sewer above Elliott Road as part of the Phase I project; but for Phase II it will be necessary to replace the 8 with a 10-inch sewer or to provide a parallel sewer in that are.

#### C. Community On-Site Wastewater Disposal

The concept of community on-site wastewater disposal systems was discussed by Montgomery, 1979, and more recently in the Phase I Supplementary Report. A generalized wastewater collection system was developed in the former report, with wastewater disposal to large community leach fields to be constructed either south of Skyway at the western edge of the town limits or south of Roe Road. This system was planned for the 500 parcels considered to have unsuitable soil conditions for on-site disposal with an estimated average daily flow of 0.15 MGD. The estimated cost of this system was \$975,000. Escalated to present costs, it is \$1,250,000, exclusive of the 32,000 foot collection system.

A physical inspection of the proposed community sites found neither suitable for large long term leach fields. The Skyway site of about 20 acres has soil depths less than four feet. The Roe Road site is about 30 acres, and has somewhat deeper soils, estimated to be six to eight feet, but the site on a ridge would destroy a large stand of pine and slopes off steeply into canyons on either side. In short, neither site appeared to be a reasonable choice for long term sewage disposal for a flow of 0.15 MGD, and not at all for the 1.23 MGD flow projected for the entire Skyway Area at ultimate conditions. The application of wastewater at rates of 5,000 to 10,000 gallons per acre per day would appear to be quite excessive for the soils of these sites, and was not further pursued.

There remains a possibility that some smaller community systems may be constructed in the Skyway and Clark areas if there is sufficient open space available. That prospect appears better for the Clark Road area than at Skyway. Possible sites that could be utilized for community systems are as listed on Table VI-1.

TABLE VI-1

Possible Community On-Site Disposal Facilities

<u>Clark Road</u>	1. Golf Course	28 Acres
	2. Rotary Grove Park	10
	3. Junior High School	10+
	4. Cemetery	<u>10</u>
		58 Acres
<u>Skyway</u>	1. High School	15 Acres
	2. Civic Center Park	<u>5</u>
		20 Acres

The quantity of wastewater that could be discharged on these sites is restricted to the overall evapo-transpiration rate of approximately twenty inches per year or 2,675 gallons/acre/day. Thus, the overall community wastewater discharge capability is about 150,000 gallons per day on Clark Road and only 50,000 gallons per day on Skyway. While there are possibilities of interim or satellite facilities for wastewater reclamation on Clark, particularly at the Golf Course, the prospect of community disposal systems on Skyway is not at all promising due to the very limited availability of public or economical land. The alternative of a Central Wastewater Collection and Disposal System thus appears as the only permanent solution to handling wastewater for these developing areas. The priority is first for Skyway; but the needs for Clark Road are not far removed either. The question is what is the best way to provide for the Central System.

#### D. Wastewater Collection System

Two alternatives for sewerage the Skyway and Clark Roads were investigated. The first was a conventional gravity sewer system and this is shown on Figure VI-1. The alternative is a small diameter gravity system as shown in Figure VI-2. The pipe sizes for the trunk sewers in each are indicated. Branch sewers would nominally be 6 inch diameter for the conventional gravity and 4 inches for the small diameter systems.

The small diameter system would utilize septic tanks for wastewater holding and equilization with discharge by pumping at controlled rates into the system. Other alternatives of pressure and vacuum sewers were investigated but not carried beyond preliminary concepts because the gently sloping terrain of Paradise is quite favorable to economical and reliable gravity sewers.

There are really two separate sewer collection systems, one along Skyway and the other on Clark. Each begins near the northern Town limits and extend nearly through the Town. The system is laid out that all lateral sewers can connect by gravity flow. Only a small pump station of 0.4 MGD capacity is needed to serve the extreme westerly portion of Skyway, while all of the Clark system will be pumped by a single large pump station of 3.3 MGD capacity that can be located east of Clark Road near the Town's south boundary.

The proposed site of a treatment plant is along the south boundary of the Town on McKay or Perkins Ridges as shown on Figure VI-3. The Skyway system can be connected by two 8 inch diameter inverted siphons across Neal Creek and flow by gravity to the treatment plant. The Clark Road Pump Station will discharge through a 12 inch force main to the treatment plant.

The Skyway system will utilize about 69,700 lineal feet of sewer, while there will be 66,600 lineal feet in the Clark system exclusive of siphons and force mains.

The laterals connecting to the main collection system have been included in the cost estimate. There will be approximately 650 on Skyway, of which about 100 are already installed. There also will be approximately 450 laterals on the Clark system. In all, about 1,100 individual parcels will be served by the Central Wastewater Collection and Disposal System.

The estimated costs of the alternative wastewater collection systems are shown in Table VI-2.

TABLE VI-2

Estimated Cost(1) of Wastewater Collection SystemTown of Paradise - Central Areas

<u>Alternative 1</u>	<u>Skyway</u>	<u>Clark</u>	<u>Total</u>
Conventional Gravity System	<u>\$2,016,000</u>	<u>\$1,831,000</u>	<u>\$3,847,000</u>
<u>Alternative 2</u>			
Small Diameter Gravity System	\$1,812,000	\$1,587,000	\$ 3,399,000
+ Septic Tanks(2)	<u>3,431,000</u>	<u>4,222,000</u>	7,653,000
Total	<u>\$5,243,000</u>	<u>\$5,809,000</u>	<u>\$11,075,000</u>

(1) Estimated Cost - May 1985

(2) Occupied parcels with septic tanks excluded from estimate.

It is clear that the conventional gravity collection system is far more economical than a small diameter system considering the additional cost of septic tanks.

The itemized cost of components of the recommended gravity, wastewater collection, Alternative 1, system are summarized in Table VI-3.





TABLE VI-3

Estimated Construction Costs of Central Area  
Wastewater Collection System, Town of Paradise

A. Skyway		Unit Cost	Construction Cost
		\$	\$
1.	Stage I - To Wagstaff Road		
	Laterals - 6" - 32,200'	16.50	531,300
	Mains - 6" - 7,000'	16.50	115,500
	- 8" - 4,400'	18.50	81,400
	- 10" - 6,900'	22.50	152,250
	- 12" - 4,900'	26.50	129,850
	- 15" - 2,000'	32.50	65,000
	Manholes - 181 @	1,800.00	325,800
	Right of - 10" - 8,900'		
	Way 2.04 A @	10,000.0	20,400
	Service - 526 @ 26' -		
	Laterals 13,700' @	15.50	<u>212,350</u>
	Subtotal		\$1,636,800
2.	Stage II - Above Wagstaff		
	Mains - 6" - 10,600'	16.50	174,900
	Manholes - 27 @	1,800.00	48,600
	Right of		
	Way - 2400' - 0.55A	10,000.00	5,500
	Service - 147 @ 26' -		
	Laterals 3,800'	15.50	58,900
3.	Stage III - Lower Skyway		
	Mains - 6" - 3,700'	16.50	61,050
	Manholes - 10 @	1,800.00	18,000
	Right of		
	Way - 1600' - 0.38A	10,000.00	3,800
	Service		
	Laterals - 22 @ 26' - 572'	15.50	<u>8,850</u>
	Subtotal		<u>379,600</u>
	Total		<u><u>\$2,016,000</u></u>

TABLE VI-3 (Continued)

		Unit Cost \$	Construction Cost \$
B. Clark Road			
1. Stage I - Golf Course Vicinity to Pearson			
Laterals - 6" - 1,100'		16.50	\$ 18,150
Mains - 10" - 2,700'		22.50	60,750
- 12" - 8,400'		26.50	222,600
Manholes - 31 @		1,800.00	55,800
Right of Way - 6,600' - 3.13 A		10,000.00	31,300
Service Laterals - 97 - 2,500'		15.50	<u>38,750</u>
			\$ 427,350
2. Stage II - Above Pearson			
Laterals - 6" - 24,700'		16.50	407,550
Mains - 6" - 11,700'		16.50	193,050
- 8" - 11,460'		18.50	212,000
- 10" - 1,700'		22.50	38,250
- 12" - 4,800'		26.50	127,200
Manholes - 136 @		1,800.00	244,800
Right of Way - 7,600' - 4.05A		10,000.00	40,400
Service Laterals - 350 - 9,100'		15.50	<u>141,050</u>
	Subtotal		<u>\$1,404,300</u>
	Total		<u><u>\$1,831,000</u></u>
Construction Total			<u><u>\$3,847,000</u></u> <sup>1</sup>

<sup>1</sup>Construction Costs - May 1983 - ENR Cost Index - 4300

The cost of service laterals amount to \$451,000 of the total collection system costs. Ordinarily, these will be born by individual parcel owners and constructed at the time of actual connection into the wastewater system. Along Skyway in the Assessment District No. 1 Zone there are nearly a hundred service laterals that will be incorporated into the wastewater collection systems in those instances they will already have been paid for by the property owners.

There is also about 800 feet of existing 8-inch diameter collection sewer installed in Skyway as a part of Assessment District No. 1. The capacity analysis conducted in this current study indicates that these sections are too small to accommodate the ultimate flow projected from the entire Skyway commercial area. It is possible to utilize this existing system in the Elliot Road area where a 10-inch sewer would be the appropriate size to provide the fifty percent full capacity critiera selected. This is the majority of the Assessment District No. 1 system. However, in the lower area near Neal Road, a 15-inch diameter sewer is needed, and the existing 8-inch sewer would be completely inadequate. In this instance about 150-feet of what was constructed under Assessment District No. 1 would be replaced. The manholes, however, could still be utilized. Overall, this means that only about \$1,500 of the original \$76,400 cost of Assessment District No. 1 would not be utilized in this expanded system. All of the remainder of the Skyway Assessment District No. 1 would be utilized and if included in the overall costs, would have a current construction value of about \$155,000 and lower costs shown on Tables VI-2 and VI-3.

° Maintenance Costs

The maintenance costs for the wastewater collection system exclusive of the pump stations are based upon the experience of systems approximately twenty years old in Northern California. These sewer systems are not beset with leakage, replacement and as many cleaning problems as older sewer systems. Still, a cost for periodic cleaning, some repair, and administration will occur. However, it will be more economical when combined with the corollary functions of on site maintenance and wastewater treatment administrative, financial, legal, engineering, and operational functions. What is budgeted for M&O of the collection system developed on an annual cost per lineal footage of the system.

Maintenance & Labor	\$0.20/foot/year
Administration	0.10
Replacement	0.075
Capital Outlay	<u>0.025</u>

Total O&M Cost	\$0.40/foot
----------------	-------------

The budget for the 187,700 lineal feet of the proposed wastewater collection system is \$75,000 per year. This is a cost that has been utilized in estimating sewer service charges for connected parcels as discussed in the financial section later in this chapter.



#### E. Pump Stations

The Central Area Wastewater Collection System will require only two pump stations. A large pump station that will serve all of the Clark Road area and a much smaller pump station that will serve the Lower Skyway area west of Neal Road as shown on Figure VI-1.

The pump hydraulic head and capacities of these pump stations are listed on Table VI-4.

TABLE VI-4

#### Proposed Wastewater Pump Stations, Town of Paradise

	Lower Skyway Pump Station	Clark Road Pump Station
Capacity - MGD		
Phase 1 - Initial	0.37	2.0
Phase 2 - Final	0.37	4.3
Hydraulic Head - Feet	200	60
Pump Units		
Number	2	3 Initial, 4 Final
Capacity - Q-H-HP	0.37-200-25	1-60-20 Initial 1.5-60-30 Final
Connected Horsepower	50	60 Initial, 120 Final
Emergency Generator - KW	50	60 Initial, 125 Final

Each pump station will utilize submersible, open impeller, lift pumps in a wet well. They will have a small structure enclosing controls and a diesel engine driven emergency generator. It is not expected that a comminution or chlorination for odor control will be necessary at either pump station due to the relatively steeply sloping terrain that will maintain moderate to high velocities and a short period of retention with good aeration in the collection system.

The estimated construction, operation, and maintenance costs of the pump stations are as shown on Table VI-5

TABLE VI-5

Wastewater Pump Station Costs, Town of Paradise

	Lower Skyway Pump Station	Clark Road Pump Station	Total
Capital Cost(1)			
Initial	\$148,000	\$152,000	\$300,000
Final	148,000	\$303,000	\$451,000
Maintenance & Operation			
<u>Initial</u>			
Labor	\$ 9,400	\$ 13,500	\$ 22,900
Materials	1,200	2,100	3,300
Energy	<u>13,600</u>	<u>33,400</u>	<u>47,000</u>
	\$ 24,200	\$ 49,000	\$ 73,200
<u>Final</u>			
Labor	\$ 13,800	\$ 19,800	\$ 33,600
Materials	1,800	3,100	4,900
Energy	<u>26,200</u>	<u>67,800</u>	<u>94,000</u>
	\$ 41,800	\$ 90,700	\$132,500
Total Annual Cost			
Capital Cost(2)	\$ 13,600	\$ 27,900	\$ 41,500
Maintenance & Operation	<u>41,800</u>	<u>90,700</u>	<u>132,500</u>
Total	<u>\$ 55,400</u>	<u>\$118,900</u>	<u>\$174,000</u>

## Notes:

- (1) Estimated at current construction costs - May 1985 - ENR Index - 4,300
- (2) Capital Recovery @ 8-3/8% interest @ 20 years.

The pump stations will each occupy about a quarter acre of land that will be fenced and landscaped to provide an unobtrusive appearance. The pump station sites should be selected for accessibility of construction, operation, and maintenance vehicles, and in commercial or public facility areas, remote from residential property. The objective is to provide for an environmental and esthetically acceptable location that will be unobtrusive to the nearby community.

F. Wastewater Treatment

A number of alternative wastewater treatment and disposal systems were investigated. These are for the most part related to disposal options that include:

- 1) Land disposal to suitable agricultural land in the vicinity of Paradise.
- 2) Treatment and disposal to Butte Creek.
- 3) Connection into the City of Chico's wastewater system for treatment and disposal to the Sacramento River.

Several of these are interrelated as land disposal for beneficial use of the water and nutrients is a summer seasonal use while disposal to Butte Creek would be most feasible during winter and spring periods of higher dilution capability. The selection of disposal system is the predominant component for consideration of type and location of treatment systems.

° Land Disposal

A review of planning documents, assessors parcels, and discussions with persons knowledgeable of land use and values in the Paradise area focused on the most suitable area as in the vicinity of the Durham-Pentz Road between State Highways 99 and 191. This area south and west of Butte College is presently open seasonal grazing land occupied by the most part by several large ranches, and zoned for agricultural usage with minimum forty acre parcels.

The soils are relatively thin, 12-24 inches deep in this area, and of moderate permeability as discussed in Chapter III. The average annual rainfall is approximately 25 inches, about half of what is experienced in the Town of Paradise. The estimated irrigation rate considering evapo-transpiration and soil characteristics is 21 inches per year to provide all year irrigated pasture for cattle. There is approximately ten square miles of these lands drained by Dry, Clear and Little Dry Creeks that are six to ten miles southwest and down ridge from Paradise that tie between elevations 200 and 500 feet where the foothills meet the Sacramento Valley, as shown on Figure VI-3.

The establishment of irrigated pasture increases forage production by extending the green feed period 5 to 6 months as compared to dry land pasture. The increased production in terms of animal is a weight gain from about 200 to 500 pounds per year on young feeder cattle by converting from dry land to irrigated pasture (Willoughby, 1979).

Additional crop productivity can be realized by the application of the nutrients nitrogen, phosphorus and sulfur in the reclaimed wastewater. Irrigated pastures in the Sierra Valleys will increase forage yield and animal weight gain in proportion to fertilization. The gain in forage reaches a maximum of 230% for nitrogen applications to 160 pounds/acre/year, by 20% for phosphorus applications of between 20 to 40 pounds per year, and as much as 25% for sulfur applications to 100 pounds per year (Martin 1964), (George 1980).

An estimate of the fertilizer value of the wastewater on the basis of an 21 inch per year irrigation rate would be:

Nitrogen @ 25 mg/l in reclaimed water = 120 pounds/year  
Phosphorus @ 5 mg/l in reclaimed water = 24 pounds/year  
Sulfur @ 2-1/2 mg/l in reclaimed water = 10 pounds/year

These nutrient additions are well within the ability of pasture grasses to uptake and the overall increase in forage yield compared to non-fertilized pastures would be in the range of 200%.

Another aspect of this fertilizer-nutrient situation is that in this utilization of wastewater for irrigation of pasture at these application rates there would be a maximum of nitrogen and phosphorus uptake into the forage and animals. Consequently, there would be little leaching potential to degrade ground waters or with subsequent drainage into surface waters where in either case the nutrient addition is unwanted and can be environmentally harmful.

Storage sites for reclaimed water during the winter season are available by impoundment in several box canyons at lower elevations. These include the "Box" Canyon on the McKnight Ranch or Corry Canyon north of Butte College. These impoundments would initially be for approximately 650 acre feet for Phase 1 and ultimately 1,300 acre feet for the entire wastewater effluent flow during the November-March period when the need for irrigation is limited to more in wet years to a little in dry years.

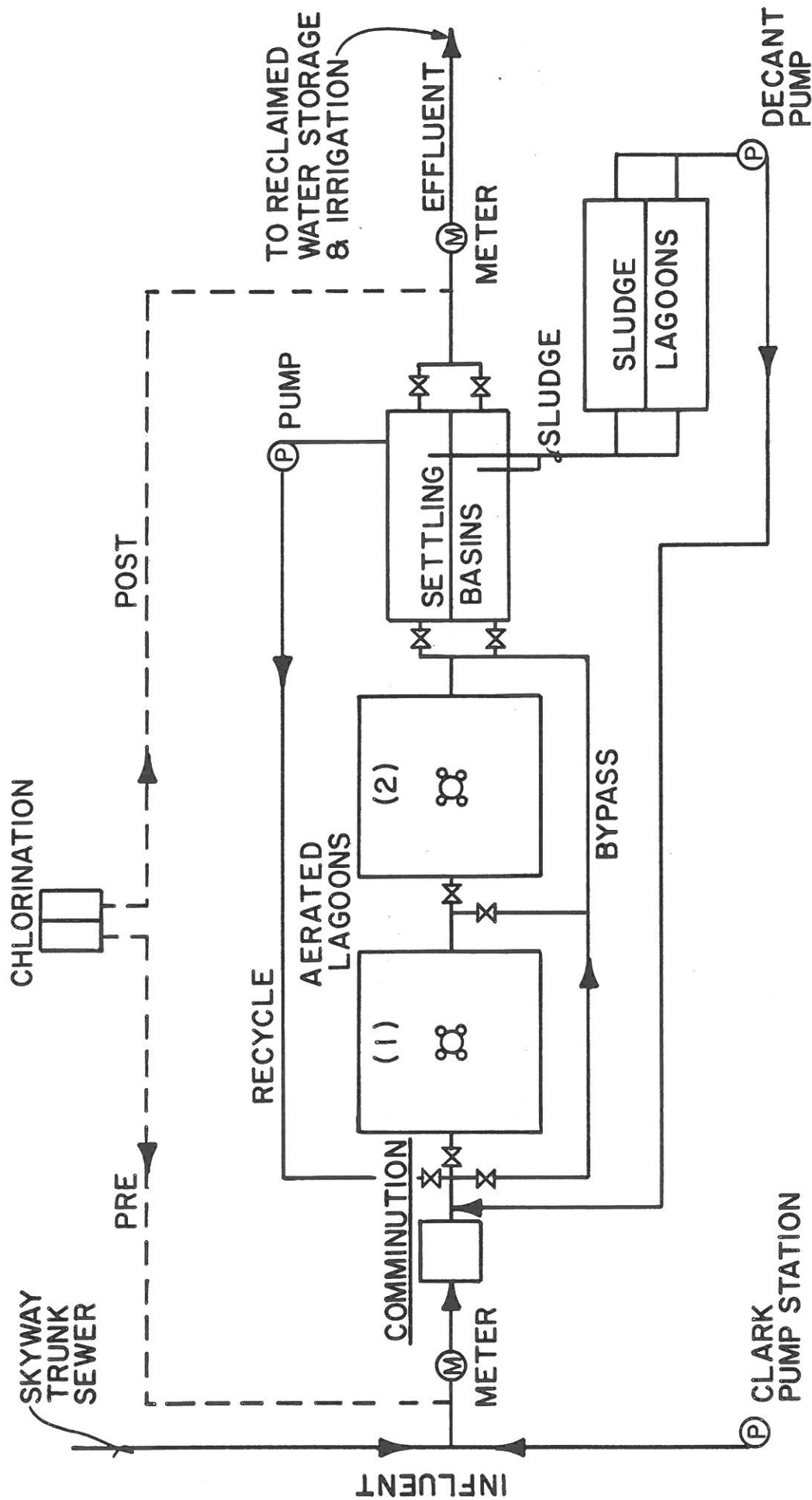
The alternatives plans for treatment and disposal shown on Figures VI-3 provide for a secondary treatment level for removal of most of the organic and particulate matter in the wastes so that these will not be odor or visual objectionable conditions in the storage reservoir and spray irrigation of pasture land. Another reason for treatment is to provide a non-sliming, low particulate carrying water that is suitable for operating an energy recovery hydraulic turbine at the reservoir. This dictates a treatment site as shown on Figure VI-3 near the southerly Town limit. Alternative sites on McKay and Perkins Ridges each of about ten acres total area, would be needed.

Several alternative treatment processes appear most feasible and preliminary sizes and cost estimates developed for each. These include:

- 1) Aerated Lagoons
- 2) Oxidation Lagoons (Facultative)
- 3) Oxidation Ditches (and Sequencing Batch Reactors)

A schematic diagram of the wastewater treatment processes are shown on Figure VI-4 for the Aerated Lagoon Alternative, Figure VI-5 for the Oxidation Ponds, and Figure VI-6 for the Oxidation Ditch modification of the activated sludge treatment process.





## CENTRAL WASTEWATER TREATMENT SYSTEM AERATED LAGOON ALTERNATIVE

PARADISE WASTEWATER MANAGEMENT PLAN

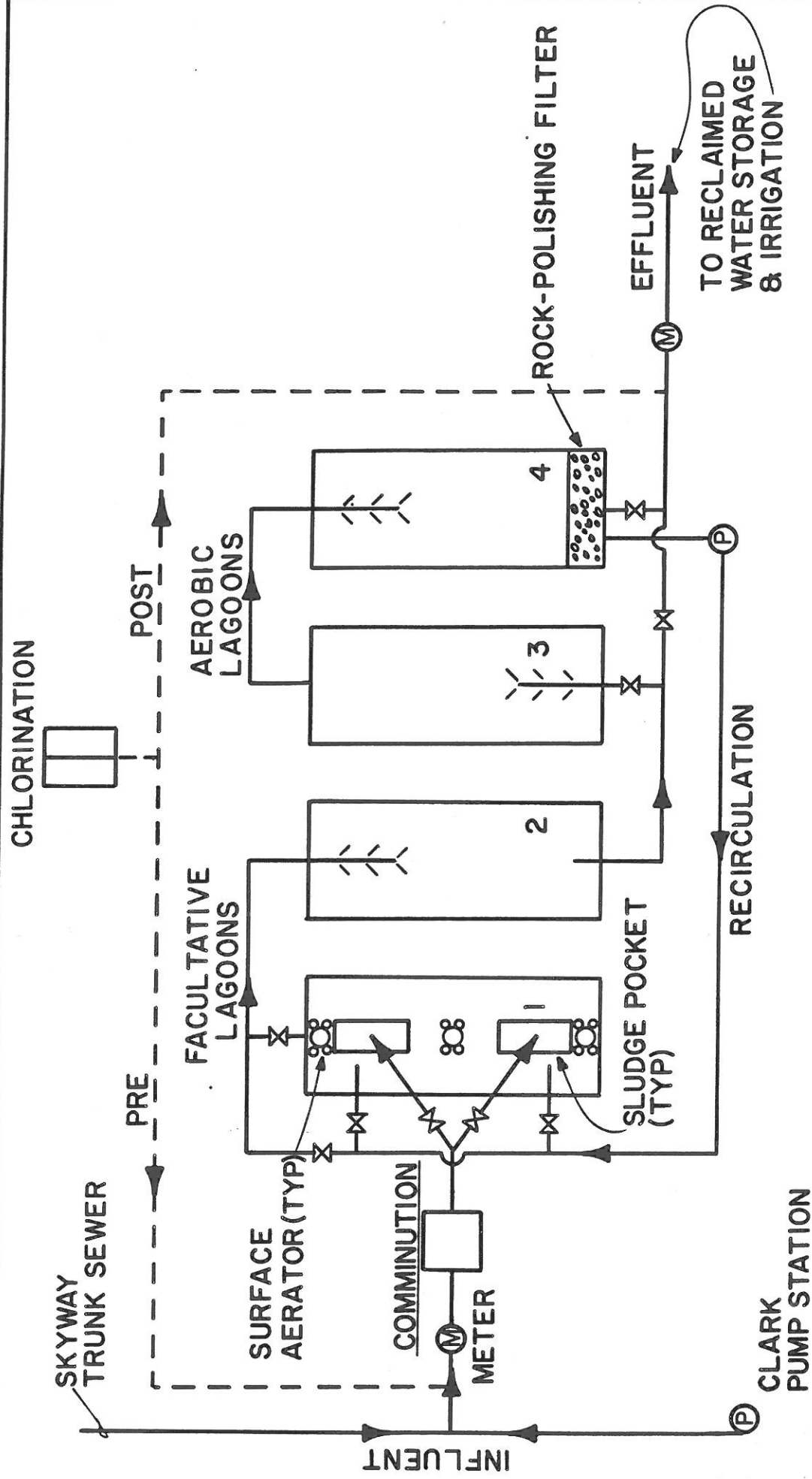
MAY 1985

FIGURE VI-4

R.A. RYDER & ASSOCIATES  
CONSULTING ENGINEERS

LARKSPUR

CALIFORNIA

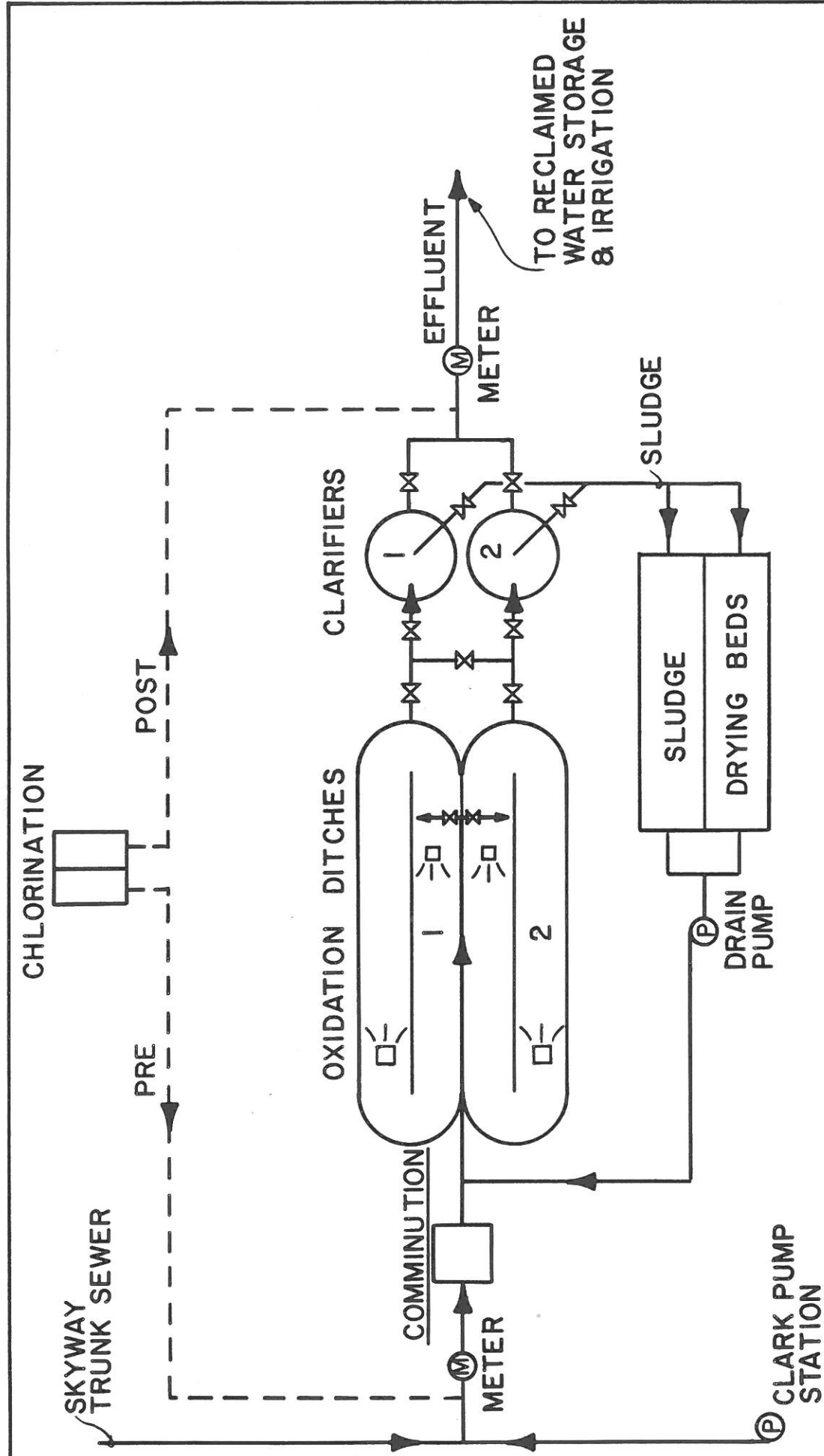


# CENTRAL WASTEWATER TREATMENT SYSTEM OXIDATION POND ALTERNATIVE

PARADISE WASTEWATER MANAGEMENT PLAN  
MAY 1985

FIGURE VI-5

R.A. RYDER & ASSOCIATES  
CONSULTING ENGINEERS  
LARKSPUR CALIFORNIA



# CENTRAL WASTEWATER TREATMENT SYSTEM OXIDATION DITCH ALTERNATIVE

PARADISE WASTEWATER MANAGEMENT PLAN

MAY 1985

FIGURE VI-6

R.A. RYDER & ASSOCIATES  
CONSULTING ENGINEERS

LARKSPUR

CALIFORNIA

In each alternative the influent waste water would be screened, comminuted and metered in pretreatment. Pre-chlorination would be provided for odor suppression to oxidize sulfides that may form as a result of unaerated transit in the force mains and siphons of the collection system immediately ahead of the treatment plant.

The biological treatment processes have been sized to provide an effluent that would meet 65% BOD and suspended solids requirements provide by amendments to the secondary treatment requirements of the revised Federal National Pollution Discharge Elimination Standards (1985). The effluent from the treatment plant discharged to the reclaimed water reservoirs would be for BOD and suspended solids concentrations of less than 60 mg/l. The aerated lagoons would have a capacity of 4.2 million gallons each, and each pond would occupy approximately 1.5 acres. The oxidation pond alternative would require initially 30 acres of ponds and ultimately 60 acres that would require a 70-acre site. The oxidation ditch would initially be 1.2 million gallons and occupy an area of about a half an acre. The total site requirement for this alternative would be 5 acres. In summary, the land requirements for treatment would be:

Aerated Lagoons	- 10 acres
Oxidation Ponds	- 70 acres
Oxidation Ditches (or Sequencing Batch Reactors	- 5 acres

These land requirements are reflected in the cost estimates at a current purchase price of \$5,000 per acre.

In each instance facilities would be initially constructed for a capacity of 1.2MGD for Phase 1 and expanded to 2.4MGD for Phase 2. An equalizing volume for storage is included to accept peak flows and to primarily reduce the size and capacity requirements of the long effluent pipeline and hydraulic turbine to those for average flow conditions. The size and capacity of intermediate secondary treatment, clarification and disinfection components can also be reduced to that sufficient for average flow conditions. The BOD and solids removal needs are in the range of 65%. Flow equalization is easily accommodated in the aerated lagoon or pond concepts, but must be provided by a side stream basin at considerable additional cost in the RBC alternative.

The comparative costs of secondary treatment processes are shown on Table VI-6.



TABLE VI-6

Capital Cost of Alternative Secondary  
Wastewater Treatment Processes(1)

<u>Process</u>	Phase 1 1.2 MGD	Phase 2 2.4 MGD
1. Aerated Lagoons(2)	\$ 300,000	\$ 520,000
2. Oxidation Ditch	1,045,000	1,825,000
3. RBC	1,390,000	1,825,000
4. Facultative Lagoons	695,000	1,220,000

(1) Current construction cost - May 1985, ENR - 4300

(2) Detention Time - 7 days - 60°F

The capital costs of the aerated lagoon process is far less than for other alternatives and the overall costs of the treatment process include the land purchase, a control building, headworks with communication and yard piping. These are shown on Table VI-7.

TABLE VI-7

Capital Cost of Wastewater Treatment

<u>Element</u>	Phase 1 <u>1.2 MGD</u>	Phase 2 <u>2.4 MGD</u>	<u>Total</u>
Land Purchase - 10 Acres	\$ 50,000	\$ -	\$ 50,000
Headworks	135,000	110,000	245,000
Aerated Lagoon	300,000	220,000	520,000
Disinfection	140,000	110,000	250,000
Control Building	75,000	-	75,000
Site Work & Piping	50,000	30,000	80,000
Emergency Generator	75,000	-	75,000
Total	<u>\$825,000</u>	<u>\$460,000</u>	<u>\$1,285,000</u>

° Operations Costs

The operations cost of the proposed wastewater treatment facilities include labor, power, chemicals and materials. These are as shown on Table VI-8.

TABLE VI-8

Operation and Maintenance Costs of  
Wastewater Treatment Facilities

	<u>Phase 1</u>	<u>Phase 2</u>
Labor	\$ 82,000	\$105,000
Power	41,000	82,000
Chemicals	24,000	48,000
Materials	<u>6,000</u>	<u>10,000</u>
Total	\$153,000	\$245,000

The total annual costs including capital recovery at 8-3/8% interest for twenty years for the treatment facilities are as shown on Table VI-9.

TABLE VI-9

Total Annual Costs of Wastewater Treatment  
Facilities for Town of Paradise

	<u>Phase 1</u>	<u>Phase 2</u>
Capital Costs	\$ 98,600	\$153,600
O&M Costs	<u>153,000</u>	<u>245,000</u>
Total	<u>\$251,600</u>	<u>\$398,600</u>

A comparative cost of the cost effectiveness of the four alternative treatment processes are shown on Table VI-10 and provide an overall comparison of cost effectiveness. These are provided for the initial Phase I costs for the project. It shows that the overall cost effective ranking of the apparent best project for treatment is the aerated lagoon process, although the operation and maintenance costs of this alternative are more than fifty percent greater than for the facultative oxidation pond alternative.

TABLE VI-10

Cost Effective Comparison of Alternative Treatment Processes  
For Phase I - 1.2 MGD Capacity

<u>Capital Costs</u>	<u>Aerated Lagoons</u>	<u>Oxidation Ditch</u>	<u>Rotating Biological Contactors (RBC)</u>	<u>Facultative Oxidation Ponds</u>
Land	\$ 50,000	\$ 25,000	\$ 25,000	\$ 350,000
Primary Treatment	135,000	135,000	135,000	135,000
Secondary Treatment	300,000	1,045,000	1,340,000	695,000
Chlorination	140,000	140,000	140,000	140,000
Control Building	75,000	75,000	75,000	75,000
Site Work & Piping	50,000	60,000	40,000	80,000
Emergency Generation	75,000	60,000	40,000	20,000
<b>Total</b>	<b>\$825,000</b>	<b>\$1,540,000</b>	<b>\$1,845,000</b>	<b>\$1,495,000</b>
<b>Rank</b>	<b>(1)</b>	<b>(3)</b>	<b>(4)</b>	<b>(2)</b>
<u>Capital Recovery (Year 1)</u>	\$ 75,900	\$ 141,700	\$ 169,800	\$ 137,600
<u>Operation &amp; Maintenance Costs/Year</u>				
Labor	\$ 82,000	\$ 82,000	\$ 82,000	\$ 60,000
Power	41,000	29,000	20,000	6,000
Chemicals	24,000	20,000	20,000	20,000
Maintenance	6,000	12,000	16,000	6,000
<b>Total</b>	<b>\$153,000</b>	<b>\$ 143,000</b>	<b>\$ 138,000</b>	<b>\$ 92,000</b>
<b>Rank</b>	<b>(4)</b>	<b>(3)</b>	<b>(2)</b>	<b>(1)</b>
<b>Total Annual Costs (2)</b>	<b>\$228,900</b>	<b>\$ 284,700</b>	<b>\$ 307,800</b>	<b>\$ 229,600</b>
<b>Cost Effective Rank</b>	<b>(1)</b>	<b>(3)</b>	<b>(4)</b>	<b>(2)</b>

(1) Capital recovery at 8-3/8% interest at 20 years of capital costs.

(2) Costs based on May 1985 base with ENR construction cost index = 4,300

#### G. Effluent Pipeline

The effluent pipeline would be constructed along the ridge roads and trails as shown on Figure VI-3. These would be steel pressure pipelines that would convey the wastes approximately five miles from the proposed plant location at elevation 1,350 feet to the reservoirs located at elevation 500 feet.

A 12 inch diameter pipeline is proposed and is of sufficient size for the Phase 2 flow of 2.4 MGD. Initially, the maximum velocity would be 2.6 fps and overall pipe friction loss about 40 feet. This would allow recovery of approximately 900 feet of pressure head by discharge through an impulse-type hydraulic turbine. This would be a 150 kilowatt unit that would be utilized to dissipate the head. Ultimately, a second 150 kilowatt turbine unit would be installed. This power recovery would be somewhat greater than the total energy requirements for pumping and treating the wastewater. It could be sold to PG&E and would have a value approximately \$80,000 per year in Phase I and \$160,000 in Phase II, based upon a 75% utilization factor and energy costs at 84/KWH.

The construction costs of the pipeline are estimated at \$26.00 per lineal foot and for the 30,000 feet required for Alternative A on McKay Ridge to the McKnight Ranch would total \$780,000. The length of the pipeline down Perkins Ridge to Corry Canyon is 24,000 feet, but then in addition there would be another 6,000 feet of pipeline to the Lucky 7 Ranch.

The turbine installation and electric transmission connection are estimated at \$300,000 for Phase I and a total of \$420,000 for the total Phase 2 capacity of 300 kilowatts. The recovery period for capital investment would be less than four years in Phase I and only a year and a half in Phase II. The energy cost recovery by the hydraulic turbine installation is ninety percent of the projected energy and cost requirements for pumping and treatment in either Phase I or Phase II.

Thus, the overall cost of the pipeline is approximately the same for either the McKay or Perkins Ridge routes.

#### H. Reclaimed Water Reservoirs

It is proposed that the reclaimed water reservoir be built in two stages to provide storage of 650 acre feet of water for each of Phase I and 2. There are two box canyons in the lower foothills that appear quite favorable from topographic and geological aspects for the storage reservoirs. These are shown on Table VI-3 and include a canyon tributary to Little Dry Creek on the McKnight Ranch designated as Alternative I and in Cory Canyon above Butte College, Alternative II. Local runoff would be minimal in each of these sites and can be diverted by side ditches to be conveyed around the reservoirs to preserve capacity for wastewater effluent. However, in the early stages of the project it may be advantageous



to allow all or a portion of the runoff to flow into the reservoirs to increase the amount of water stored and allow more of the pasture area to be irrigated.

Of the two sites, the McKnight Ranch canyons are better geologically and topographically, and are on one property as contrasted to ten parcels of the subdivided Cory Canyon site.

The dams at either the McKnight Ranch or Corry Canyon sites would be approximately 80 feet high at the crest with a length of 900 feet and a surface area of approximately 25 acres. The dams would be rock fill with a clay core obtained from excavation on the site.

The normal maximum pool height would be ten feet below the crest of the dam, and seasonally the water level would fluctuate by as much as 45 feet.

An emergency spillway would be provided for the maximum probable storm at an elevation three feet above the maximum pool height. There would also be a gated outlet structure that would be utilized for supplying the irrigation piping in summer or as an emergency release in winter. Discharge to Little Dry Creek would be done only during wet seasons of more than 10 year recurrence and when dilution flows exceeded 10:1. The Little Dry Creek drainage basin above Highway 99 is approximately 14.5 square miles, and flows average 40 cfs in normal years during the winter, and double during seasons where rainfall exceed 10 year recurrence.

The reservoir would be aerated by draft tube aerators to suppress odors, stratification or algae blooms. Fish would be stocked in the lake for algae and aquatic plant control, and it would provide a habitat for water fowl and terrestrial animals as well.

The estimated cost of the dam and reservoir facilities is \$975,000 for each Phase, a total of \$1,755,000.

#### I. Wastewater Disposal

The land requirements for wastewater disposal by irrigation are based upon a seven month growing season of pasture grass and a total season irrigation requirement of 21 inches. The total land that would be irrigated would be 760 acres in Phase I and 1,520 acres in Phase II. This would be land where the depth of soil would exceed twelve inches and slopes less than twenty percent. Overall, the total area requirement would be approximately 2,000 acres to provide for roads, boundary buffers, the reservoir, septage disposal facilities, and unsuitably steep terrain.

There are three major ranch properties in the vicinity that could accept the proposed wastewater disposal. These include the McKnight Ranch located between Neal and the Durham-Pentz Roads just east of Highway 99, the Lucky 7 Ranch portion immediately south of

Butte College, and the G&M Ranch south of the Lucky 7 and north of Highway 70. All are in agricultural zoning, of similar terrain and soil types, and used for seasonal cattle grazing.

Two proposed plans were studied in detail. One for the McKnight Ranch and discussions were conducted with the owners. This is shown as Alternative I. The other would combine disposal at Butte College and the adjacent Lucky 7 Ranch; and is designated as Alternative II.

° Alternative I - McKnight Ranch

In a meeting with representatives of the McKnight Ranch, they rejected the concept of leasing and proposed instead that the Town purchase the land necessary for wastewater irrigation and operate their own irrigated pasture cattle ranch.

The parcels of the McKnight Ranch that are proposed for purchase are as shown on Table VI-11.

TABLE VI-11

McKnight Ranch Parcels Proposed for Use In Reclaimed Water  
Town of Paradise Irrigation System

Assessors Parcel Book	Section	Parcel	Acreage	Assessed Valuation		Per Acre
				Land	Improvements	
41-10	19	7	624.26	\$ 35,700	0	\$57.18
	20	Part(2)	330.0	32,600	0	55.25
41-13	30	37	470.1	26,900	0	57.22
40-12	24	Part(8)	590.0	35,000	0	54.86
40-13	25	35	<u>623.85</u>	<u>35,600</u>	0	<u>57.06</u>
Total			2638.21	\$165,800		\$56.31

All of this land is currently in Williamson Act Agricultural Preserve and as such is not assessed as potentially developable land. It is recommended that the entire 2638.21 acres be purchased to not sever the parcels and to provide a reserve for additional wastewater disposal needs in the future.

The estimated purchase price for this land is \$250 per acre. The total purchase price is \$660,000, and is included as such in the Phase I estimate of costs for the Central Area Wastewater System.

Irrigation and land improvement costs are estimated at \$1,500/acre in Phase I and \$1,150/acre for the total system in Phase II. Either fixed set or center pivot irrigators can be used in the moderately sloping terrains of this part of the McKnight

Ranch. Screening to remove particulate matter exceeding 3/16 inch diameter and pumping to provide a minimum 40 psi pressure at the nozzles would be provided and included as part of the initial Phase I costs.

The estimated costs for the Phase I irrigation system to serve 760 acres is \$1,140,000; and for Phase II when additional 760 acres would be irrigated is \$608,000. The overall construction cost of the irrigation system is estimated at \$1,748,000 at current May 1985 amounts.

There is a benefit value of the irrigated pasture. In present terms, the dry pasture is leased annually in the range of \$15 to \$30/acre. Irrigated pasture values on the other hand nets approximately \$100-\$115/acre annually (Butte County Agricultural Report 1984). On the basis of \$115 being the value for irrigated pasture, this is revenue that the Town of Paradise can expect from pasture irrigation, and can be used together with the electrical energy sales of the hydraulic turbine at the dam to offset some of the operation and maintenance costs of the wastewater collection and treatment systems.

The estimated revenue that can be produced by the irrigated pasture in terms of current 1985 values are:

Revenue:

Phase I - 760 acres x \$115.00 =	\$87,500
Management Costs	<u>15,000</u>

Benefit Total	<u><u>\$72,500</u></u>
---------------	------------------------

This "benefit" cost would double in Phase II to a total of \$145,000 per year.

A very considerable advantage of the McKnight Ranch alternative is that it is all on one property including the reservoir, that the owners are willing to sell to the Town of Paradise.

° Alternative II - Butte College/Lucky 7 Wastewater Disposal

Another alternative land disposal area is at Butte College and the adjacent Lucky 7 Ranch. Representatives of Butte College contacted the Town of Paradise to express their interest in receiving wastewater. At the present time, Butte College operates their own wastewater treatment facilities and disposes effluent into ponds and fields north of the Durham-Pentz Road.

A meeting was held with facilities management staff of Butte College to determine specific areas that could accept wastewater on the College property. They related that in the past the Lucky 7 Ranch had expressed an interest in receiving in excess reclaimed water for irrigation of their lands to the south.

Butte College operates an extended aeration plant designed to serve 10,000 persons. At the present time the average flows to the plant are 85,000 gallons per day and there are 5,000 students enrolled full and part time at the College. The treated wastewater is discharged to a series of three landscape ponds adjacent to Clear Creek on the College property and into approximately thirty acres of pasture land at the southeast corner of the College.

Overall there are 200 acres of the campus site that could potentially be irrigated with reclaimed wastewater. However, due to campus building and well field limitations, the actual additional acreage that can be irrigated by reclaimed water is 50 acres. This probably should be reserved for the long term growth and increased wastewater disposal requirements of the Butte College itself.

There is also an interest at the College for creating some wildlife habitat ponds with reclaimed wastewater in the hill area of the College property that lies north of the main College Drive. This could be accommodated within a plan of utilizing Corry Canyon for reclaimed water storage, then constructing three ponds as shown in Figure VI-7 on the College property that would be fed by a pipeline that would provide reclaimed water for irrigation to Butte College and extend to the Lucky 7 Ranch where there are 2,000 acres of pasture land that could be irrigated with reclaimed water and would increase that land's productive value.

Detailed costs on possibilities of lease or purchase with the Lucky 7 Ranch were not developed. This was because there did not appear to be any cost savings as compared to Alternative I on the McKnight Ranch. Instead, there is considerably more complexity and probable costs in acquiring sites for the reservoirs, and the irrigation disposal land. In all, more than fifteen parcels would have to be dealt with either by purchase or lease arrangement. In addition, the Lucky 7 Ranch lands are assessed at 150% per acre more than those of the McKnight Ranch further west. Although these lands are also in the agricultural preserve, they are closer to present and proposed subdivisions and other more dense land utilization, and this is reflected in the assessed valuation.

If suitable arrangements cannot be made in the future for the Alternative I, McKnight Ranch Plan; then this Alternative II should be explored in greater detail, and perhaps then would prove to be the preferable plan.

#### J. Connection to Chico

Another alternative for providing treatment and disposal to the Central Area of the Town of Paradise that was studied in some detail was the possibility of connecting to and being served by the City of Chico. Chico began a master planning study to expand wastewater collection and treatment to the surrounding County Areas in March 1985, in response to increasing ground water degradation





# RADISE WASTEWATER MANAGEMENT PLAN

MAY 1985

## ALTERNATIVE TO CENTRAL SYSTEM- WASTEWATER CONNECTION TO CHICO

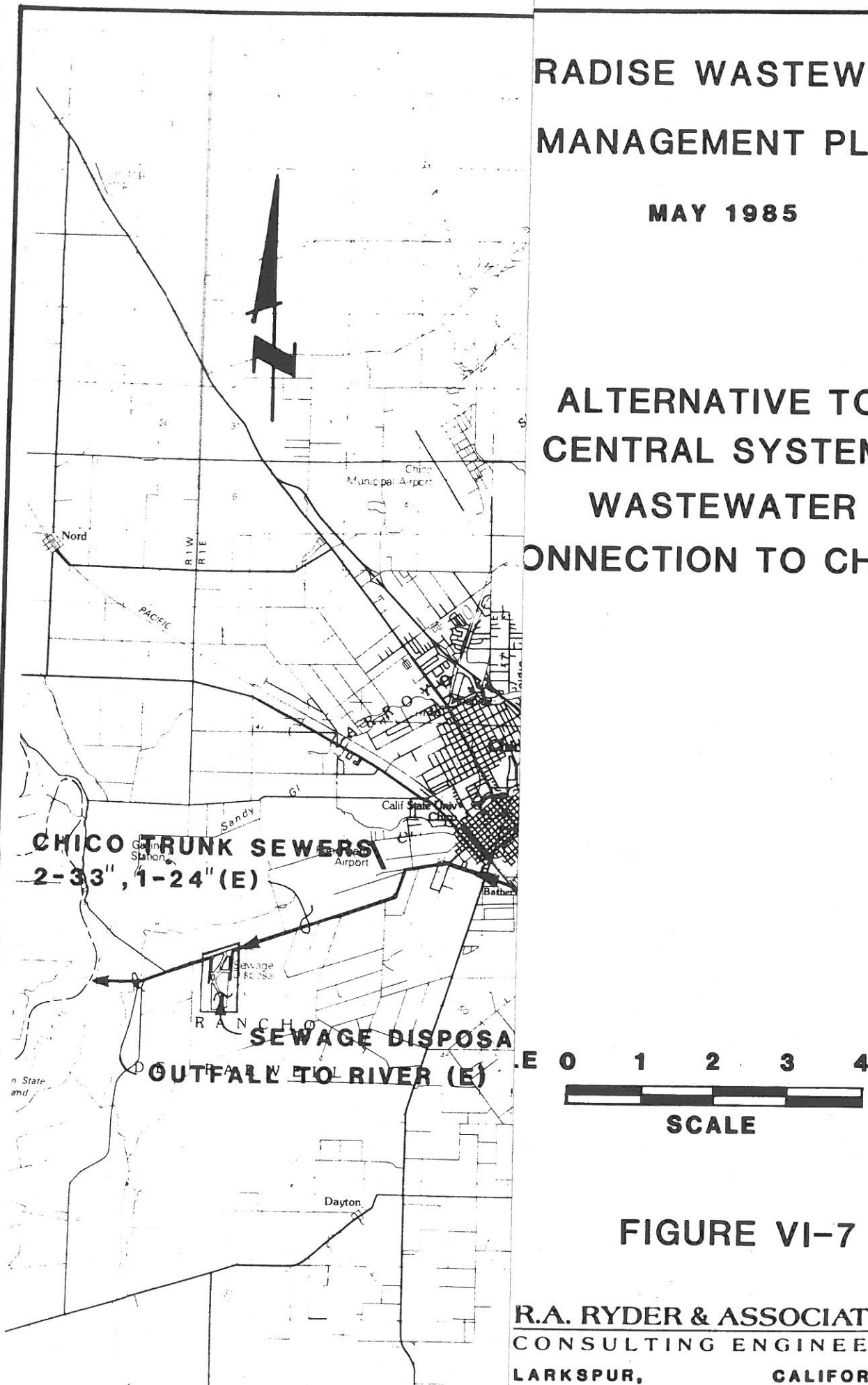
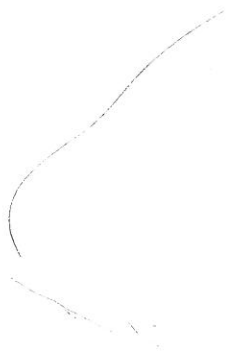


FIGURE VI-7

**R.A. RYDER & ASSOCIATES**  
CONSULTING ENGINEERS  
LARKSPUR, CALIFORNIA



by nitrates from septic tank and leachfield disposal that resulted in concerns and orders by the County and State. The possible inclusion of Paradise in the expanded Chico facilities could at this time be evaluated as to feasibility and costs.

Contact was made with and information obtained from the Chico City Manager, Fred Davis, and the wastewater master plan consulting engineer, Perry Shafer of Brown & Callwell.

The Chico Wastewater Treatment Plant is a 5 MGD activated sludge secondary treatment facility that is located near and discharges into the Sacramento River West of Chico as shown on Figure VI-7. The treatment plant serves 32,000 people and has an average dry weather flow of about 4 MGD. There is room at the site of the treatment facility to expand to 15 or perhaps 20 MGD. Plans for the expanded service area could create an additional 5 MGD of flow to the treatment plant. Nevertheless in the opinion of the City Manager, the 2.4 MGD flow anticipated from the Paradise Central Area could be accommodated by expansion of the facility and providing sufficient capacity in new trunk sewers now being planned to serve the area south of Chico.

Following this establishment that the connection to Chico would appear to be acceptable in physical and political terms, then the necessary facilities and costs to provide for this alternative were developed.

#### ° Collection System

The collection system for the Skyway and Clark Road areas would be very much as planned for the land disposal alternatives previously discussed. However, there would be significant changes to the pump stations. The Clark Pump Station would have the same capacity, but have 100 rather than 50 foot pumping head and discharge through a 3-1/2 mile, 12 inch force main to the trunk sewer that would be constructed adjacent to the railroad right of way adjacent to the southwest Town limits. A Lower Skyway Pump Station would not be needed.

A comparison was made of the size and cost requirements for providing an equalizing basin to reduce flows to the average daily or to provide that peak capacity in the trunk sewer that would be routed down the abandoned railroad right of way to Chico. It was found that an equalizing basin would be cost effective when the additional costs of enlarging trunk sewers south of Chico to the treatment plant were also included. This analysis is shown on Table VI-12.



TABLE VI-12

Comparative Costs of Conveying Peak or Average Flows  
From the Central Area of Paradise to The Chico WWTP

Alternative I - Peak Flow = 4.8 MGD

Trunk Sewers - 15" on Skyway - 26,250 LF @ \$39.50 =	\$1,036,875
18" on Skyway - 25,250 LF @ \$48.70 =	1,229,675
24" on South Chico - 26,250 LF @ \$76.15 =	<u>1,998,950</u>

Total            \$4,265,000

Alternative II - Average Flow = 2.4 MGD

Trunk Sewers - 12" on Skyway - 26,250 LF @ \$33.30 =	\$ 874,125
15" on Skyway - 25,250 LF @ \$39.50 =	997,375
18" on South Chico - 26,250 LF @ \$48.70 =	997,375
Equalizing Basin - 2.4 MGD	<u>610,000</u>

Total            \$4,164,000

The costs are essentially equal; but Alternative I to provide for peak flow is preferred because it provides capacity from additional connections beyond the Central Area in the future that can be accommodated by an equalizing basin that could be constructed in the future.

°     Wastewater Treatment Costs

The costs of providing wastewater conveyance and treatment in Chico would be applied to the Paradise wastewater under the same terms as service is now provided to other Butte County areas. These costs are \$808.00 per residential dwelling unit contribution for wastewater trunkline transmission and \$808.00 for treatment capacity in current 1985 costs (Chico Sewer Fee Schedule 1984). The residential flow capacity is rated as 250 gallons per day per dwelling unit. An adjustment to the connection fee costs are made in relationship to the ENR cost index.

On the basis of these criteria, the costs for connection to and treatment by Chico would be:

Phase I - Flow = 1.2 MGD/250 gpd/du = 4,800 DU  
4,800 x \$1,616/du = \$7,756,800

Phase II - Flow 2.4 MGD/250 gpd/du = 9,600 DU  
9,600 x \$1,616/du = \$15,513,600

The service fees are relatively low at Chico, presently being \$3.40/month per dwelling unit for operation and maintenance costs. This would equate to an annual O&M cost as follows:

$$\text{Phase I} - 4,800 \text{ DU} \times \frac{\$3.40}{\text{Mo./du}} \times \frac{12 \text{ Mo.}}{\text{Yr.}} = \$195,800$$

$$\text{Phase II} - 9,600 \text{ DU} \times \frac{\$3.40}{\text{Mo./du}} \times \frac{12 \text{ Mo.}}{\text{Yr.}} = \$391,600$$

° Chico Connection Alternative Costs

In summary, the total costs for the alternative of connection into the Chico System are shown on Table VI-13.

TABLE VI-13

Estimated Costs for Paradise Central Area  
Wastewater to be Connected to and Served by Chico

<u>Capital Costs</u>	<u>Phase I</u>	<u>Phase II</u>	<u>Total</u>
Wastewater Collection			
In Paradise	\$ 3,847,000	\$ 0	\$ 3,847,000
Clark Pump Station	180,000	160,000	340,000
Clark Force Main	485,000	0	485,000
Skyway Interceptor Sewer	4,265,000	0	4,265,000
Chico Wastewater Treatment	<u>7,756,800</u>	<u>7,756,800</u>	<u>15,513,000</u>
Total	<u>\$16,533,800</u>	<u>\$7,916,800</u>	<u>\$24,450,600</u>
<u>Operation &amp; Maintenance</u> <u>Costs/Year</u>			
Wastewater Collection			
In Paradise	75,000	0	75,000
Clark Pump Station	82,400	76,100	158,500
Force Main	7,400	0	7,400
Skyway Interceptor Sewer	31,000	0	31,000
Chico Collection & Treatment	<u>195,800</u>	<u>195,800</u>	<u>391,600</u>
Total	<u>\$ 391,600</u>	<u>261,900</u>	<u>\$ 663,500</u>
Total Annual Costs			
Capital Recovery	<u>\$1,521,800</u>	<u>\$ 728,600</u>	<u>\$2,250,400</u>
Total/Year	<u>\$1,913,400</u>	<u>\$ 990,500</u>	<u>\$2,902,000</u>

#### K. Other Disposal Alternatives

There were two other evident alternatives for wastewater disposal that were not studied in the detail of that for land disposal near Pentz-Durham Road or the Chico Connection. These are wastewater reclamation for horticulture in Nance Canyon in a plan proposed by Mr. Hap Penn, with possible winter discharge to Butte Creek. The wastewater disposal would be combined with planned development of the Coon Ridge area of the Parrot Ranch in a concept of terraced ponds and seed beds as utilized in the Orient for wastewater disposal.

It was decided not to study this concept in extensive detail because there did not appear to be a suitable site for winter storage of wastewater, and there is a Butte County restriction that prohibits the discharge of any wastewater or effluent to Butte Creek. As a consequence, these alternatives appeared too uncertain in social and environmental issues to evaluate economically for a cost effectiveness comparison with costs for land disposal as developed previously for Alternative I on the McKnight Ranch reveal as shown on Table VI-14, that the Chico alternative is considerably more expensive.

TABLE VI-14

#### Comparison of Local Land Disposal to Chico Service

	<u>Land Disposal</u>		<u>Chico Connection</u>	
	<u>Phase I</u>	<u>Ultimate</u>	<u>Phase I</u>	<u>Ultimate</u>
Capital Costs	\$8,827,000	\$10,946,000	\$16,533,800	\$24,450,600
<u>Annual Costs</u>				
Operation & Maintenance	\$ 192,400	\$ 180,700	\$ 391,600	\$ 663,500
Capital Recovery	<u>812,400</u>	<u>1,007,500</u>	<u>1,521,800</u>	<u>2,250,400</u>
Total	<u>\$ 1,004,800</u>	<u>\$ 1,188,200</u>	<u>\$ 1,914,000</u>	<u>\$ 2,913,900</u>

#### L. Financing Alternatives

Funds may be obtained from various sources. Financing techniques fall into four general categories which can be identified as grants (no repayment), cash (pay as you go), debt (pay as you use), lease, or investment (early buy-in). Many of these techniques, however, were developed in response to particular money market conditions or to solve local problems with respect to ability to pay. The most appropriate financing method of Paradise will be addressed in this section of the report. The following is a general discussion of financing methods which might be considered:

Grants:

Grants are available to municipal agencies, require no repayment and should be utilized to the maximum extent possible. In anticipation of this report, contact has been made with the California Water Quality Control Board (State) to determine the status of Paradise with respect to a Federal Environmental Protection Agency (EPA) grant and State of California Clean Water Grant. Grant discussions were also held with local administrators of Federal Housing and the Urban Development (HUD) and Economic Development Administration (EDA).

Maximums of 55% EPA and 12-1/2% State grants are available to cover most of the project components provided Paradise qualifies for inclusion on the State 1986 priority list. For such inclusion, Paradise needs a letter from the Butte County Sanitarian describing the problem(s) and documenting serious health hazard(s), and 2/3 of the flow in the area to be sewered must have existed since 1978. If serious health hazards don't exist, EPA and State grants aren't viable. For inclusion in the 1986 State priority list the Letter, the supporting documents must reach the Central Valley Region Water Quality Board (CVRWQCB) in June 1985. A "dark cloud" on new projects exists because of the President's exclusion of EPA grants on "new starts" in his fiscal 1986 budget. The 1984 legislature also provided for 12-1/2%, low interest loans to supplement the above grant(s), with the same Letter needed.

Any EPA or State Clean Water funding will require a review of the proposed project by the State Air Pollution Control Board. Paradise is in the Butte County unurbanized area which is presently "non-attainment for ozone (O<sub>3</sub>)". However, the population growth projected herein to be sewered is rather close to the State Department of Finance projections (about 2.4% per year). If Air Board projections are substantially exceeded, they may condition EPA and State funding with mitigation measures.

Paradise may be eligible for a HUD Community Development Block Grant which would be a function of the economic development aspect of the Paradise Wastewater Project (creates jobs and/or preserves existing jobs). HUD funds can't be used in connection with projects creating assessments on low income households - unless such funds are used to pay such assessments. The next HUD funding cycle starts in January 1986, for which an application must be submitted to HUD by August 15, 1985. Paradise should immediately contact the Butte County HUD

representative to begin a HUD application for Block Grant Funds. If eligible, Paradise could receive \$1.00 in grant for every \$3.00 committed (say, by assessment). Urgent need must be documented and one permanent job creation or retention must occur for every \$10,000 of HUD grant.

EDA hopes to have grant money in 1986, which also is based on the project's local economic stimulus. Butte County appears to be eligible for up to an 80% EDA grant which can be additional to other grants (for example, a HUD grant). EDA's primary criteria is private sector job creation (up to \$10,000 per job created can be granted). EDA, if funded by Congress for 1986 appears to be a good candidate funder for at least a portion of the Paradise Central Business District (CBD) wastewater project because of the sewer's job creation (or preservation) potential for the businesses which are now on all septic tanks.

EDA also funds a few Public Works Impact Projects (PWIP) each year, criteria for which is primarily creation of jobs by the project in high unemployment areas.

Perhaps Paradise qualifies for a mix of some regular and PWIP grant funds.

Although EDA is officially unfunded at this time (official "line" is that agency goes out of business September 1985 - senate budget -0- for this fiscal year and House budget includes funds in amount of 90% current level), it is strongly recommended that Paradise immediately contact the EDA Sacramento Field Office about the project for assistance in composing a "community profile" to determine eligibility for a possible grant application. It is also very important that the Paradise project be included in the Butte County Overall Economic Development Plan (OEDP) - update due June 30, 1985 - to be eligible for an EDA grant. So, Paradise should immediately contact its local OEDP representative to get the sewer project included.

Cash:

Revenue sources for cash financing are derived primarily from rates and charges for wastewater connection fees and special accounts. Miscellaneous fees, standby charges, interest and rental income, reserves, etc., also contribute to the cash available to the municipality. A significant advantage of cash financing is the substantial savings in interest expense which can be used to finance additional facilities. Proponents of cash financing



also point out that because the decision to spend money is made by current residents who will benefit from the new improvements. They are quick to point out that incurred costs should not be imposed on future residents who have no voice in the matter. Although the cash method is the least expensive, care should be taken to avoid a commitment of available cash which may restrict the utility's ability to meet unanticipated expenses. It does appear that connection and standby charges proposed herein could cover Phase II (after 1995) construction.

Debt:

Debt financing is generally utilized for major non-recurring project expenses and for rehabilitation programs. Debt financing is attractive because the repayment of the costs more nearly matches the expected service life of the facilities and thus places at least some of the cost burden of the improvements on future customers who will use and benefit from them. Other advantages are that debt service schedules can be tailored to the utility's ability to pay; and in an inflationary economy, the dollars which are repaid will be of lesser value than those borrowed. In addition, as the number of beneficiaries increase, the cost per customer decreases. Among the candidate long term debt financing methods considered for the Paradise CBD Wastewater Project are:

- State 12-1/2% low interest loan (see above)
- Privatization - whereas a qualified, private sector company finances, designs, constructs, operates, and maintains the wastewater works under an agreement with the public entity being sewerred. Essentially, this is how PG&E, with its franchise(s) in Paradise, purveys power and gas. Good business practice and tax incentives can result in reasonable use fees and profit. Options exist such as Paradise financing, owning and leasing the works to the Company. Also, the sewer system would revert to Paradise at the end of a fixed, agreed-to period (with appropriate maintenance, state of the art upgrading, etc.)
- Special assessment - an ancient method - evidence of theory for which is found in Roman Law. California special assessment can be levied, following a public hearing, only where the specific land of the property owner will be proportionally benefitted by the public improvement and the assessment must not exceed the improvement cost. In California, the most commonly used special assessment acts are the:

Improvement Act of 1911 (Assessment Proceedings whereby, by petition of at least 60% of the property owners (measured by land area), or direct action of the town governing body, the engineering and project definition, area(s) of benefit, pricing, bond specifications, hearings, bids, construction, legal, misc., are accomplished. These documents authorize him or his assignee (bond dealer) to receive bonds issued representing unpaid assessments. Bonds are issued pursuant to either the Improvement Act of 1911 or the Improvement Bond Act of 1915 (1911 or 1915 act bonds).

Municipal Improvement Act of 1913 proceedings by which the governing body authorizes an engineering report defining the project and appropriate assessments, authorizes final construction plans and specifications, and bids, holds a public hearing and confirms final assessments, and effects issuance of 1911 or 1915 Act Bonds. Only the hearing is necessary although for sewers the 1913 Act provides option at the governing body.

Improvement Bond Act of 1915 - provides issuance of assessment bonds representing the total of overall District assessments levied under one of the assessment acts such as the Improvement Act of 1911 or the Improvement Act of 1913. Among security provisions are a special reserve fund and provisions for Superior Court foreclosure for delinquency of any installment.

Revenue Act of 1933 - allows using Bonds benefitting readily identifiable users who are charged for using the public facility, usually on a monthly basis (user fees, connection charges, standby charges, etc.). Voter approval is not needed unless 15% of the property owners or registered voters petition an election. Security is provided by pledge of revenues in excess of debt service, establishing a reserve fund, and special covenants such as prompt project completion, prompt payment, insurance, fidelity bonds, etc.

Lease Revenue: Legal basis for the issuance of Lease Revenue Bonds and construction of the Paradise CBD sewerage works by a non-profit entity (corporation, authority, etc.) may exist. Such entity would then lease the works to the Town of Paradise to operate and maintain. Among security provisions could be the lease, user fees, and charges, tax increment revenue

of a redevelopment agency, reserve fund(s), and insurances. Other features of lease revenue bonds would include title reversion to Paradise when the bonds are paid off, no maximum interest rate, and no voter approval of bonds by electorate. But the lessee (Paradise) must approve the lease by ordinance subject to referendum under California law under which if a sufficient number of voters petition to put the issue on the ballot, and 50% of those voting oppose the lease, the proceedings are terminated.

**Investment:** A new financing method that circumvents public debt shifts the portion of the cost to future developers and users. Those municipalities may sell future capacity in the sewer system at discount prices using these funds to finance early construction. The benefit of purchasing this capacity could be rewarded by a significant discount with a guarantee against future increases in sewer development assessments, connection rights on any property owned in the service area and the opportunity to resell the connection at a considerable profit. Obvious benefits of this method of financing include the avoidance of debt service, protection against future higher costs, allows a profit potential for purchasers, and promises future services at today's prices.

**Certificates  
of**

**Participation:** This method provides long term financing through a lease (with option to purchase or a conditional sale agreement) that does not incur indebtedness under State law, nor require voter approval. Essentially, the lessor (non-profit entity) would lease to Paradise (lessee) and a bank, other financial institution and/or investor (who purchase Certificates of Participation) pay the lessor for the present value of future lease payments. If bond counsel would opine that revenues may be committed for the full term of the lease (on the basis that such revenues are exempt from the annual appropriation required by the State Constitution) this financing option is viable. If revenues can't be committed for the lease, security would be the sewerage system - probably not viable. Further security provisions, including insurances, maintenance and system upgrading agreements, remarketing agreements, third party lease payment guarantor, etc., are necessary.

#### M. Apparent Best Alternative

Upon review of the above alternatives, project phasing, the ability to pay of the residents in the service area, the current money market conditions, and the potential for grant funding, a combination of grant, cash, and debt (assessment) financing appears to be the most viable. Since federal grant funds are questionable, the alternative of relying on 100% cash and assessment bonds funding will be developed in this report.

Assessment and Bond proceedings under the Municipal Improvement Act of 1913 and the Improvement Bond Act of 1915 Act, respectively, are recommended for sewerage the Paradise CBD based on the following advantages:

- ° A hearing process is sufficient - thereby precluding general referendum to authorize bonds.
- ° Capital costs are spread equitably amongst all District properties benefitting.
- ° Bonds are secured by property, therefore interest rate will not be raised by lack of operating history.
- ° Property owners have option of paying taxes "up front."
- ° According to Financial Consultants, 1915 Act Bonds would provide Paradise the lowest possible net effect interest rate.

#### N. Background and Scope of Financing and Revenue Program

The Federal Water Pollution Control Act Amendments (PL 92-500) which were passed in 1972 outlined a number of requirements for agencies receiving federal grants from the Environmental Protection Agency to plan, design, and construct wastewater treatment facilities. These guidelines are rational for Paradise even if no EPA grant is obtained. Among other things, the Act specified that agencies receiving such grants must (1) adopt a user charge system to assure that each recipient of the waste treatment service pays its proportionate share; (2) make provision for payment by industrial users through industry cost recovery (ICR) charges where applicable; and (3) have legal, institutional, managerial and financial capability to insure adequate construction, operation, and maintenance of its treatment works throughout its jurisdiction.

In 1977, the Clean Water Act was amended (by Public Law 97-217) and these amendments reaffirmed that agencies receiving federal funds to construct wastewater treatment facilities must establish and maintain an approved revenue program. The revenue program is required to comply with Federal and State revenue program guidelines and to specifically account for the following: (1) general user classes (residential/small non-residential, industrial/large commercial, or tax exempt) pay proportionally to



their use of the system as a class; (2) total revenues must be sufficient to properly operate and maintain sewage facilities; (3) adequate capital funds must be provided for future facilities replacement.

Under the law, federal grants may be utilized to provide up to 55 percent of eligible costs of the collection and treatment works.

The State of California , under the Clean Water Bond Law of 1978, may provide at least ten percent funding of those collection and treatment works components determined as grant eligible, thereby increasing the potential grant funding up to at least 65 percent.

The local share, meaning all costs that the grantee must pay through local revenue sources, is the remaining share of grant eligible costs (generally around thirty-five percent) of the total project cost, plus all ineligible costs.

With this background, the purpose of this element of the report is to determine total revenue requirements (based on known and estimated costs), sources for financing (Federal, State and local), and selection of best financing and revenue alternatives to meet the interim and long-range Wastewater Collection and Treatment requirements for the Town of Paradise. In addition, the financial and revenue program should serve as a guide to the community as to potential financial obligations and requirements imposed by Federal and State guidelines.

#### O. Construction and Operation and Maintenance Costs

The projected costs as shown on Table VI-15 have been developed by using the prevailing prices for similar work in Northern California during the early part of 1985. An inflation factor of 4% per year should be applied to all costs and benefits which follow to the actual year of construction.



TABLE VI-15

Estimated Costs of Apparent Best Project for  
The Town of Paradise Central Area Wastewater System(1)

° <u>Construction Costs</u>		
	<u>Phase I</u>	<u>Phase II</u>
A. Collection System		
Skyway	\$2,016,000	\$ 0
Clark	1,831,000	0
B. Pump Stations		
Lower Skyway	148,000	0
Clark	152,000	151,000
C. Treatment Facilities	<u>Phase I</u>	<u>Phase II</u>
Land	\$ 50,000	\$ 0
Plant Units	575,000	430,000
Electrical	75,000	0
Control Building	75,000	0
Piping & Sitework	50,000	30,000
D. Miscellaneous		
Pipeline to McKnight Ranch	780,000	0
Ranch Purchase	660,000	0
Power Plant	300,000	120,000
Storage Reservoir	975,000	780,000
Irrigation Disposal	<u>1,140,000</u>	<u>608,000</u>
Subtotal	8,827,000	2,119,000
Contingency, Administration and Engineering	<u>2,206,750</u>	<u>529,750</u>
Total	<u>\$11,033,750</u>	<u>\$2,648,750</u>
° <u>Operation and Maintenance Cost</u>		
	<u>Phase I</u>	<u>Phase II</u>
Costs:		
Collection System	\$ 155,400	\$ 167,700
Treatment	153,000	245,000
Disposal Site	<u>36,500</u>	<u>73,000</u>
Total Cost	\$ 344,900	\$ 485,700
Benefits:		
Power Generation	\$ 80,000	\$ 160,000
Irrigated Pasture Lease	<u>72,000</u>	<u>145,000</u>
Total Benefit	\$ 152,000	\$ 305,000
Net O&M Cost	\$ 192,400	\$ 180,700

(1) Basis - Current, May 1985, Construction Costs, ENR Index=4300.

P. Cost Analysis Factors

Cost estimating procedures followed EPA's cost-effectiveness guidelines. Cost-effectiveness is defined as including monetary cost and environmental and social impact assessment. Capital costs are based on an operable system with a 20-year life. If a total system will have an expected service life of less than 20 years, the capital cost includes the present worth of the subsequent replacement costs at current values as required to obtain a 20-year service life. Salvage value for estimated service life beyond 20 years is only considered for land. Staged construction is considered in the development of costs for facilities where applicable.

Where decisions are required for the sizing of facilities to provide flexibility, reliability, and standby units, standard engineering practices are followed that are not influenced by financial restriction.

Capital costs include construction, engineering, legal, bond, administration, and contingencies for all building, equipment, and appurtenances. Annual operation and maintenance costs include labor, energy, chemical, and routine replacement of parts and equipment (when replacement is required at intervals of five years or less). Construction cost estimates were based on preliminary layouts and sizing, appropriate redundancy, quotations from equipment manufacturers, and recent contract bids as available.

° Basic cost assumptions are:

Service Life	20 years
Interest Rate	10.5 percent

	<u>Without Grant</u>	
	<u>Phase I</u>	<u>Phase II</u>
Construction	\$11,033,000	\$2,636,250
*Reserve	1,325,000	318,900
Discount	667,000	159,500
Legal	148,500	46,000
Other	76,500	28,350
Total	\$13,250,000	\$3,189,000

For example, a 7% HUD Block Grant reduces the above figures to approximately \$12,300,000 and \$3,000,000, respectively. \*Reserve is based on 10% of bond issue. If a revenue bond is used the amount would be equal to one full annual payment. \*\*Under certain criteria, Paradise would generate up to \$1,200,000 in grants, over two funding cycles.

° Paradise Population Information for  
Cost Assignment and Revenue Allocations

	<u>1985</u>	<u>1995</u>	<u>2005</u>	<u>Ultimate</u>
Town of Paradise	24,500	31,300	35,400	47,500
Central Area	8,250	15,775	22,100	31,550
Paradise Region	32,000	43,000	50,800	101,500

Residents/living unit - 2.326

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Equivalent Dwelling Units\*

	<u>1985</u>	<u>1995</u>	<u>2005</u>	<u>Ultimate</u>
Town of Paradise	10,381	13,457	15,219	20,421
Central Area	3,547	6,782	9,501	13,564
Paradise Region	13,758	18,487	21,840	43,637

\*Population divided by residents/living unit - see weighting factors below which are intended to accomplish equity for non-residential flows.

Q. Revenue Program

With the initial costs and annual costs now developed various initial and/or annual charges per equivalent dwelling unit (EDU) can now be calculated.

It is recommended that an assessment be placed on all properties, whether occupied or vacant, based on the EDU method. This method defines the average single family residence as one equivalent dwelling unit. Property zoned for other than single family residents will be assigned an equivalent dwelling unit (EDU) factor from which the assessment will be determined. The following table, VI-16, indicates the translation from raw land (acreage) to EDU and per acre cost for Phase I based on zoning:

TABLE VI-16

Zoning Weighting Factors and Assessment Costs

Zoning	Allowable Density- Dwelling Units/A	Weighting Factor(2)	Equivalent Dwelling Units Per Acre	Average Cost Per Acre(1)
Multi Family-MF	7	1	7.0	\$ 6,825
Multi Family Dense-MF	10	1.33	10.0	12,968
Planned Unit Development-PD	7	1	7.0	6,825
Common Commercial- CC <i>Community</i>	14	2	14.0	27,300
Business Com- mercial-BC- <i>CB Central Business</i>	14	2	14.0	27,300
Industrial-IS	14	2	14.0	27,300

- (1) Average cost per acre based on Phase I assessment (1985 prices) with no grants.
- (2) Weighting factor x allowable density per acre = Assigned equivalent dwelling units per acre.
- (3) Phase II will occur after 1985 and it is probable that the revenues from new connections and standby charges will be sufficient for District financing of Phase II.

Criteria for an initial, equivalent "spread" of the above is as follows:

- existing, initial EDU in the CBD at assumed 1987 time of assessment 4,000
- Project cost when bid in 1987 \$14,331,200
- Ultimate equivalent dwelling units in Central Area 13,564
- Average cost per equivalent dwelling units (EDU) \$ 1,057
- Connection charges per EDU up until 30 days prior to assessment hearing (cut off date) - payable either by cash or authorization by owner to assign this amount per EDU to assessment per EDU to assessment rolls \$ 1,500
- Connection charge per EDU after 30 days prior to assessment hearing - cash only \$ 3,000

(all may have to go to retire bonds)  
 This encourages payment of connection  
 charge prior to cut-off-date.  
 Hopefully, a portion of these later  
 charges can be "sunk" for Phase II  
 construction.

- ° Assumed number of EDU's paying connection  
 charge prior to cut-off date in 1987 =  
 4000 existing connections plus 30% of  
 remaining EDUs\* =  $4000 + .3 (13,564 - 4000)$  6,869
- ° Base, arbitrary, blanket assessment per  
 EDU over entire Central Area Special  
 Assessment District \$ 300
- ° Standby charge per EDU which hasn't paid  
 connection charge - 3.00/month = \$36.00/year  
 This charge is justified as a  
 contribution by vacant but several  
 property towards plant depreciation  
 which occurs whether in use or not

Therefore, based on the above critieria the income profile to  
 finance Phase I construction is as follows:

- ° 1987 Construction Cost \$14,331,200
- ° 6,869 Connection Charges at \$1,500 \$10,303,500
- ° Base Assessment = 13,564 EDU x \$300/EDU \$ 4,069,200

The \$3.00/EDU/month standby charge should be initially  
 established as a precedent and as a "cushion" against fewer than  
 anticipated connection charges. The above will raise in the order  
 of \$150,000 to \$250,000 annually, and can always be lowered.

The approximate annual assessments per acre for various zoning  
 - based on the above 1987 income profile for acreage with and  
 without the connection charge paid "up front" is shown on Table  
 VI-17.

Debt service is based on a 20-year assessment bond issue being  
 sold at 10.5 percent (CRF = 0.1195). It is obvious that should  
 grants be available, the monthly bond retirement cost would be  
 proportionately less.

\*Conservative - Financial Consultant believes that potential  
 connectors who will pay initial fee will exceed 50%.



TABLE VI-17

PARADISE CENTRAL AREA  
TOTAL AND ANNUAL SEWERAGE ASSESSMENT CHARGES  
FOR VARIOUS ZONING CLASSIFICATIONS(1)

Zoning	50% With "Paid Up" Connection Charge on Assess. Rolls		50% Without "Paid-up" Connection Charge		Acres In District	Total Assessment
	Total Assessment/A	Total Annual Assessment Payment/A	Total Assessment/A	Total Annual Assessment Payment/A		
MF	\$12,600	\$1,506	\$2,100	\$ 250	401.7	\$ 2,952,500
Dense MF	18,000	2,150	3,000	360	107.2	1,125,600
PD	12,600	1,506	2,100	250	110.2	810,000
CC	25,200	3,010	4,200	502	490.1	7,204,500
BC	25,200	3,010	4,200	502	102.8	1,511,200
IS	25,200	3,010	4,200	502	139.4	2,049,200
						<u>\$15,653,000</u>

(1) Basis - Phase I project escalated to 1987 costs.

The operation and maintenance costs will be primarily carried by those using the system. Since there are certain fixed costs which vary only slightly with load, it can be anticipated that the O&M costs per EDU could decrease as load increases. Taking into account an annual inflation factor offsetting any lowering of the unit cost for operation and maintenance it may turn out to be a levelling effect. Monthly operation and maintenance charges must be reviewed periodically in order to adjust service charges making them responsive to needs.

Table VI-18 indicates the monthly EDU debt service, the operation and maintenance charges, and the amount set aside for depreciation reserve:

TABLE VI-18

Estimated Annual and Monthly Costs for Wastewater Service  
Paradise Central Area(1)

Debt		O&M + Debt		O&M Debt Service/Acre Sewered(3)											
Service/EDU(A) Annual Monthly	O&M/EDU(B) Annual Monthly	Service/EDU Annual Monthly	MF		Dense MF		PD	CC		BC		IS			
			Ann.	Mo.	Ann.	Mo.		Ann.	Mo.	Ann.	Mo.	Ann.	Mo.		
\$215	\$18	\$135	\$11.25	\$350	\$29.25	\$2450	\$204	\$4655	\$388	\$2454	\$204	\$9800	\$816	\$9800	\$816

(1) Based on 1987 estimate of construction, operation and maintenance costs.

(2) EDU = Equivalent Dwelling Unit

(3) By zoning classifications.

The above "first cut" at a sewer revenue program for the Paradise Central Business District should be augmented to insure an additional monthly stream of revenues for unforeseen emergencies, by the previously mentioned standby charge of in the order of \$3.00/month per unconnected EDU.

R. Financial Planning

It is recommended that the Town of Paradise proceed to set up a Special Assessment District for wastewater service to the Central Area. Concurrently, an investigation should be conducted of possible grant funds from the Federal Housing and Urban Development and other Federal Agencies. State bond funding or the possibility of a partial Clean Water Grant for water reclamation should also be actively investigated as measures to lower overall local funding and assessment requirements.

The Town of Paradise should retain a financial consultant with expertise in the bond market, methods of bonding, types of bonds on the market and other technical knowledge to insure the user of the best long term rate. A Bond Attorney will be needed later when the project is nearer to construction and bonds must be sold.

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# **CHAPTER VII**

## **SEPTAGE**





## VII. SEPTAGE TREATMENT AND DISPOSAL

### A. Septage Characteristics

Solids which accumulate on the bottom of septic tanks in between cleaning are normally called "septage." Since these solids derive from household wastes, septage contains varying amounts of soluble and solid organic matter, grease, detergents, sand, and other materials. The U.S. Environmental Protection Agency has conducted studies dealing with the chemical composition of septic tank solids. Table VII-1 is a summary of EPA's septage characterization studies.

The wide variations in the value of several characteristics have been attributed to user habits, the use of garbage grinders, tank design and the frequency of septic tank cleaning.

Because the solids collected in septic tanks are only partially digested, septage often exhibits other undesirable characteristics, including a highly offensive odor, a large foaming potential, and poor settling and dewatering properties.

### B. Existing Septage Disposal at Paradise

Septage now periodically pumped at the owner's request from septic tanks in the Paradise area is trucked to the Neal Road sanitary landfill located about seven miles southeast of town. Septage is first discharged into earthen holding ponds adjacent to the landfill where it is allowed to dry. Dried solids are subsequently scraped and buried.

Odors in the vicinity of the septage ponds are objectionable; however, the distance between the landfill and Paradise effectively isolates the town from this source of odors.

Table VII-2 shows the volume of septage from the Paradise area hauled to the Neal Road sanitary landfill during 1983, the last year for which complete records are available at the County Department of Public Health. Four private companies are currently engaged in cleaning septic tanks in the vicinity of the Town of Paradise: Paradise Plumbing, Rooter & Septic Service; Paradise Sanitation Co.; Jerry Hegenbart Septic Tank Cleaning; and George Donaldson Septic Tank. The monthly reports filed by those companies do not separate septage by locality; consequently, the volume originated from the Town cannot be determined from the quantities given in Table VII-2.

### C. Septage Quantities

Septage generation is influenced by the same factors which determine septage characteristics and thus exhibits wide variations

TABLE VII-1  
TYPICAL SEPTAGE CHARACTERISTICS

<u>Parameter(1)</u>	<u>EPA Mean Concentration</u>	<u>Minimum Reported</u>	<u>Maximum Reported</u>	<u>Variability(2)</u>
TS	38,800	1,132	130,475	115
TVS	25,300	4,500	71,402	16
TSS	13,300	310	93,378	301
VSS	8,700	3,660	51,500	14
BOD <sub>5</sub>	5,000	440	78,600	179
COD	42,900	1,500	703,000	469
TOC	9,900	1,316	96,000	73
TKN	680	66	1,900	29
NH <sub>3</sub> -N	160	6	380	63
NO <sub>2</sub> -N	----	0.1	1.3	13
NO <sub>3</sub> -N	----	0.1	11	110
Total P	250	20	760	38
PO <sub>4</sub>	----	10	170	17
Alkalinity	----	522	4,190	8
Grease	9,100	604	23,368	39
pH (units)	6 - 9	1.5	12.6	8
LAS	160	110	200	2
Al	48	2.00	200.0	100
As	0.16	0.03	0.05	17
Cd	0.71	0.05	10.8	216
Cr	1.1	0.3	3.0	10
Cu	6.4	0.3	34.0	113
Fe	200.0	3.0	750.0	250
Hg	0.28	0.0002	4.0	20,000
Mn	5.0	0.5	32.0	64
Ni	0.9	0.2	28.0	140
Pb	8.4	1.5	31.0	21
Se	0.1	0.02	0.3	15
Zn	49.0	33.0	153.0	5

(1) All values in mg/l except where noted.

(2) Values represent ratio of maximum to minimum



TABLE VII-2

PARADISE SEPTAGE HAULED TO NEAL ROAD LANDFILL IN 1983(1)

<u>Month</u>	<u>Paradise Plumbing</u>	<u>Paradise Sanitation</u>	<u>J. Hegenbert</u>	<u>G. Donaldson</u>	<u>Total</u>
Jan.	8,250	30,870	24,750	-	63,870
Feb.	12,050	26,660	17,150	5,000	60,860
March	2,750	37,790	28,500	7,000	76,040
April	10,100	43,770	41,400	12,000	107,270
May	17,050	63,200	72,900	11,500	164,650
June	13,900	48,100	38,400	6,000	106,400
July	22,800	47,085	38,700	6,000	114,585
Aug.	28,100	50,120	51,900	7,000	137,120
Sept.	27,000	50,670	56,700	11,000	145,370
Oct.	18,000	-	20,050	8,200	46,250
Nov.	17,600	33,050	25,300	6,200	82,150
Dec.	<u>17,000</u>	<u>34,300</u>	<u>29,400</u>	<u>7,000</u>	<u>87,700</u>
Total	194,600	465,615	445,150	87,900	1,192,265

(1) All values in gallons.

also. Practically, septage volume expressed in gallons per capita per unit of time (usually gallons per year) is not significant. In terms of septage handling and disposal, the determining factor is the frequency of septic tank cleaning since it will in fact set the volume to be handled by the treatment and/or disposal facilities. In most unsewered communities the pumping of septic tanks is still done only when signs of leachfield failure appear rather than at regular intervals. Even when mandatory pumping schedules have been established by ordinance, the enforcement of such regulations has proven difficult. Consequently, meaningful records of septage quantities are not readily available.

In this respect, the situation in Paradise can be considered typical. The septage volume figures given in Table VII-2 cannot be used to develop unit septage quantities since our discussions with County Sanitarian, confirmed by field observations, have verified that many septic tanks are pumped at much longer intervals than the two to four year cycle usually recommended for proper septic tank operation. As indicated earlier, another difficulty in using the figures in Table VII-2 is the fact that the haulers using the Neal Road landfill also pump septic tanks from the areas adjacent to the town (Magalia, Paradise Pines).

The current pumping and disposal practices have in fact established a "regional" approach to septage handling in the Paradise areas, which is likely to continue for the foreseeable future. Consequently, planning for the treatment and disposal of septage from the Town of Paradise will include septage generated in the whole Paradise market area encompassing the Town of Paradise, Upper Ridge and Central Butte County. Stirling City is expected to experience very slow growth and thus, it will not contribute significant septage quantities.

Septage quantities will be projected for each type of land use area based on the following criteria:

° <u>Land Use</u>	<u>Population Equiv/Unit</u>	<u>Average Septic Tank Volume - Gallon</u>	<u>Pumping Freq./Yrs.</u>
Single family residential	2.33	1,000	4
Multi-family Residential	23	3,500	3
Commercial & Industrial	10	2,000	2
Restaurants & Laundromats	30	4,000	1

Septage production in gallons/year can then be computed by the following formula:

$$\frac{\text{Population} \times \text{Septic Tank Vol (gal)}}{\text{Pop Equiv/Unit} \times \text{Pumping Frequency}}$$

#### D. Regulatory Considerations

The treatment and disposal of septage is subjected to Federal, state and local regulations.

° Federal Regulations. In general, Federal regulations deal with septage as part of the overall management of sludge. Two Federal Acts, the Clean Water Act and its Amendments (CWA) and the Resource Conservation and Recovery Act (RCRA) include specific septage provisions. CWA authorizes the U.S. Environmental Protection Agency to issue comprehensive septage and wastewater sludge management guidelines and regulations to establish a research and demonstration programs to develop improved sludge and septage management practices. CWA also authorizes Federal grants to construct facilities for septage treatment and disposal.

Under RCRA, septage is treated as a solid waste. This Act authorizes Federal technical and financial assistance to state and local governments for the development and implementation of solid waste management plans. RCRA also requires stringent regulations for hazardous and non-hazardous wastes (including septage) and encourages the research and demonstration of more effective solid waste disposal and resource conservation technologies.

Other Federal Acts which impact the handling of septage less directly than CWA and RCRA include the Clean Air Act Amendments, the Safe Drinking Water Act, the National Environmental Policy Act and the Toxic Substances Control Act.

° State Regulations. Section 13260 of the Porter-Cologne Water Quality Control Act requires any person discharging waste, or proposing to discharge waste, to file a report of the discharge containing such information as may be required by any of the nine Regional Water Quality Control Boards. The Regional Board then issues a discharge permit containing waste discharge requirements for operation and disposal. The Regional Board, Central Valley Region has jurisdiction over septage disposal in Butte County. A waste discharge permit for a Butte County site incorporates all applicable points in the above Federal section and the pertinent points in the local regulations section below. In addition, the Regional Board would hold the land owner liable for proper cleanup after site abandonment and protection of the public from the site.

Regulations governing the disposal of septage on landfills (referred to as "waste management units") are included in Subchapter 15 of the California Administrative Code titled Discharges of Waste to Land (the latest revisions to Subchapter 15 were adopted on October 18, 1984). Under the provisions of Subchapter 15, septage is classified as a "Designated Waste" which include "non-hazardous waste which consists of or contains pollutants which, under environmental conditions at the waste management unit; could be released at concentrations in excess of applicable water quality objectives, or which could cause degradation of waters of the state."

The regulations also require that non-hazardous designated wastes shall be discharged only at Class II waste management units, (WMU), complying with the provisions of Subchapter 15. According to these requirements, Class II WMU's must be located at sites

where topography, geologic characteristics and the presence of natural or artificial barriers effectively "isolate wastes from waters of the state."

The current waste discharge requirements for the Neal Road Landfill (Order No. 74-79) were adopted by the Central Valley RWQCB on September 28, 1973. The requirements are for a "Class II-2 Waste Disposal Site" as defined in the previous version of Subchapter 15 and contain specific provisions for the handling of septage. The regional board is in the process of revising the waste discharge requirements to comply with the recent changes included in Subchapter 15.

° Local Regulations. Two Butte County departments issue regulations for septage disposal; the Department of Health regulates the haulers and the disposal sites, while the Planning Department must approve the zoning for the disposal site.

The county Department of Health regulates septage haulers pursuant to Section 25000 of the California Health and Safety Code. Septage pumpers are annually registered in accordance with the provisions below and are subject to the county Department of Health terms and conditions of registration. Haulers that violate the provisions may lose their license for a period commensurate with the seriousness of the violation. Pertinent portions of Sections 25000 include:

- ° It is unlawful to pump, haul or dispose of septage or chemical toilets without a valid registration issued by the local health officer (Sections 25001-25002).
- ° Applications for registration must state name and location of applicant and the exact location of the place at which it is proposed to dispose of cleanings (Section 25003).
- ° A health officer must inspect the equipment to be used, place and manner of disposal, and be satisfied with the applicant's knowledge of sanitary laws and principles before issuing a registration (Section 25004).
- ° Registrations are only valid for the balance of the calendar year (Section 25006).
- ° Applicants may be registered under such terms, conditions, orders and directions as the health officer or his duly authorized representative may deem necessary for the protection of human health and comfort (Section 25007).
- ° Any registration issued under this chapter may be revoked by the issuing health officer for cause on 10 days notice to applicant (Section 25009).
- ° Violations of these rules of any order of a health officer made pursuant to these rules for the protection of human

health and comfort may be punishable by a fine of \$100 or 30 days in jail, or both (Section 25010).

Septage disposal facilities require a use permit from the Butte County Planning Commission and applications are to be made to the planning department for the permits. The application should show compatibility with surrounding land uses, landowner permission and environmental protection. The Planning Department relies on the Health Department for health protection compliance. An Initial Study as required by the California Environmental Quality Act is also needed to determine whether an Environmental Impact Report or a Negative Declaration is appropriate for a proposed septage disposal facility.

Any use permit may be revoked if its terms or conditions are violated or if any acts or omissions of the permittee in connection with the use authorized by the permit constitute a public nuisance. If a decision to revoke the permit is made, the decision may be appealed to the county Board of Supervisors. If the decision is upheld and the use continues, then the evidence necessary to litigate is reported to the office of the District Attorney and County Counsel.

In 1976 Butte County adopted a Solid Waste Management Plan to provide "for the safe and environmentally sound storage, collection, processing and disposal of all solid wastes generated in Butte County." One of the objectives of this plan was "to be the solid waste element of the Butte County General Plan." Consequently, the Solid Waste Management Plan is more a planning document than a regulatory tool.

#### E. SEPTAGE HANDLING ALTERNATIVES

Alternatives for the treatment and disposal of septage can be grouped into three broad categories:

- Direct application to land;
- Combined treatment at a wastewater treatment plant;
- Treatment at a separate septage treatment facility.

Application of septage to land is by far the most widely used means of disposal. Separate septage treatment facilities have been built in areas such as Paradise and Magalia where high densities of septic tanks exist.

#### ◦ Land Application of Septage

Four methods are commonly used to apply septage to land: surface spreading, subsurface application, trenching, and landfilling. Only subsurface methods of septage disposal are permitted in Butte County. Lagoon storage is often included as a land method of septage disposal, although it is also considered among the methods of septage treatment. Considerations in selecting one of these methods



include climate, soil characteristics, topography, groundwater levels, land use, distance to populated areas, odor and vector control, and protection of surface and groundwaters.

° Surface Spreading - Surface spreading of septage is practiced where land is readily available at a safe distance from populated areas. Usually the same hauler truck that pumps out septic tanks applies septage to the land. However, intermediate holding facilities are desirable since septage should not be spread during or just before precipitation to prevent surface runoff of contaminated water. Septage can also be spread using irrigation type nozzles connected to a system of distribution pipes and high pressure pump.

Although this method has very low operation and maintenance costs, it also has certain health and environmental hazards due to the potential for direct human contact, odor and vector problems and contamination of surface and groundwaters. Because of these concerns it is not allowed or advised to be in Butte County.

° Subsurface Application - Incorporating septage into the soil both reduces the likelihood of pathogen contamination to humans and offers better odor and vector control; however, it does not decrease the possibility of water contamination. Costs are greater than for surface spreading because storage basins and septage injection equipment are necessary.

Three subsurface application techniques are most frequently used:

- ° Application using a farm tractor and tank trailer with attached septage injection equipment;
- ° Application using a single tank truck with subsurface injection equipment;
- ° Application using tractor-mounted injection equipment coupled to a central holding facility through a flexible connection which allows continuous septage pumping from the holding tank to the injection equipment.

° Trenching - In this disposal method, 2 to 3 feet wide trenches are excavated to a depth of 3 to 6 feet. Septage is then applied in 6 to 8-inch depth layers to minimize drying time. When a trench is filled with septage, 2 feet of soil is then placed as a final covering and a new trench is opened. Disposing of septage in trenches has similar advantages and drawbacks than subsurface application.

° Landfilling - Class II waste management units are permitted to accept septage for final disposal. It is recommended to apply a 6-inch soil cover daily to each landfill area that was dosed with septage. A 2-foot final cover should be placed within a week after placing the final lift of garbage-septage mixture.

° Lagoons - Lagoons are also widely used to handle septage; however, they are seldom the means of final disposal. Septage lagoons are normally earthen cells with the bottom left unsealed to facilitate leaching. A minimum of 2 cells is recommended, 3 to 5 feet deep. Lagoon design must include provisions to dispose of the liquid supernatant as well as of the solids. Partially dried septage is usually disposed by burial, although composting has been suggested as an attractive alternative. Undesirable features of septage lagoons include odor generation and potential groundwater contamination.

A summary of methods for the disposal of septage on land prepared by the U.S. EPA is given on Table VII-3.

° Combined Septage - Wastewater Treatment

Trucking of septage to a nearby wastewater treatment plant for treatment and disposal is also a common septage handling method. The nearest facility to dispose of septage from the Town of Paradise is located at Chico, a distance of approximately ten miles. Disposal at the Chico Sewage Treatment Plant is not considered feasible because of the distance and the large volume of septage originated in the Paradise area. The addition of large volumes of high strength waste stream such as septage to a conventional wastewater treatment facility could seriously impair the operation of the biological treatment process. In some cases, uncontrolled septage addition has been the cause of complete process failure. For this reason, it is not unusual for wastewater treatment plant officials to refuse to accept septic tank wastes at their treatment facilities.

Septage can be either added to the liquid treatment train, i.e., at the head end of the plant, or directly to the solids handling units. Table VII-4 presents a comparison of these two practices.

° Separate Septage Treatment

In some areas of high septic tank density, facilities have been built exclusive to handle septage as is currently done at Chico, Oroville and Gridley. Table VII-5, taken from an U.S. EPA publication, lists the different treatment methods that have been used to treat septage at a centralized plant. Of the methods listed, lagooning is the simplest and most economical and it is therefore the one mostly used.

One treatment alternative not listed on Table VII-5, but one that could be cost effectively applied to the Paradise Market Area is the combined treatment of septage and other biodegradable waste products produced in areas in Butte County near Paradise.

Anaerobic digestion has been successfully used to produce biogas and generate electricity and other valuable byproducts from animal, particularly cattle, manures. Anaerobic sludge digestion

TABLE VII-3  
-Land disposal characteristics\*

Land disposal method	Acres required @ 10,000 gal/d, 250 d/yr	Characteristics	Advantages	Disadvantages
Surfaces: Application Spray irrigation.....	370, plus storage and buffer zone	Large orifices for nozzle; irrigation lines to be drained after irrigation season	Can be used on steep or rough land	High power requirements; odor problems; possible pathogen dispersal Storage lagoon needed for pathogen destruction and when ground is wet or frozen
Ridge and furrow .....	400, plus storage	Land preparation	Lower power requirements than spray irrigation; can be used in furrows, on crops not grown for human consumption	Limited to 1.5 percent slopes; storage lagoon; some odor
Hauler truck spreading..	400, plus storage	Larger volume trucks require floatable tires; 500- to 2000-gallon trucks ok; 800- to 3000-gallon capacity	Same truck can be used for transport and disposal	Some odor immediately after spreading; storage lagoon; limited to 8 percent slopes
Farm tractor with tank wagon spreading .....	400, plus storage	Requires additional equipment	Frees hauler truck during high usage periods	Some odor immediately after dispersal; storage lagoon; limited to 8 percent slopes
Subsurface application: Tank truck with plow- furrow-cover (PFC) ..	420	Single plow mounted on truck; not usable on wet or frozen ground	Minimal odor; storage lagoon optional for pathogen control	Limited to 8 percent slopes; longer time needed for disposal operation than for surface disposal

TABLE VII-3 (Cont'd)  
-Land disposal characteristics-Continued

Land disposal method	Acres required @ 10,000 gal/d, 250 d/yr	Characteristics	Advantages	Disadvantages
Farm tractor with PFC..	420	Septage discharge into furrow behind single plow; septage spread in narrow swath and immediately plowed; not usable on wet or frozen ground	Minimal odor; storage lagoon optional for pathogen control	Limited to 8 percent slopes; more time needed for application than in surface disposal
Sub-sod injection (SSI) ..	420	Septage placed in opening created by tillage tool; not usable in wet, frozen, or hard ground	Injector can be mounted on rear of some trucks; minimal odor; storage lagoon optional for pathogen control	Limit land to 8 percent; more time needed for application than in surface disposal; keeps vehicles off area for 1 to 2 weeks after injection
Burial: Trench .....	15	New trenches opened when old ones filled; long-term land commitment after operations end	Simplest operation; no slope limits; no climatological limits	Odor problems; high groundwater restrictions; vector problem
Lagoon .....	30	Sludge bucketed out to landfill from bottom of lagoon; settled water usually flows to percolation/infiltration beds	No slope limits; no climatological limits	Odor problems; high groundwater restrictions; vector problem
Sanitary landfill .....	195, working surface	Septage mixed with garbage at controlled rates; possible leachate and collection requirements	No topographic limits; simple operation	Odor problems; rodent and vector problems; limited to areas with less than 35 inches yearly rainfall or have leachate collection or be isolated from groundwater

TABLE VII-4

## SEPTAGE TREATMENT AT WASTEWATER TREATMENT PLANTS

<u>Process</u>	<u>Description</u>	<u>Design Considerations</u>	<u>Advantages</u>	<u>Disadvantages</u>
Liquid Stream Addition (3)(6)(11)(12)	Septage placed in storage tank at plant Pretreatment (screening, grit removal) Controlled bleed into headworks to prevent shock overload	Septage volume/characteristics Plant capacity (aeration and solids handling) Receiving station - Truck transfer - Storage - Pretreatment (optional) - Controlled discharge to plant Sludge production O&M (power, labor, chemicals)	Easily implemented Low capital cost Public acceptance good Particularly desirable at plants with primary clarification	Additional sludge generation May organically overload plant Increased O&M Final disposal site and sludge equipment expansion may be needed
Sludge Stream Addition (6)(11)(12)	Septage placed in storage tank Fed directly into sludge stream with or without separate conditioning/handling	Septage volume/characteristics Septage receiving/holding Organic and solids loading on each sludge handling unit Pumping and storage capacity Additional mixing and feeding equipment Increase in chemical usage	Avoids overloading secondary and tertiary systems Avoids possibility of final effluent degradation	Additional sludge generation Final disposal site and sludge equipment expansion may be needed



TABLE VII-5

Process	Description	Design Considerations	Advantages	Disadvantages
Lagooning (11)(13)(14)	Usually anaerobic or facultative Inlet on bottom for odor control Liquid disposal by percolation and evaporation in lagoon or by separate infiltration bed pH adjustment to pH 6-8 may be necessary for odor control	Septage volume/characteristics Site location - Distance to dwellings, etc. - Depth to groundwater or bedrock - Distance to surface water Depth of liquid, surface area Climate Aquifer characteristics Monitoring wells Solids removal and disposal	Low cost Simple operation	Odor problems if pH not maintained Cannot use in areas with high water table Possible vector problem Soil clogging may stop percolation
Lime Stabilization (11)(14)(15)	Collection, mixing, and reaction with lime to pH 12 (hold 1 hour) Dewatering optional Odors eliminated, pathogens greatly reduced	Septage volume/characteristics Septage receiving/holding Mixing (air or mechanical) Lime handling and feeding Final disposal	Odor eliminated Good pathogen reduction Low land requirement Enhanced solids dewatering	No reduction in organic matter Lime increases quantity for final disposal High cost for labor and lime Unknown effects of long-term storage
Chlorine Oxidation (11)(19)(15)	Chlorine and septage mixed in pressurized reaction chamber pH 1.2 - 2.5 Chlorine dosage 700-3,000 mg/l	Septage volume/characteristics Equipment sizing Septage receiving/holding Dewatering facilities Final solids disposal Chlorine storage/safety	Stable, odor-free sludge produced High pathogen destruction Enhanced solids dewatering Low land requirement	High operating costs dependent on chlorine cost Neutralization may be required Question of harmful chlorinated organics Underdrainage liquor requires further treatment
Aerobic digestion (11)(11)(19)(14)	Similar to aerobic digestion of sewage sludge Often accomplished at existing wastewater treatment plant	Septage volume/characteristics Septage receiving/holding Organic loading Solids retention time (20-30 days) Climate (temperature) Mixing and DO level Final disposal	SS reduction BOD reduction Reduction of odor and pathogens May enhance solids dewatering Low land requirement	Biological operation not simple Subject to organic overloading Requires monitoring and lab analysis Can have foaming problems

TABLE VII-5 (Cont'd)

<u>Process</u>	<u>Description</u>	<u>Design Considerations</u>	<u>Advantages</u>	<u>Disadvantages</u>
Composting (11)	May be natural draft or forced air Septage mixed with bulking material High temperature/pathogen destruction Storage/distribution	Septage volume/characteristics Septage receiving/holding Bulking agent availability Dewatering Materials handling capability	Provides pathogen destruction and stabilization Produces soil amendment Operationally simple Low energy requirements	High bulking agent requirement if not dewatered Product market must be established May be labor-intensive
Anaerobic Digestion (9)(11)	Often accomplished in combination with sewage sludge Demonstrated on pilot-scale Identical to sludge digestion technology	Septage volume/characteristics Septage receiving/holding Grit removal Solids retention time Maintenance of digester temperature No toxic materials input Final disposal	Methane recovery/ utilization possible Stabilized product Can handle variety of organic wastes	Biological process requires close operator control Subject to upset by toxics Requires continuous supply of organic materials
Chemical Treatment (11)(11)	Chemical coagulation - Mixing and settling - Supernatant collection, treatment/disposal - Sludge holding/dewatering/disposal Acidification (H <sub>2</sub> SO <sub>4</sub> ) - Mixing and settling - Additional coagulation possible with lime	Septage volume/characteristics Septage receiving/holding Chemical feed equipment and dose levels Mixing, reaction time, settling time Final disposal	Low land requirement	High labor requirement High costs
Dewatering (11)(11)	Drying beds Pressure filtration Vacuum filtration Drying lagoons Centrifugation	Septage volume/characteristics Septage receiving/holding SS concentrations Filterability Pretreatment-chemical conditioning Final disposal	Reduced hauling costs Reduces area required for disposal	High cost for some alternatives High operation and maintenance requirements Mechanical dewatering devices require an enclosure

is widely practiced in municipal wastewater treatment plants to stabilize the solids generated during the liquid treatment phase. Biogas (commonly called "sludge gas" in municipal waste treatment) is used as fuel for boilers and internal combustion engines.

Since septage can also be considered as a partially digested sludge from an unheated digester, it is amenable to anaerobic digestion, alone or in combination with other waste products. Construction of a large biomass conversion to energy facility, using septage, manure and other concentrated agricultural wastes generated in the vicinity of Paradise, could be another alternative for separate septage treatment. However, a preliminary assessment of the availability of these waste products in the vicinity of Paradise, coupled to collection and transportation problems, did not support further consideration of this alternative.

#### F. DEVELOPMENT OF SEPTAGE HANDLING ALTERNATIVES

Based on the conclusions arrived at regarding wastewater collection, treatment and disposal for the Town of Paradise; on current lagooning practices at the Neal Road facility, the current planning by Butte County to handle all septage originating on Paradise Ridge in a regional facility; and on a preliminary screening of the alternative methods of septage handling presented earlier, separate treatment and disposal at the McKnight Ranch site has been selected for detailed evaluation. The following alternatives have been identified as the most viable options for Paradise at the present time. Because most of the treatment units considered in these alternatives are not readily expandable, the economic comparison will be based on the number of septic tanks projected in the Paradise Market Area under ultimate development conditions.

1. Lagooning
2. Aerobic Digestion
3. Anaerobic Digestion

The "No Project" alternative is the current disposal method at the Neal Road landfill. Current charges ("tipping" fee) to septic tank haulers are 1/2 cent per gallon of septage. It must be pointed out that lagooning at the Neal Road facility is an interim solution due to expire within two years. Unless an agreement is reached between Butte County and the landfill operator, a new site would have to be found for county-wide disposal of septage.

Another consideration is that the Neal Road septage lagoons do not meet the requirements of Subchapter 15 covering the discharge of waste to land. Butte County has been asked to file an application of the Neal Road landfill. The County may upgrade these lagoons to meet Subchapter 15 regulations or stop accepting septage at Neal Road.

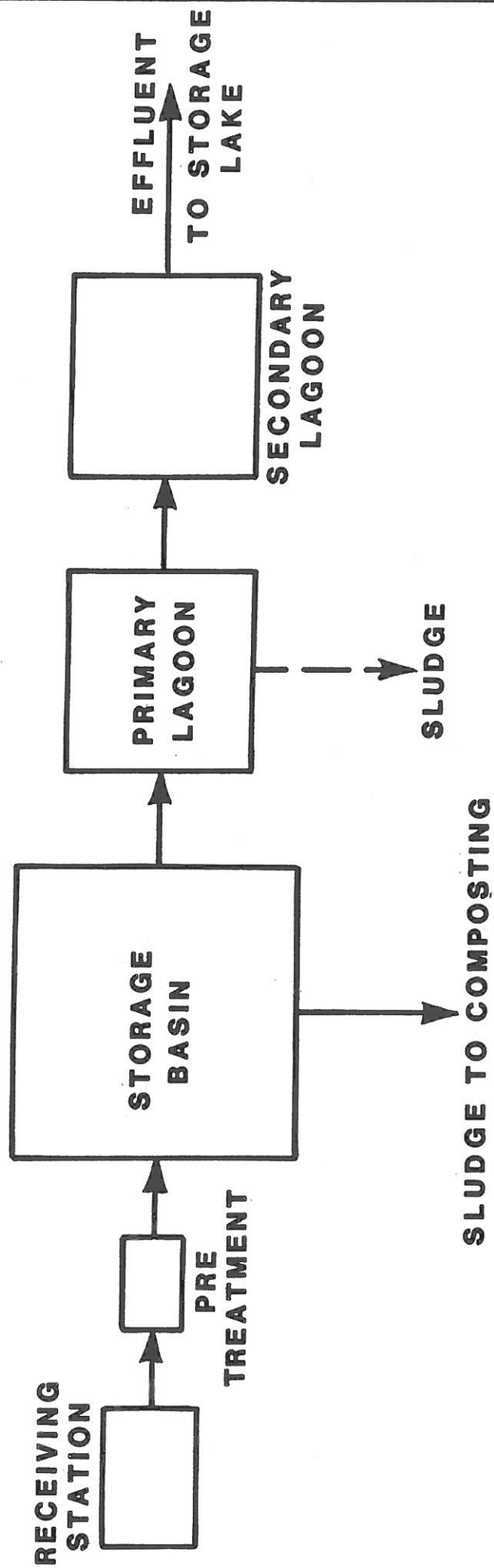
Observations of the existing lagoons at the Neal Road facility indicate that septage solids concentration is low (i.e., less than 1%). This was confirmed by the owner of a septic tank company. Consequently, septage thickening would be required before conventional anaerobic digestion. To avoid this, anaerobic filters (also called "fixed film reactors") have been selected for evaluation. Another advantage of the anaerobic filters is that they are ideally suited to handle high strength liquid wastes such as diluted septage. Besides anaerobic filters, there are other emerging technologies which could be applicable in Paradise. The costs of these technologies are considered similar to that selected.

Schematic diagrams of the three proposed alternatives are shown in Figures VII-1, VII-2 and VII-3. Design parameters are summarized in Table VII-6. All three alternatives share the following features:

1. A storage/equalization basin will be provided ahead of the process units. Given the isolated location of McKnight Ranch which minimizes potential odor problems, the basin would be designed as an anaerobic lagoon and would therefore reduce the organic loading to the septage treatment units.
2. Effluent from the treatment units will be pumped to the reservoir where treated wastewater is stored during periods following rains when effluent cannot be sprayed on land.
3. Sludge produced during septage treatment will be periodically removed and composted on site. Composted sludge would either be sold as a soil amendment or spread in adjacent lands owned by the Town.

° Septage Volume

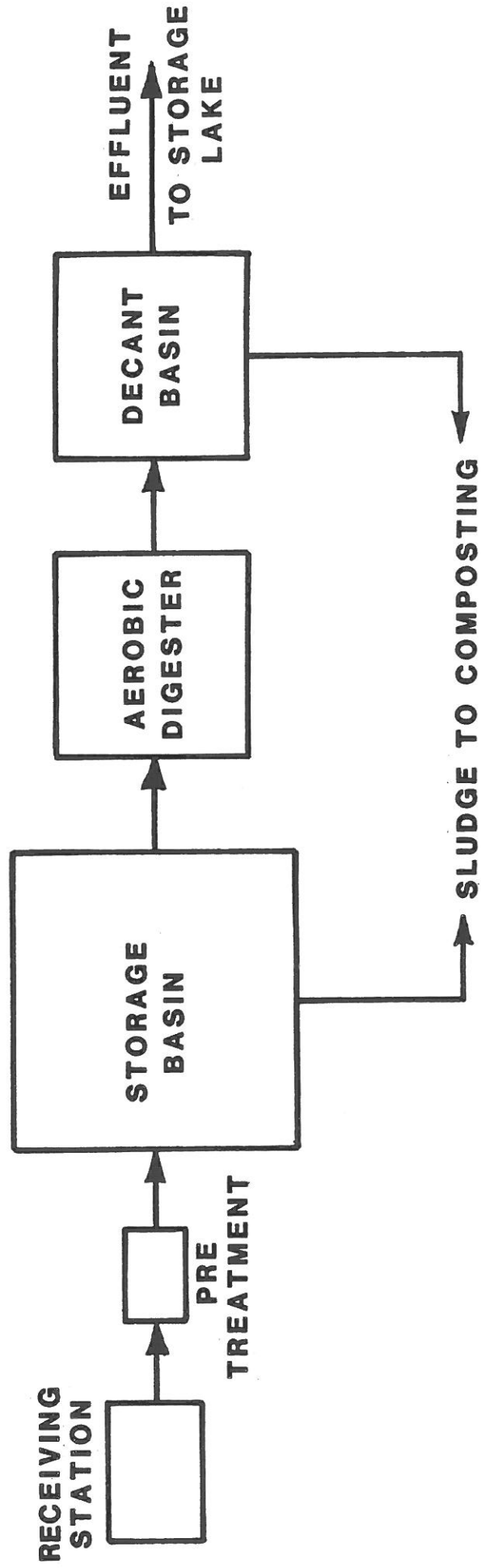
Calculations of septage volume used in the comparison of alternatives are summarized on Table VII-7. Total septage per year under ultimate conditions is approximately thirteen million gallons.



## SEPTAGE HANDLING ALTERNATIVES-LAGOONING

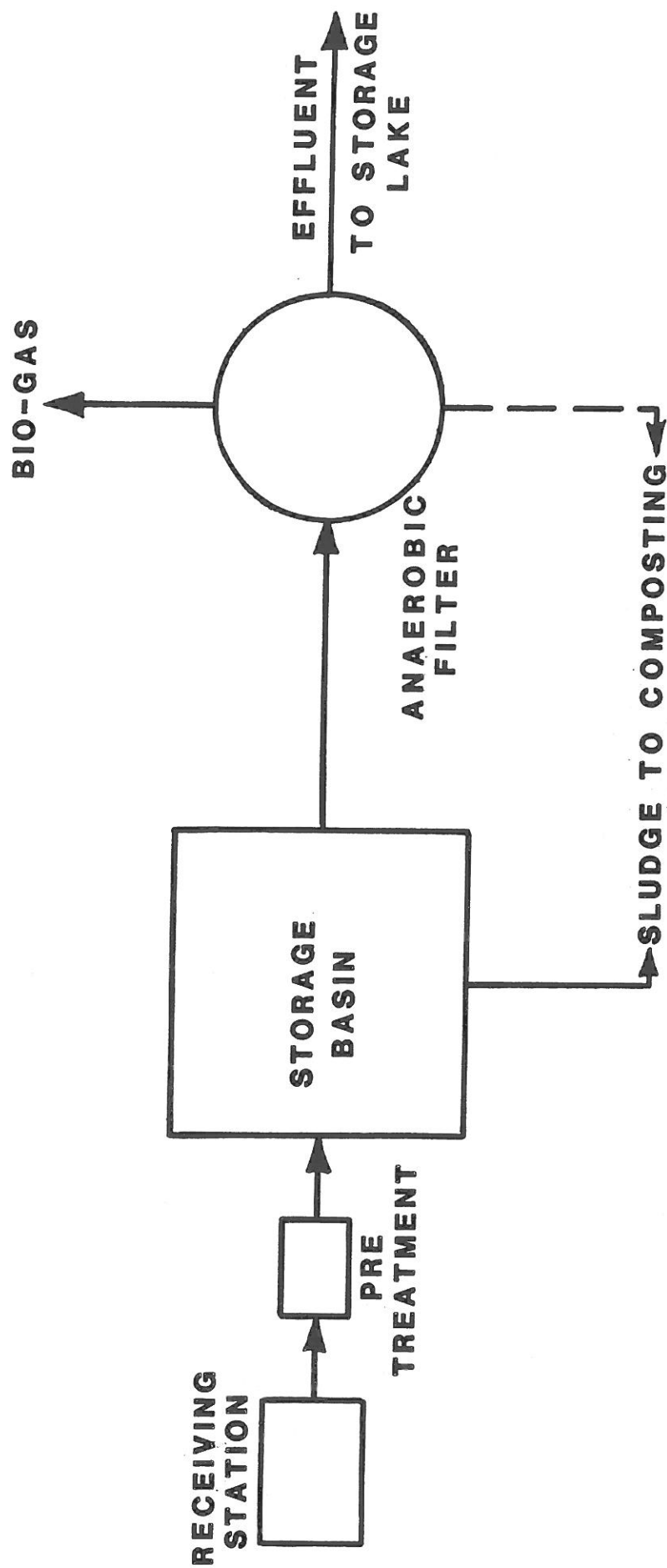
**FIGURE VII-1**





## SEPTAGE HANDLING ALTERNATIVES - AEROBIC DIGESTION

**FIGURE VII-2**



## **SEPTAGE HANDLING ALTERNATIVES-ANAEROBIC DIGESTION**

**FIGURE VII-3**

**PARADISE WASTEWATER MANAGEMENT PLAN**

**R.A. RYDER & ASSOCIATES**  
**CONSULTING ENGINEERS**

**MAY 1985**

TABLE VII-6

DESIGN PARAMETERS - SEPTAGE HANDLING ALTERNATIVESDesign Flow, gallons/day

Average	1,300
Peak (1)	2,200

Organic Loadings, mg/l

BOD <sub>5</sub>	7,000
TSS	15,000
VSS	10,000

Storage Basin

Detention Time, days	20
Loading, lbs BOD <sub>5</sub> /acre/day	500
Assumed BOD <sub>5</sub> Reduction, %	50

Lagoons

Overall Detention Time, days	20
Loading, lbs BOD <sub>5</sub> /acre/day	402
Assumed BOD Reduction, %	85

Aerobic Digester

Detention Time, days	20
Loading, lbs VSS/AF/day	0.10
Power Requirements (3), h/z/1000 cu.ft.	1.0
Assumed VSS Reduction, %	40

Anaerobic Filter

Detention Time, hrs.	18
Hydraulic Loading, gpm/sq ft	0.10
Assumed BOD <sub>5</sub> Reduction, %	50

Notes:

- (1) Based on peak month from Table VII-2
- (2) Applied to primary lagoon
- (3) For mechanical mixing

CAPITAL AND ANNUAL COSTS OF SEPTAGE HANDLING ALTERNATIVES

<u>Cost Factor</u>	<u>Lagooning</u>	<u>Aerobic Digestion</u>	<u>Anaerobic Digestion(4)</u>	<u>No Project(5)</u>
Capital Cost(1)	\$531,000	\$425,000	\$562,500	-
Capital Recovery Cost(2)	48,900	39,100	49,600	-
O&M Cost(3)	7,000	12,000	8,000	-
Annual Cost	\$ 55,900	\$ 51,100	\$ 57,600	\$130,000

Notes:

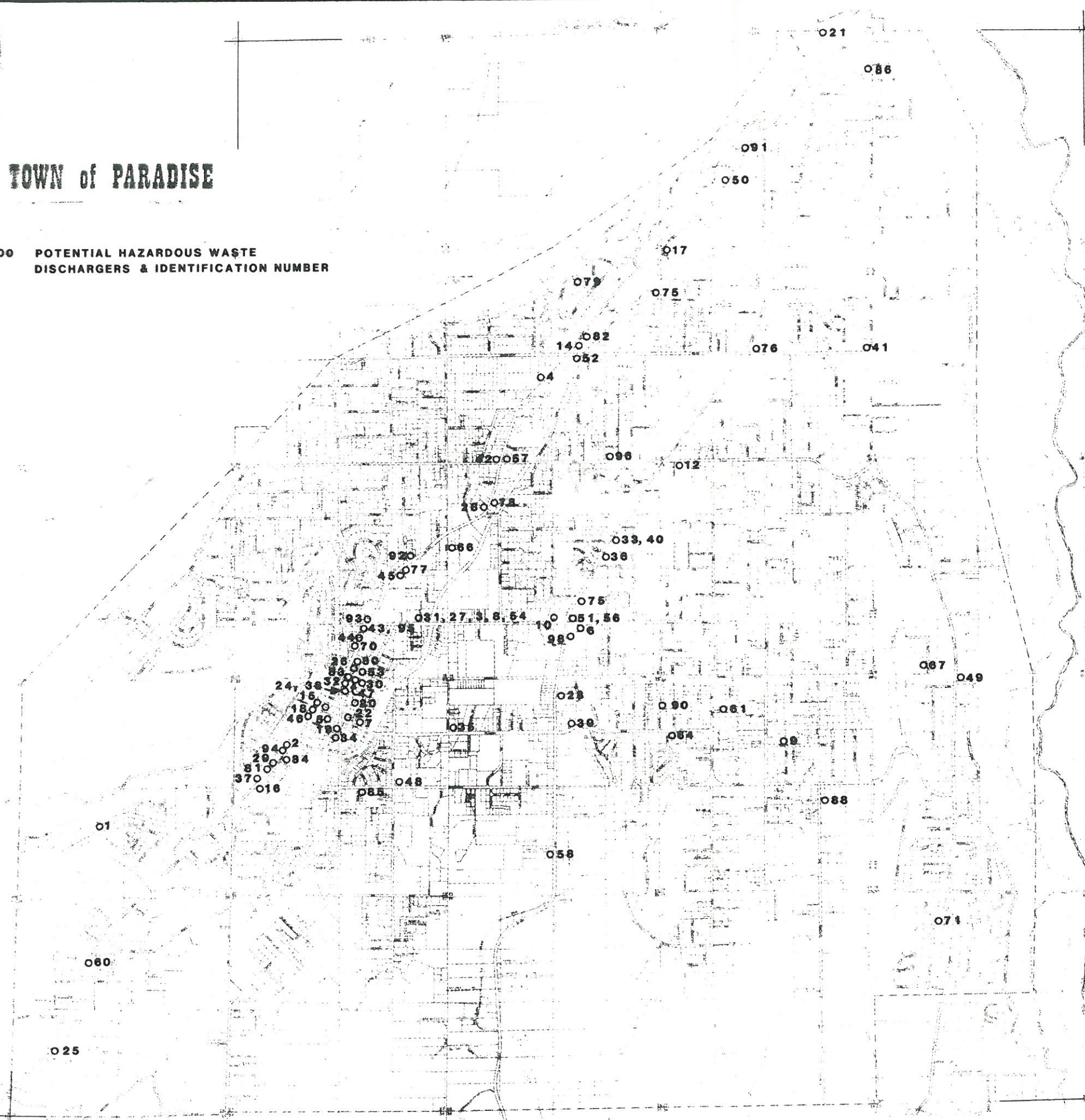
- (1) Includes construction costs plus 25% allowance for engineering, administration and contingencies (May 1985 basis).
- (2) Capital recovery at 8-3/8% interest and 20 year period.
- (3) Operation and maintenance (May 1985 basis).
- (4) Does not include allowance for the value of biogas produced.
- (5) "No Project" alternative is the continuation of disposal at the Neal Road land fill assuming an increase to one cent per gallon tipping fees to pay for additional capital cost of new lagoons to meet Subchapter 15 regulations.





# TOWN of PARADISE

○100 POTENTIAL HAZARDOUS WASTE  
DISCHARGERS & IDENTIFICATION NUMBER



## PARADISE WASTEWATER MANAGEMENT PLAN

MAY 1985

### COMMERCIAL POTENTIAL HAZARDOUS WASTE DISCHARGERS

SCALE 1"=2600'

FIGURE VIII-1

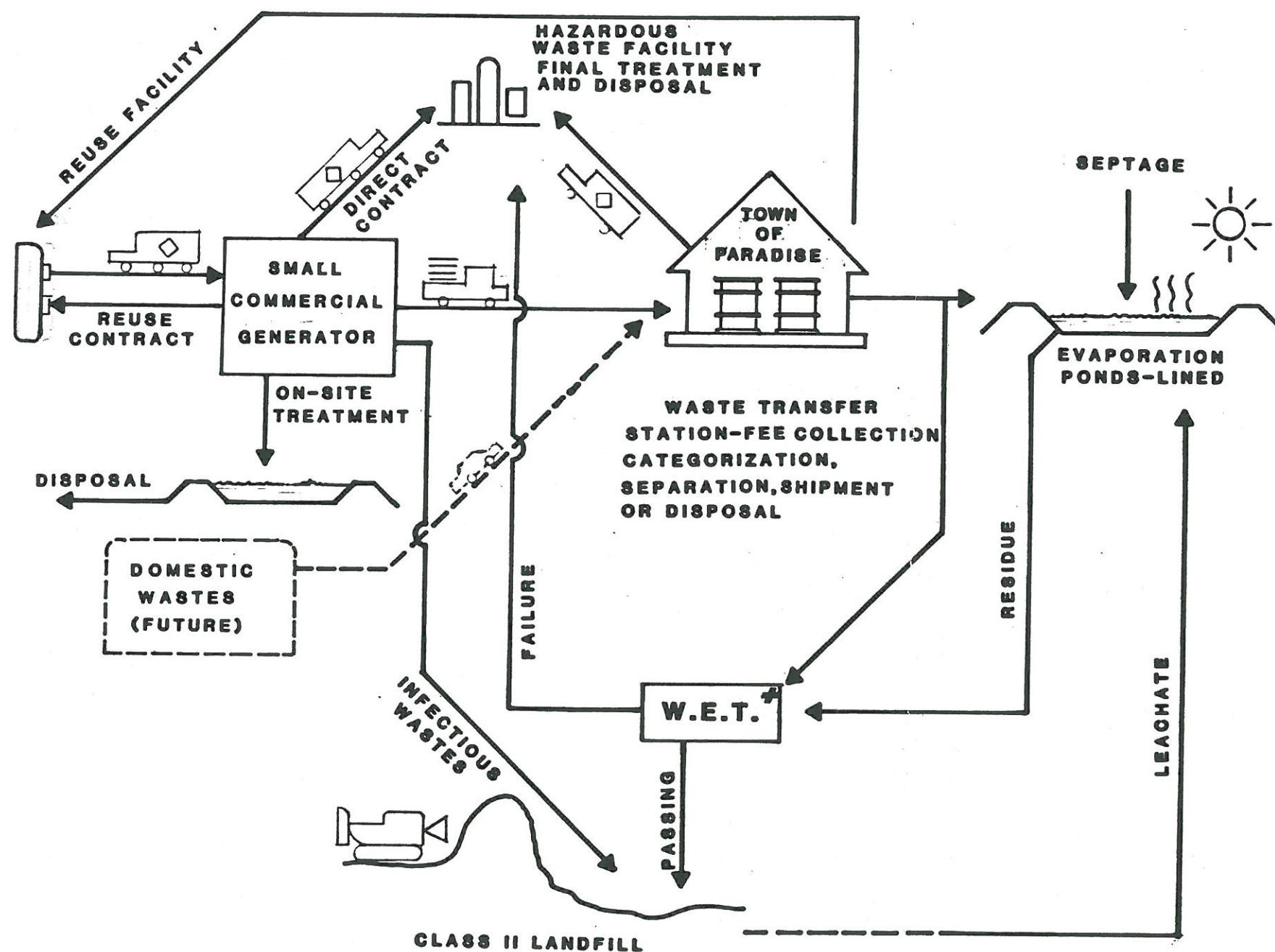
**R.A. RYDER & ASSOCIATES**  
CONSULTING ENGINEERS  
LARKSPUR, CALIFORNIA



# PARADISE WASTEWATER MANAGEMENT PLAN

MAY 1985

## SCHEMATIC SHOWING PROPOSED HAZARDOUS WASTE MANAGEMENT PLAN



\* WASTE EXTRACTION TEST PER 22 CAL. ADM. CODE 4-SEC. 66700

FIGURE VIII-2

**R.A. RYDER & ASSOCIATES**  
CONSULTING ENGINEERS  
LARKSPUR, CALIFORNIA



# **CHAPTER VIII**

## **HAZARDOUS WASTE MANAGEMENT PLAN**





## VIII. HAZARDOUS WASTE MANAGEMENT PLAN FOR COMMERCIAL ESTABLISHMENTS

### A. Introduction

On May 15, 1984, the Water Resources Control Board of the State of California issued its approval of the Phase I, Step 1 Wastewater Management Study for the Town of Paradise, and authorized the Town to proceed with Phase II, the development of a comprehensive waste management plan for the Town. Several tasks were identified as eligible in the approval, including the development of regulations for the containment and disposal of commercially generated hazardous wastes.

The inclusion of the hazardous waste management task was due to the combination of Federal emphasis on hazardous waste management and recent field observations. In recent years, hazardous waste management and disposal has come to the forefront of Federal environmental planning. Secondly, the Phase I supplementary report to the Wastewater Management Study prepared by Dr. George Tchobanoglous noted the apparent direct discharge of hazardous wastes from service station clean up operations to storm drains along with a petroleum-like odor in stream culverts downstream from the storm drain discharge.

With the passage of the Resource Conservation and Recovery Act (RCRA) and the Toxic Substance Control Act by Congress in 1976, a process to control the storage, transport, treatment and disposal of hazardous wastes generated by industry was mandated.

The United States Environmental Protection Agency (EPA) then promulgated Title 40 of the Code of Federal Regulation (40 CFR) to implement the directive of RCRA. 40 CFR established criteria for identifying hazardous waste and also specified lists of wastes classified as hazardous wastes. Additionally, 40 CFR specified conditions under which states might be approved for management of hazardous waste programs on a state, rather than Federal, level. California has qualified under 40 CFR and now operates its hazardous waste program under Title 22, Division 4 of the California Administrative Code. The California program incorporates definitions of hazardous wastes similar to those adopted by 40 CFR, but waste listings have been expanded to contain wastes not listed by EPA.

Many of the commercial generators of hazardous wastes in the Town of Paradise do not fall under the jurisdiction of 40 CFR primarily due to the small quantities of waste generation. The Town has therefore been directed to develop regulations which would apply to these so-called small scale generators.

### B. Methodology

To develop effectively regulations covering containment and disposal of commercial hazardous waste in the Paradise area, the





extent, type and quantity of material disposed must first be determined, as well as the method of discharge. In this study there was an initial preliminary office determination of potential dischargers followed by a field survey of identified establishments. The establishments actually surveyed were chosen so as to provide a representative cross-section of waste management practices by the area's commercial concerns.

Following the field survey the collected data was analyzed and categorized according to waste stream, quantity and method of disposal. From this data, a determination of the amount of hazardous waste generated was then utilized to draft regulations which are specific to the Town of Paradise. The proposed regulations are included as Appendix I.

The data resulting from the survey, when summarized, produced four general types of commercial hazardous waste discharge are currently practiced:

- 1) direct untreated discharge to soil and water conveyances;
- 2) waste containerization and landfill;
- 3) primary treatment and disposal to soil via soil adsorption; and
- 4) contract with recovery/recycling entities for hauling offsite.

Volumes of hazardous wastes discharged vary from as little as one pint/year to as much as 25 gallons/month. A summary of the potential dischargers, groupings, wastes disposed of and methods of disposal is presented in Table VIII-1. Discharger locations are shown in Figure VIII-1 and the corresponding discharger list is included as Appendix VIII-2.

#### C. Management Plan

The relatively small amounts of hazardous wastes generated by the average Paradise commercial enterprise, when coupled with the distance to the nearest Class II-1 disposal site accepting hazardous wastes (80 miles to Roseville), creates a condition which could impose economic hardship should the Town of Paradise impose a zero discharge limitation without providing an infrastructure for economical storage and transport to final disposal sites.

The management plan proposed here (Fig. VIII-II) is intended to allow the implementation of the proposed regulations without imposing severe financial burdens upon the regulated community, a condition which can lead to "midnight dumping" practices. The key feature of the plan is the provision of a local hazardous waste storage and transfer station by the Town of Paradise in cooperation and desirably in conjunction with Butte County. The station

would receive hazardous wastes from commercial dischargers, classify and stockpile them until economically transportable quantities are achieved. The station could then contract for transport or provide transport of wastes to the nearest facility capable of accepting the waste for disposal. An additional advantage of the establishment of the station would be the general public would then have an alternative to the toilet or garbage can for the disposal of domestic hazardous wastes. Although it may be difficult to obtain a permit for this transport facility, it would appear most desirable to practically facilitate environmentally acceptable hazardous wastes disposal from small generators.

Under the proposed plan, the hazardous waste generator is restricted from discharge of untreated wastes listed by the 40 CFR or 22 California Administrative Code 4 along with other selected wastes. The generator will then be faced with several options as vehicles for compliance. The generator may choose to arrange for transport of generated wastes to applicable off-site disposal, re-use or treatment facilities. In the case of treatable wastes, the discharger might choose to treat the waste on-site and dispose of the treated, non-hazardous waste by acceptable means, said means being determined on a case-by-case basis under a variance proceeding. As a final option, due to the presence of the transfer station, the generator would transport his wastes to the station for eventual disposal or re-use under the direction of the Town of Paradise.

The wastes of dischargers who choose the latter method will be collected at the waste transfer station located at the landfill site. The wastes will then be categorized according to volume, constituents, compatibility and re-use potential. Wastes accumulated at the transfer station will be disposed of according to the results of the categorization performed at the transfer station.

Dilute wastes such as spent caustics, photographic fluids, oily washwaters and radiator flush waters which do not contain sufficient concentrations of hazardous wastes to be considered restricted hazardous wastes by 22 California Administrative Code 4 may be diluted and evaporated in the septage lagoons along with the septage. The resultant dried septage would then be subjected to the waste Extraction Test (WET) prior to landfill of the septage cake. Samples exhibiting Soluble Threshold Toxic Limits for any substance in excess of those specified in 22 California Administrative Code 4 would result in transport of the subject septage batch to a suitable hazardous waste disposal facility for regulated disposal. Alternatively, small separate lagoons conforming to the permit requirements of 22 California Administrative Code 4 would be constructed at the transfer station location to concentrate dilute wastes for shipment to a suitable hazardous waste disposal facility.

Wastes delivered to the transfer station which exhibit sufficient quality and quantity for eventual re-use such as used solvents and used crankcase oils will be stored on-site pending

transfer to a licensed recycler which will be retained under contract with the responsible operating party. The determination of quantities of recyclable wastes to be retained for transport to re-use facilities will be made by the station operator based upon a consideration of material volume, recycling compatibility with materials of different origin, availability of recycling entity and storage requirements.

All remaining hazardous wastes not deemed acceptable for surface impoundment and concentration or recycling re-use will be treated as disposable hazardous waste subject to all requirements of 40 CFR and 22 California Administrative Code 4. Disposable hazardous wastes will be stored at the transfer station for eventual transport to a suitable hazardous waste disposal facility, upon accumulation of economically transportable quantities. Due to the small quantities of certain wastes, such as paint sludges, waste chemicals, etc., it will be necessary for the operational entity to determine the relative compatibilities of wastes to facility combination of small quantities into containers which may be economically stored and transported. Determination of compatibility will be based both upon the requirements of 40 CFR 265.17 and eventual waste disposal/treatment method.

Infectious wastes originating from any health care facility as defined by 22 California Administrative Code 4 Article 13 will be processed through the transfer station for disposal in the County's Neil Road landfill or, in the future, the proposed alternative of a Town of Paradise septage handling facility on the McKnight Ranch according to the requirements of said Article. Certain infectious wastes prohibited from landfill by Article 13 would be excluded. containerization of wastes for disposal will be the responsibility of the generator of the waste subject only to acceptance review of the transfer station operator.

The proposed program places the responsibility for management of hazardous wastes following collection upon the Town of Paradise or Butte County. The Town or County would have two options for management operation; administration by the contract entity operating the landfill site, or administration of the program by personnel of the new On-Site Wastewater System Management Zone, (OSWMZ).

Additionally, monitoring for compliance to the regulations would become the responsibility of the OWSMZ. The personnel of the OWSMZ would, during the course of the routine inspection program, inspect a discharger's facilities for waste handling methods, illegal connections, containment, recordkeeping, etc. The personnel might sample septic tank effluents or sludges of dischargers to determine the presence of illegally disposed hazardous wastes.

Although the majority of hazardous waste dischargers will be readily identifiable, a requirement for completion of a hazardous waste questionnaire by a business license applicant will allow the

OSWMZ the opportunity to review all commercial entities' potential for discharge and the applicability of the regulations to the commercial enterprise.

The establishment of the waste transfer station by the OSWMZ or County will require the application for a Hazardous Waste Facility Permit from the California Department of Health Services, or the granting of a variance from the permit requirements of Title 22 California Administrative Code Division 4 to classify the facility as a generator which does not store wastes for longer than 90 days rather than a hazardous waste facility. The station will also require application for an EPA identification number as a generator or as a hazardous waste facility. Finally, it is anticipated a variance will be required to allow landfill disposal of evaporation pond residues from caustic solutions, dilute oily waste waters and similar materials.

The implementation of the proposed program potentially will result in substantially reduced commercial hazardous waste flows. However, to insure its success a public awareness campaign would provide invaluable. Certain establishments such as service stations will require capital expenditures and/or substantial modification of existing practice to achieve compliance with the proposed regulations. Measures such as a public information program which details mitigation waste minimization methods, absorbent use for spills, absorbent mat placement in service bays, etc., would serve to ease the transition to full enactment of the regulations and substantially diminish discharge of these wastes onto the ground where they may contaminate either surface or underground water.



TABLE VIII-1

Potential Hazardous Waste Dischargers In Town of Paradise(1)

<u>Commercial Classification</u>	<u>Number In Classification Grouping</u>	<u>Waste</u>	<u>Disposal Method (Current)</u>
Automobile Painting	7-10	Paint sludge	Containerize to landfill. Direct discharge to soil.
Automobile Repair/Service Station	50+	Spent caustic, oily washwater, waste oil, oily rags, solvents	Landfill with septage, direct discharge of oily washwater, oil recycling, rag service, landfill, direct discharge of spent oils and solvents.
Construction Contractors	30+	Waste crankcase oil, solvents, paving & roofing products	Direct discharge to soil, oil recycle, leakage.
Cleaners	4	Spent solvent filter cartridges	Landfilled
Dental Labs	7	Minute quantities of acids	Dilute discharge to soil, soil adsorption.
Hospital	1	Small quantities of reagents, 20-30 gallons/mo photo processing fluids	Discharge to soil adsorption.
Newspapers	1	26+ gal/mo printing press washdown, photographic fluids.	Washdown containerized & landfilled Fluids discharged to soil adsorption.

TABLE VIII-1 (Continued)

Potential Hazardous Waste Dischargers In Town of Paradise(1)

<u>Commercial Classification</u>	<u>Number In Classification Grouping</u>	<u>Waste</u>	<u>Disposal Method (Current)</u>
Painters	8	Paint/solvent sludge	Containerize to landfill.
Pest Control	7	Pesticide wastes, containers	Pesticides used up on job, containers triple rinsed, punctured and landfilled.
Woodworkers/Refinishers	2	Small scale solvent sludges	Containerize and landfill.
X-Ray & Photo Finishing	2	Photographic fluids	Soil adsorption system.

(1) Survey conducted - Spring 1985.

## REFERENCES

1. Anon, "Early Enactment Provisions RCRA Reauthorization"; Permits and State Programs Division, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, Feb. 1985
2. Anon, "Environmental Progress & Challenges: An EPA Perspective," United States Environmental Protection Agency, Washington 1984
3. Anon, "The Hazardous and Solid Waste Amendments of 1984," Ninety Eighth Congress of the United States of America, Washington 1984
4. Anon, "Hazardous Waste Regulations"; Title 40 of the Code of Federal Regulation, Parts 122 to 124 and Parts 260 to 265, inclusive
5. Mallow, A, "Hazardous Waste Regulations - An Interpretative Guide," Van Nostrand-Reinhold, New York 1981
6. Anon, "Listing of Hazardous Waste Treatment and Disposal Sites and Class I and II Landfills in California - Transmittal from California Department of Health Services, Sacramento 1985
7. Anon, "Minimum Standards for the Management of Hazardous and Extremely Hazardous Wastes," Chapter 30, Title 22, California Administrative Code, Section 14, Sacramento 1985
8. Anon, "The Resource Conservation and Recovery Act," Ninety Fourth Congress of the United States, Washington 1976
9. Anon, "Toxic Substances Control Act," Ninety Fourth Congress of the United States, Washington 1976



# **APPENDIX**





APPENDIX V-A  
SUGGESTED AMENDMENT OF ORDINANCE NO. 103  
TOWN OF PARADISE  
SEWAGE DISPOSAL ORDINANCE



ORDINANCE NO. 103  
TOWN OF PARADISE  
SEWAGE DISPOSAL ORDINANCE

DRAFT

Proposed Amendments\*  
March 15, 1985

THE TOWN COUNCIL OF THE TOWN OF PARADISE, STATE OF CALIFORNIA, DOES  
ORDAIN AS FOLLOWS:

Section 1. PURPOSES. The purposes of this ordinance are:

A. To facilitate an orderly development within the Town of Paradise.

B. To protect the ground and surface water quality within the Town of Paradise's hydrologic basins.

C. To implement the recommendations of the Montgomery Phase I, 201 Report concerning Surface Wastewater accepted by the Paradise Town Council in April, 1983.

Section 2. APPLICATION OF ORDINANCE; WAIVER OF PROVISIONS OF ORDINANCE. This ordinance shall apply to all real properties located within the Town of Paradise. The health officer shall waive the permit and inspection requirements contained in this ordinance when the provisions of this ordinance are superseded by any State law.

Section 3. DEFINITIONS. For the purposes of this ordinance, the following words and phrases shall have the meanings respectively ascribed to them by this Section:

A. Auxiliary System - A secondary sewage system designed to dispose of a portion of the sewage from a building.

B. Building - Single family residence, multi-family residence, place of business, or other structure where persons reside, congregate, or are employed and accessory buildings.

C. Development - Any change in the density or intensity of the land use, or any construction or alteration of an existing structure or land use.

D. Health Officer - Health officer shall mean the legally designated health authority of the Town of Paradise or his authorized representative.

E. Impervious Stratum - A layer or lense of fine grained soil, rock, cemented material, or similar soil structure in which the percolation rate exceeds one hundred twenty (120) min./inch or in which twelve (12) inches of water depth will not seep completely away in a twenty-four (24) hour period, shall be deemed to be impervious.

\*Amendments noted in prestige  
elite type characters  
(smaller type size)

F. Living Unit - A residential building or portion thereof providing complete, independent living facilities for one family, including permanent provisions for living, sleeping, eating, cooking and sanitation.

G. Sewage - Includes any and all waste substance, liquid or solid associated with human habitation, or which contains or may be contaminated with human or animal excreta, offal or any feculant matter.

H. Sewage Disposal System - Sewage disposal system shall include septic tank, drain field, seepage pit, chemical toilet and any other structure or system used for the treatment, discharge or disposal of sewage.

I. Curtain Drain - A curtain drain is a trench backfilled with drain rock and perforated used pipe for (1) intercepting a laterally moving perched water table, spring or other subsurface flow above a leachfield site or (2) to lower water table elevations in an area with seasonal groundwater levels less than 5 feet below a leachfield trench.

J. Bedroom or Sleeping Quarters - For purposes of calculating average daily sewage volumes, a bedroom or sleeping quarters are rooms that are or will be used for sleeping purposes more than 25 percent of the time.

K. Bottom Design - A "bottom design" leachfield trench shall include only the bottom gross area of the trench in calculating the required soil absorption area for a given installation.

L. Sidewall Design - A "sidewall design" leachfield trench shall include a reduction in the standard bottom design absorption area required based upon the depth of drain rock below the perforated pipe as described in a subsequent subsection.

M. On-Site Wastewater Disposal System - On-site wastewater disposal system means any of several works, facilities, devices, or other mechanisms used to collect, treat, reclaim, or dispose of wastewater without the use of community-wide sanitary sewers or sewage system. May be used interchangeably with septic systems or sewage disposal system in this ordinance. (California Health and Safety Code, Part 2, Chapter 3, Section 6950.)

N. Alternative Systems - Alternative sewage disposal systems (on-site systems) can be one of a number of designs incorporating non-standard features. Artificial leaching areas (mound systems), sand filters and seepage pits are examples of alternative systems. Alternative designs are also referred to as special designs herein (Section 73).

O. Assimilative Capacity - The assimilative capacity of any leachfield site proposed for an alternative system and/or to serve more than one dwelling unit will be determined by measurement of soil permeability at depth and slope of the land.

Section 4. SANITARY SEWAGE DISPOSAL SYSTEM REQUIRED. It shall be unlawful for any person to maintain, occupy or use any building not



provide with a sewage disposal system which disposes of sewage in a sanitary manner.

Section 5. UNLAWFUL DISPOSAL METHODS. It shall be unlawful for any person to construct, maintain or use any sewage disposal system which results in any of the following:

- A. Sewage overflowing any lands whatever.
- B. Sewage emptying, flowing, seeping or draining into any stream, spring, river, lake or other waters within the Town.
- C. Sewage being accessible to rodents, insects or humans.

It is provided, however, that when sewage is treated and disposed of in such manner that it does not constitute a hazard to the public health or does not create a nuisance, and that adequate requirements for such disposal are set by the Central Valley Regional Water Quality Control Board pursuant to Division 7, Department 4, Article 2 of the State Water Code, then such disposal shall be considered to be lawful.

#### Section 6. PERMITS - REQUIRED

A. No person shall begin or cause to have begun construction of any development or any sewage disposal system without review and approval by the health officer. All developments requiring a sewage disposal system, or an alteration, enlargement or repair of an existing system must submit plans showing the means of sewage disposal to the health officer and obtain a permit therefor from the health officer. Sewage disposal permits shall be obtained prior to the issuance of building permits.

B. Permit Valid for One Year. Permits issued pursuant to this ordinance shall be valid for one year and shall automatically become void one year from the date of issuance, unless renewed prior to the expiration date. Only two, one-year renewals shall be permitted. Permits for repair, alteration, replacement, abandonment or enlargement shall be valid for one year from the date of issuance and are not renewable.

C. Auxiliary Systems. No person shall construct an auxiliary sewage disposal system for a building presently served by a sewage disposal system without first submitting plans of the proposed means of sewage disposal to the health officer and obtaining a permit therefor from the health officer.

D. Repairs.

- (1) No person shall alter, repair, relocate, add to or replace any existing sewage disposal system without first securing a permit from the health officer.

- (2) With respect to the repair of existing sewage disposal systems, the health officer may allow lesser distances as contained in Section 22 (Table III) as he shall determine are necessary to avoid undue hardship, but that will accomplish the general purposes and intent of this ordinance.
- (3) No installation shall be permitted under this subsection in areas not owned or controlled by the property owner, unless the area is dedicated for sewage disposal purposes, in a document recorded in the Recorder's Office of the County of Butte.

E. Abandonment.

- (1) No person shall abandon a septic tank or cesspool or discontinue from further use without first obtaining a permit from the health officer.

F. A permit shall be required for the construction of a curtain drain even though not installed as part of an individual on-site wastewater system.

Section 7. APPLICATION FOR PERMIT. The following items shall be required in order to process a sewage disposal application:

A. The required scale plot plan shall include the following information:

- (1) Lot boundaries and dimensions.
- (2) Locations of proposed and existing buildings and sewage disposal facilities.
  - (a) Location of proposed leachfield and one hundred (100) percent replacement area for leachfield.
  - (b) Location and elevation of house sewer outlet and proposed location and elevation of septic tank and leachfield.
- (3) A floor plan of the building, the number of bedrooms and other potential sleeping quarters, and all proposed appurtenant structures.
- (4) Source of domestic water and location and treatment, if required. If a well is proposed as a domestic water source, well drilling permit application shall be made at the time a sewage disposal permit application is submitted.
- (5) Ditches, creeks, springs, other surface water on the premises and within 200 feet in any direction of the proposed sewage disposal area. Lakes or reservoirs within 200 feet of the proposed sewage disposal areas.

- (6) Location of known or proposed wells on property and within 100 feet of property lines.
- (7) Topography including contours and rock outcroppings, cliffs, etc.
- (8) Setbacks from property lines.
- (9) Driveways, patios, walkways, parking areas and other impervious surfaces.
- (10) Such other additional information as deemed necessary by the health officer to process the application.
- (11) Existing or proposed curtain drains (See Section 3, Definitions).
- (12) Location of any tree greater than 6" in diameter which may affect the location of septic tank or leachfield.

B. Additional information and/or testing may also be required at the discretion of the health officer. Such information or testing may include but not be limited to the following:

- (1) Water table depth determinations. The time of year that these tests are performed shall be determined by the health officer based upon drainage characteristics, topography, soil types or strata, precipitation in the area, snow melt, and/or other pertinent factors (generally after 70 percent of the average annual rainfall has occurred).
- (2) Soil mantle depth determinations.
- (3) Detailed engineering plans shall be submitted for approval of all special design systems, sewage treatment plants, and any deviations from standard practice.
- (4) Design criteria to accommodate anticipated flows.

#### Section 7A. WASTEWATER TEMPERATURE CONTROL (COMMERCIAL SYSTEMS)

A. Certain commercial establishments which produce a large proportion of high temperature sewage such as restaurants, laundromats and the like, shall be required to present special design features for the system which will permit the efficient entrappment of grease, soaps and detergents.

- (1) Grease, soaps and detergents are not readily congealed or flocculated and settled at high wastewater temperatures. Carry-over of these suspended materials to the leachfield will produce soil clogging and failure.
- (2) Design options can include:
  - (a) blending the wastestream with cold water upstream of the grease trap and/or septic tank.

- (b) sand filtration.
  - (c) combine with cold wastestream from other commercial establishment.
- (3) Town Sanitarian shall establish temperature limits and may require laboratory testing of effluent to verify best temperature limits for grease and soap removal.

Section 8. PERMITS - FEES. Every applicant for a permit required by Section 6 shall pay a fee at the time of application for each permit or for renewal of each permit. The fees shall be established by resolution by the Paradise Town Council, and said resolution shall include a fee for a variance.

If development on a lot or parcel is begun or if construction of a sewage disposal system or an auxiliary sewage disposal system has begun prior to obtaining the required permit, the permit fee above specified shall be doubled, but shall not relieve any persons from fully complying with the requirements of this ordinance nor from any other penalties prescribed herein.

Section 9. INSPECTIONS - REQUIRED; CERTIFICATE OF INSPECTION. No person shall back-fill or cover with earth, or put into use any sewage disposal system constructed under provisions of this ordinance until an inspection of the sewage disposal system has been made by the health officer and a certificate of inspection has been issued by the health officer.

If the sewage system is not installed in accordance with the plot plan as built plot plan showing the exact location of the sewage system shall be submitted prior to issuance of an inspection certificate.

Section 10. HIGH GROUNDWATER, SPRINGS, SEEPS AND CURTAIN DRAIN CONSTRUCTION. (Also see Section 6A (12), Permits Required).

A. Permits shall be required for all curtain drain construction whether or not installed in connection with a septic system.

B. Curtain drains shall have a minimum setback of 10 feet from all property lines and

C. Curtain drains shall be designed and constructed in accordance with Attachment "A" or an approved design prepared by a registered Civil Engineer, Geologist or Sanitarian.

Section 11. MOUND SYSTEMS AND OTHER ALTERNATIVE SYSTEMS.

A. Mound systems shall be designed in accordance with the "Wisconsin" Criteria (Design and Construction Manual for Wisconsin Mounds, State of Wisconsin, Dept. of Health and Social Services - Small Scale Waste Management Project, 1978 and the Uniform Plumbing Code 1979).

B. Other non-standard designs or commercially available alternative systems shall be approved on a case by case basis.

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C. The Town Sanitarian shall ensure that the homeowner or commercial enterprise are aware of the additional special attention required for some alternative systems over and above that required for the traditional on-site system. Failure to maintain the system properly will result in the imposition of a Maintenance Bond to defray the operating costs to be incurred by the town or other legally responsible entity.

D. Composting toilets are prohibited in the Town of Paradise.

E. Seepage pits or cesspools are prohibited in the Town of Paradise.

#### Section 12. POLICY FOR PAVING OR INSTALLATION OF OTHER IMPERVIOUS SURFACES OVER LEACHFIELDS.

A. Parking lots, driveway, sidewalk, asphalt paving or the installation of other impervious surfaces over leachfields shall be prohibited unless in the opinion of the Town Sanitarian, space limitations on the site offer no other alternatives.

B. Pervious pavement (1) or surfacing shall be installed when in the opinion of the Town Sanitarian the operation of the leachfield would be impaired by impervious surfacing.

#### Section 13. WATER CONSERVATION FIXTURE POLICY.

A. The installation of low water using plumbing fixtures shall be encouraged for new construction and specified for old systems with a repair permit, when in the opinion of the Town Sanitarian to fail to do so, would impair the long-term operation of the system.

B. Past water bills shall be used as a basis for assessing patterns of water consumption and whether in the opinion of the Town Sanitarian installation of water conservation fixtures would significantly effect future sewage volume.

#### Section 14. SEWAGE DISPOSAL SYSTEMS.

A. Septic Tank Specifications. Septic tank shall be two compartment construction and shall be of the size and type constructed in accordance with the requirements of the health officer and in accordance with the Uniform Plumbing Code. The septic tank and all inlets and outlets thereto shall be watertight.

(1) Size. The minimum liquid capacity of the septic tank shall be one thousand (1,000) gallons. Lesser capacities may be authorized by the health officer for auxiliary septic tanks.

(1) Pervious surfacing can be one of several commercially available cement blocks with the void spaces backfilled with sand or peagravel.



<u>No Bedrooms</u>	<u>Tank Capacity</u>
equal to or less than 3	1,000
4	1,500
more than 4	+ 500 gal. for each add'l bedroom
-----	
garbage grinder	+ 500 gal to volume req'd for no. of bedrooms
-----	
commercial/institution	1125 + 0.75 x avg. daily sewage flow

- (2) Materials. The septic tank shall be constructed of concrete, or other durable material satisfactory to the health officer. (See note)

B. Leach Field. The effluent from the septic tank shall be discharged into an absorption field of the size and type constructed in accordance with the requirements of the health officer.

The leach lines shall be laid at a grade not to exceed four (4) inches per one hundred (100) feet. For systems with dosing siphons leach lines shall be laid flat. Leach lines shall be installed in a trench not less than twenty-four (24) inches wide on the bottom of which has been placed a six-inch layer of one-half to two and one-half inch loose clean rock. Leach lines shall be covered with a layer of one-half inch to two and one-half inch rock at least two inches thick. A minimum of one hundred fifty (150) square feet of leaching area shall be provided in the trench bottom.

C. Minimum Criteria.

- (1) When a project has an average daily sewage flow in excess of four hundred (400) gallons per day, one hundred (100) percent of original and alternate field shall be installed along with accessible diverter valve.
- (2) Soil depth below the bottom of the leaching trench shall not be less than five (5) feet.
- (3) Depth to groundwater below the bottom of the leaching trench shall not be less than five feet.

NOTE: Because of the high rate of concrete tank failures believed to be due in part to the moderately high acidic soils all new concrete septic tanks and concrete replacement septic tanks shall be fabricated from non-reactive cement, ASTM Type II Modified or equal.

- (4) Ground slope in the disposal area shall not be greater than thirty percent (30%).
- (5) There shall be available suitable area upon the subject property for the installation of the initial sewage disposal system and a one hundred percent (100%) replacement of that system.
- (6) Soil composition shall be such that it will serve as an effective filter for septic tank effluent.
- (7) Individual leach fields shall not be excavated when the soil is wet enough to compact or smear easily.
- (8) Any soil testing performed pursuant to meeting the above criteria may, at the discretion of the health officer, be witnessed by a representative from the Health Department.
- (9) Paved areas, or areas proposed to be paved, which exceed thirty (30) min./inch of percolation rate shall not be used to determine net lot area of a parcel.
- (10) When the total length of leachlines exceed 500 feet, a dosing siphon shall be required (See Attachment B).
- (11) Credit shall be given for added absorption area of the sidewalls of trenches and standard "bottom design" trenches may be decreased by the following percentages.

Percentage of length of standard trench<sup>(1)</sup>  
(After USPHS Manual 526)

Depth of Gravel Below Pipe in Inches <sup>(2)</sup>	Trench width 12"	Trench width 18"	Trench width 24"	Trench width 36"	Trench width 48"	Trench width 60"
12 . . . . .	75	78	80	83	86	87
18 . . . . .	60	64	66	71	75	78
24 . . . . .	50	54	57	62	66	70
30 . . . . .	43	47	50	55	60	64
36 . . . . .	37	41	44	50	54	58
42 . . . . .	33	37	40	45	50	54

(1) The standard absorption trench is one in which the filter material extends two inches above and six inches below the pipe.

(2) For trenches or beds having width not shown, the percent of length of standard absorption trench may be computed as follows:

$$\text{Percent of length standard trench} = \frac{w + 2}{w + 1 + 2d} \times 100$$

Where w = width of trench in feet

d = depth of gravel below pipe in feet

D. Design Criteria for Development Using Septic Systems.  
The following requirements are applicable to all development using septic systems:

- (1) Where the average soil depth on the parcel is less than seven (7) feet, special design systems may be approved, and development shall be limited to uses which generate three hundred (300) gallons or less per day per increment of Section 21 (Table II).  
Also see alternative systems, Section 11.

- (2) Grease traps for commercial establishments shall be designed in accordance with Attachment "C".

The health officer together with the State Regional Water Quality Control Board shall formulate guidelines for special design systems. Special design systems designated by the Health Department, shall be located, designed and installed under the direction of a Registered Civil Engineer, Registered Engineering Geologist, or Registered Sanitarian and so certified in a manner acceptable to the Health Department.

- (3) Commercial institutional or industrial installations with average daily sewage flows of 1,000 gallons per day or greater and/or raw sewage B.O.D. values of greater than 2,000 mg/l (24 hour composite value), shall require the use of a dosing siphon and/or 1.25 times the calculated absorption area for the soils found at the site.

- (4) Where the average soil depth on the parcel exceeds seven (7) feet, net lot areas shall be sized according to Section 21 (Table II). Septic systems shall be constructed in accordance with this ordinance. Net lot area shall mean that a portion of a parcel not including the following areas:

- (a) Private and public easements for access or roadway purposes.

- (b) Areas within the minimum separation distances shown in Section 22 (Table III) except required setbacks for buildings and streets.

- (c) Areas with a slope in excess of thirty (30) percent, unless in the opinion of the Town Sanitarian slope stability analyses, geotechnical studies and seepage analyses clearly demonstrate that:

- (i) effluent will not surface down slope from the leachfield.

- (ii) saturation of the slope and removal of vegetation will not produce structural failure at the slope.
- (iii) severe erosion of the slope will not occur.
- (d) Areas where the percolation rate is in excess of one hundred twenty (120) min./inch or greater than 5 min./inch.
- (e) Areas with less than seven (7) feet of soil above impervious stratum or winter groundwater, unless special design sewage disposal systems are proposed. Also see alternative systems, Section 11.
- (f) Easements dedicated or reserved for sewage disposal purposes in a document recorded in the Recorder's Office of the County of Butte. Such recorded documents shall apply only to repairs and to existing lots of record on the effective date of this ordinance.

Each parcel shall provide the minimum net lot area for sewage disposal found in Section 21 (Table II) attached. Areas shown in Section 21 (Table II) up to and including 2.0 acres are net lot areas for sewage disposal as defined above. Areas in Section 21 (Table II) in excess of two (2) acres are minimum gross parcel sizes provided, however, that such gross parcels shall contain not less than two (2) acres of net lot area as defined above.

## Section 11. VARIANCES.

A. A variance may be granted only when special circumstances are applicable to the property, involving the soil characteristics, topography or surrounding property characteristics. Variances may be granted only to the specifications required in Section 10D of this Ordinance. Cumulative effects within the hydrologic basin shall be considered prior to issuance of any variance.

B. Applications for variances shall be made in writing on a form prescribed by the Health Department. Upon receipt of the application, the Health Officer together with the Town Engineer and Town Planning Director shall make an investigation to determine whether a variance should be granted under the provisions of Subsection (11) above. After conclusion of the investigation, the Health Department shall prepare a written order granting or denying the variance, and shall include in such written order specific findings of fact and reasons for its granting or denial.

C. If the Health Department should deny the application for variance, the applicant may file an appeal to the State Regional Water Quality Control Board within ten (10) days after denial. Such decision by the State Regional Water Quality Control Board shall be final.

Section 12. SEPTIC TANKS - BUILDINGS UNDER DIFFERENT OWNERSHIP. No permit shall be issued for a septic tank system where the buildings it is to serve are under different ownership, nor for buildings proposed to go under separate ownership. When the development is to utilize a sewage disposal system(s) under common ownership, and an association of property owners is formed and which is responsible for maintenance and repair of the sewage disposal system(s) according to the written articles of the association, then the health officer may grant an exception to this section.

## Section 13. SEPTIC TANK ABANDONMENT.

A. Every cesspool, septic tank and seepage pit which has been abandoned or has been discontinued otherwise from further use or to which no waste or soil pipe from a plumbing fixture is connected, shall have the sewage removed therefrom in a manner acceptable to the health officer and shall be sufficiently uncovered to allow an examination of structural integrity and a determination of appropriate means of processing.



B. Processing of abandoned septic tanks and cesspools shall depend upon materials of construction and structural integrity at the time of abandonment.

- (1) Systems constructed entirely of concrete, including compartment covers, which are confirmed to be structurally sound by the health officer, may be left in place without further action. Such systems which are structurally sound except for the top or cover may be processed in this manner provided a new top or cover, cast in concrete, is added prior to final abandonment.
- (2) Systems constructed of fiberglass may be left in place provided they are covered with a layer of welded wire fabric reinforced concrete of not less than four (4) inches nominal thickness, and the slab shall extend one (1) foot beyond outside wall of tank.
- (3) All other systems, including those made of wood, steel, and concrete or fiberglass not processed as above provided, shall be completely filled with earth, sand, gravel, concrete or other approved material as follows:

The top of the septic tank shall be demolished before filling and the filling shall not extend above the top of the vertical portions of the side walls or above the level of any outlet pipe until inspection has been called and the fill material has been inspected. After such inspection the cesspool, septic tank or seepage pit shall be filled to the level of the top of the ground.

- (4) If the abandoned tank, etc. is going to be under a structural stem wall or pier and soil is used for backfill, the soil shall be compacted as determined by the building official.
- (5) Nothing herein shall prevent the health officer from requiring additional or other processing in the furtherance of health and safety.

Section 14. Privies. Pit or vault privies are prohibited within the Town of Paradise.

"Section 15. EXCEPTION. If a building or a portion thereof is destroyed by fire or other natural disaster, that building(s) will be exempt from Sections 20 and 21 (Tables I and II) of this ordinance provided the building is not expanded beyond its original foundation and/or the occupancy of the building does not change."

Section 16. ENFORCEMENT OF ORDINANCE. It shall be the duty of the health officer to enforce the provisions of this ordinance and the health officer, or his duly authorized representative, is hereby empowered to enter at any reasonable hour any premises necessary in the enforcement of this ordinance.

Section 17. VIOLATIONS. Any person who violates any provision of this ordinance is guilty of a misdemeanor. Each offense shall be punishable by a fine of not less than Twenty-Five Dollars (\$25) nor more than Five Hundred Dollars (\$500), or by imprisonment in the county jail for a term not exceeding six (6) months, or by both such fine and imprisonment. Each day a violation exists shall be considered a separate offense.

"Section 18. LIABILITY OF TOWN. This ordinance shall not be construed as imposing upon the Town or Butte County any liability or responsibility for damage resulting from the defective construction of any sanitary disposal system, as herein provided; nor shall the Town or any official, employee, or any contract agency, its employees, agents, or servants thereof be held as assuming any such liability or responsibility by reason of standards, requirements, or inspection authorized thereunder."

Section 19. EFFECTIVE DATE. This ordinance shall take effect thirty (30) days from the date of this ordinance. Before the expiration of fifteen (15) days after its passage, this ordinance shall be published in a newspaper of general circulation published and circulated within the Town of Paradise along with the names of the members of the Town Council of Paradise voting for and against the same.

PASSED AND ADOPTED by the Town Council of the Town of Paradise, County of Butte, State of California, this 21st day of June, 1983, by the following vote:

AYES: IVAN C. AMY, ROBERT D. JEFFORDS, JR., JOHN J. WILLIAMS, WALTER M. WINN AND RICHARD L. CRABTREE, MAYOR

NOES: NONE

ABSENT: NONE

NOT VOTING: NONE

Following are the wastewater generation rates to be used by the applicant

Section 20

TABLE 1

a. Net lot areas are based on a wastewater generation rate of 300 gallons per day (gpd). Net lot areas shall be adjusted proportionately using the following wastewater generation rates:

Type of Development (Each Living Unit)	Wastewater Generation Rate, gpd
One Bedroom	150
Two Bedroom	225
Three Bedroom	300
Each additional bedroom, add	75
Commercial, Industrial, Institutional	

Wastewater generation rate to be determined by the Butte County Health Department based on water use records or published wastewater generation data. (In U.P.C., EPA Manual or Manual of Septic Tank practices)

- b. An impervious stratum is a layer or lense of fine grained soil, rock, cemented material, or similar soil structure in which the percolation rate exceeds 120 minutes per inch or in which 12 inches of water depth will not seep completely away in a 24-hour period.
- c. Areas with less than two feet of soil, slopes in excess of 30 percent, or percolation values in excess of 120 min/inch are deemed unsuitable for on-site wastewater treatment and disposal.
- d. In addition to the other requirements of these standards, sewage disposal areas must be of such a configuration that it is practicable to use them based upon standard practices for the installation of on-site wastewater treatment and disposal systems.
- e. Net lot area necessary to accommodate the sewage flow from a private or multiple family residence(s) shall be based upon the number of bedrooms or other potential sleeping quarters in the residence, and upon the average percolation rate in the proposed sewage disposal area.

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SECTION 21 (TABLE 11)

MINIMUM NET LOT AREAS BASED ON: WASTEWATER GENERATION RATE OF 300 GALLONS PER DAY

AVERAGE SOIL DEPTH ABOVE WINTER GROUNDWATER OR IMPERVIOUS STRATUM

SLOPE	PERC VALUE  (min./in.)	Conventional Septic Systems 7' or Greater	Special Design Systems						
			7' to 6'	6' to 5'	5' to 4'	4' to 3'	3' to 2'		
0 to 10%	0-10 11-20 21-40 41-60 61-80 81-100 101-120	(sq./ft.) 14,520 16,520 18,520 20,520 31,520 41,520 61,520	20,520	25,520	35,520	80,860	5 acres		
			22,520	27,520	37,520	82,860	5 acres		
			24,520	29,520	39,520	84,860	5 acres		
			24,520	31,520	41,520	86,860	5 acres		
			34,520	41,520	51,520	2.0 acres	5 acres		
			44,520	51,520	61,520	2.25 acres	5 acres		
			64,520	71,520	81,520	2.75 acres	5 acres		
OVER 10% to 20%	0-10 11-20 21-40 41-60 61-80 81-100 101-120	16,520 18,520 20,520 27,520 39,520 49,520 69,520	30,520	38,520	53,520	2.25 acres	5 acres		
			32,520	40,520	55,520	2.5 acres	5 acres		
			34,520	42,520	57,520	2.5 acres	5 acres		
			36,520	44,520	59,520	2.75 acres	5 acres		
			46,520	54,520	69,520	2.75 acres	5 acres		
			56,520	64,520	79,520	3.0 acres	5 acres		
			76,520	84,520	99,520	3.5 acres	5 acres		
OVER 20% to 30%	0-10 11-20 21-40 41-60 61-80 81-100 101-120	20,520 22,520 24,520 26,520 46,520 56,520 76,520	40,520	50,520	74,080	3.5 acres	10 acres		
			42,520	52,520	76,080	3.5 acres	10 acres		
			44,520	54,520	78,080	3.75 acres	10 acres		
			46,520	56,520	80,080	3.75 acres	10 acres		
			56,520	66,520	90,080	4.0 acres	10 acres		
			66,520	76,520	100,080	4.25 acres	10 acres		
			86,520	2.25 acres	2.75 acres	4.75 acres	10 acres		

## Section 22

TABLE III

Standards for Location and Placement  
of Sewage Disposal Systems

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Minimum Horizontal Distance Required From	Septic Tank	Leaching Trench
Building or structures	5' (A)	5' (A)
Roadway setbacks	20' (C)	20' (C)
Private Water Wells	50'	100'
Public Water Wells	100'	100'
Lakes, reservoirs or other water impoundments	50' (D)	200' (D)
Groundwater drainage systems such as "french" drains, curtain drains, etc.	25' (E)	50' (E)
Springs, seeps, lava outcroppings	50'	50' to 100'
Intermittent and perennial streams, irrigation ditches or other perennial water courses (J)	50' (B)(D)(I)	100' (B)(D)(I)
Ravine, drainage way or ephemeral stream (J)	50' (B)(D)	50' (B)(D)
Leaching Trench	1'	10'
Swimming Pools	5'	5'
Water Lines	5'	5'
Water Mains	10'	10'
Driveway or Parking Area	yes (G)	yes (H)
Cut Bank or Fill	25'	4 x height of cut or fill (F)
Surface Storm Drainage Pipe	5' (E)	25' (E)
Large Trees	10'	10'
Property Lines	10'	10'



## Section 22, TABLE III (Continued)

- (A) Including proaches and steps whether covered or uncovered, breezeways, roofed patios, carports, covered walks, covered driveways and similar structures or appurtenances.
- (B) Culverting these drainage ways will decrease the setback for leachfields to 50 feet and for septic tanks to 25 feet for requirements.
- (C) Greater or less distances are required depending on size of right of way.
- (D) Distance from high waterline of a ten-year recurrent storm.
- (E) Greater or lesser distances may be required. Depending on site characteristics.
- (F) Four times the height of the bank, measured from the top edge of bank (with a 100' maximum distance).
- (G) Only if access provided and minimum 1 foot cover provided.
- (H) Only if percolation rate under 30 min./inch.
- (I) 200' sewage disposal setback required for property within the "Middle and Upper Honey Run Basins" as described in the "Wastewater Management Study of 1983."
- (J) Intermittent, perennial, ephemeral streams as described below, of the Paradise Master Storm Drainage Study (1980):
  - (1) ephemeral - carry only surface runoff and where the water table is always below the stream bottom.
  - (2) intermittent - water courses that are wet during the rainy season and generally dry during the rest of the year. The streambed may be below the groundwater table in the winter time.
  - (3) perennial - flowing all the time.

Section 4. EFFECTIVE DATE; URGENCY ORDINANCE. This ordinance is adopted as an urgency measure and shall take effect immediately based upon the finding by this Council that its adoption will protect the public safety, health, and welfare of the citizens of the Town of Paradise; and that its adoption will implement the Phase I, 201 Surface Water Quality Study adopted by the Town Council in April, 1983. Before the expiration of fifteen (15) days after its passage, this ordinance shall be published in a newspaper of general circulation published and circulated within the Town of Paradise along with names of the members of the Town Council of Paradise voting for and against same.


PASSED AND ADOPTED by the Town Council of the Town of Paradise, County of Butte, State of California, on this 17th day of January 1984, by the following vote:

AYES: Ivan C. Amy, Robert D. Jeffords, Jr., John J. Williams, Walter M. Winn, and Richard L. Crabtree, Mayor

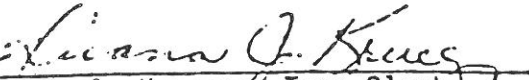
NOES: None

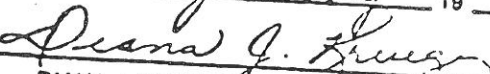
ABSENT: None

NOT VOTING: None

  
Richard L. Crabtree, Mayor

ATTEST:

By:   
Diana J. Krueger, Town Clerk

I, DIANA J. KRUEGER, TOWN CLERK OF THE TOWN OF PARADISE, DO HEREBY CERTIFY THAT THIS IS A TRUE AND CORRECT COPY OF ORDINANCE NO. 115 ADOPTED BY THE COUNCIL OF THE TOWN OF PARADISE AT a regular MEETING HELD ON 17th DAY OF January 1984  
  
DIANA J. KRUEGER, TOWN CLERK



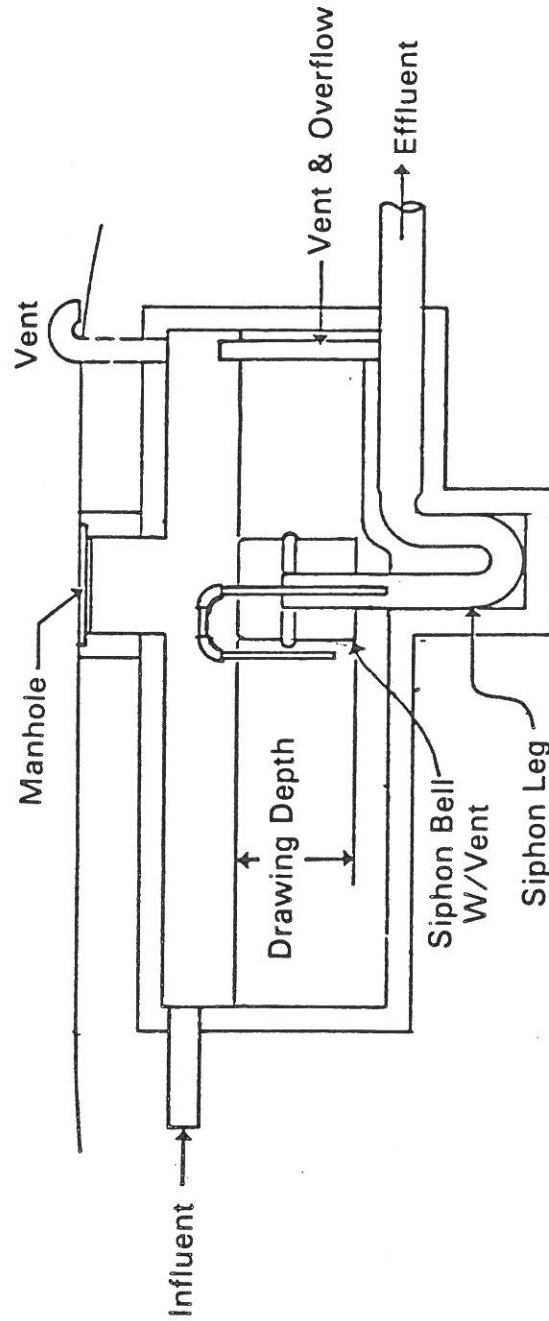
ATTACHMENTS  
ORDINANCE 103





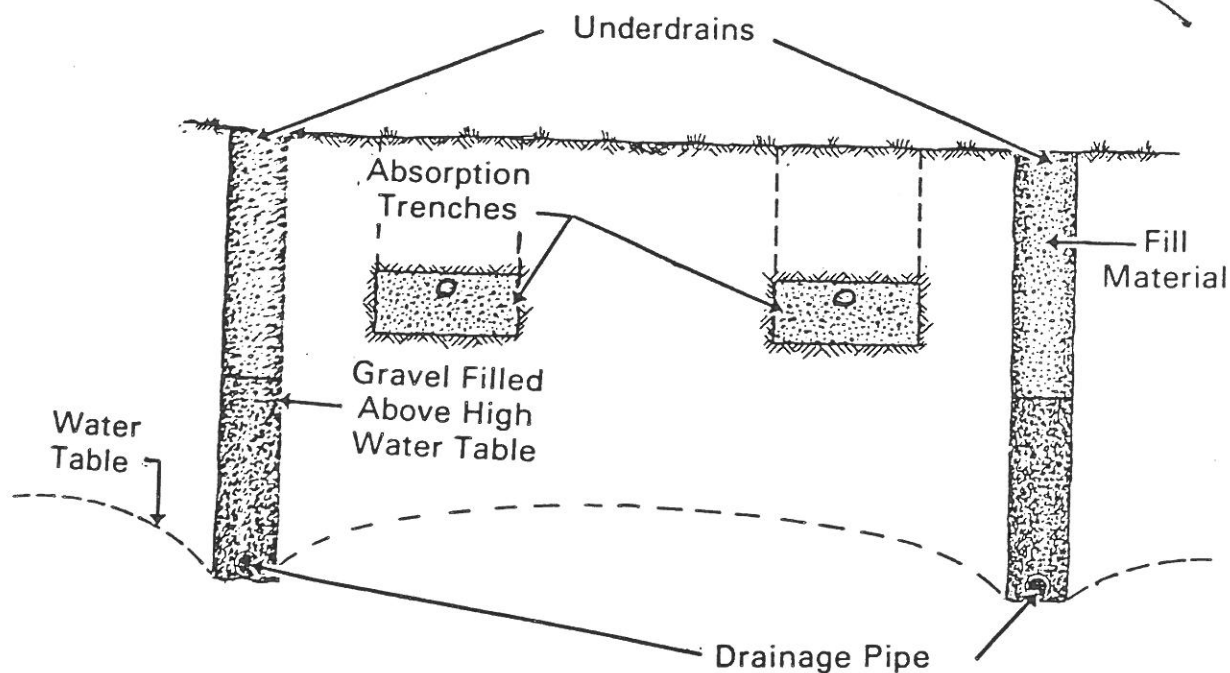
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TYPICAL DOSING CHAMBER WITH SIPHON

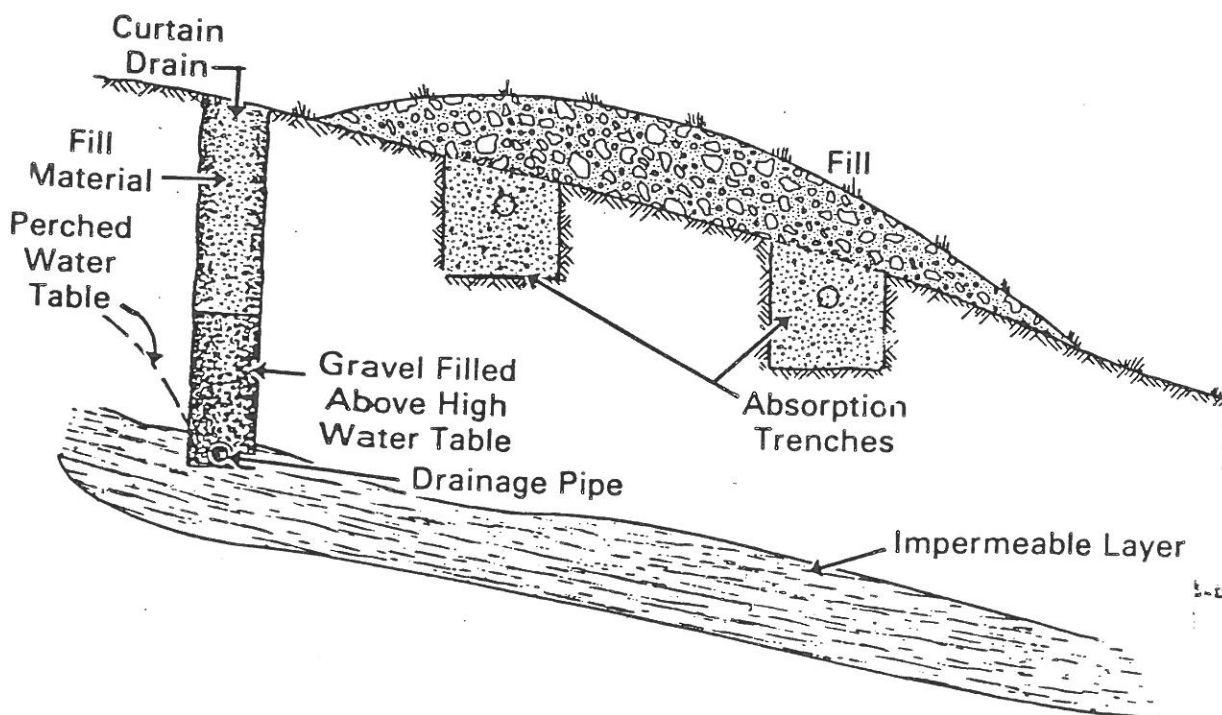


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# UNDERDRAINS USED TO LOWER WATER TABLE



## CURTAIN DRAIN TO INTERCEPT Laterally MOVING PERCHED WATER TABLE CAUSED BY A SHALLOW, IMPERMEABLE LAYER



## GREASE TRAP DESIGN CRITERIA

(After EPA Design Manual Onsite Wastewater Treatment and Disposal Systems)

Sizing of grease traps is based on wastewater flow and can be calculated from the number and kind of sinks and fixtures discharging to the trap. In addition, a grease trap should be rated on its grease retention capacity, which is the amount of grease (in pounds) that the trap can hold before its average efficiency drops below 90%. Current practice is that grease-retention capacity in pounds should equal at least twice the flow capacity in gallons per minute. In other words, a trap rated at 20 gpm (1.3 l/sec) should retain at least 90% of the grease discharged to it until it holds at least 40 lb (18 kg) of grease (1). Most manufacturers of commercial traps rate their products in accordance with this procedure.

Recommended minimum flow-rate capacities of traps connected to different types of fixtures are given in Table 8-1.

Another design method has been developed through years of field experience (3). The following two equations are used for restaurants and other types of commercial kitchens:

## 1. RESTAURANTS:

$$(D) \times (GL) \times (ST) \times \left(\frac{HR}{2}\right) \times (LF) = \text{Size of Grease Interceptor, gallons}^a$$

where:

- D = Number of seats in dining area
- GL = Gallons of wastewater per meal, normally 5 gal
- ST = Storage capacity factor -- minimum of 1.7  
onsite disposal - 2.5
- HR = Number of hours open
- LF = Loading factor -- 1.25 interstate freeways  
1.0 other freeways  
1.0 recreational areas  
0.8 main highways  
0.5 other highways

## 2. HOSPITALS, NURSING HOMES, OTHER TYPE COMMERCIAL KITCHENS WITH VARIED SEATING CAPACITY:

$$(M) \times (GL) \times (ST) \times (2.5) \times (LF) = \text{Size of Grease Interceptor, gallons}^a$$

where:

- M = Meals per day
- GL = Gallons of wastewater per meal, normally 4.5

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TABLE 8-1

## RECOMMENDED RATINGS FOR COMMERCIAL GREASE TRAPS (1)

<u>Type of Fixture</u>	<u>Flow Rate gpm</u>	<u>Grease Retention Capacity Rating lb</u>	<u>Recommended Maximum Capacity Per Fixture Connected to Trap gal</u>
Restaurant kitchen sink	15	30	50.0
Single-compartment scullery sink	20	40	50.0
Double-compartment scullery sink	25	50	62.5
2 single-compartment sinks	25	50	62.5
2 double-compartment sinks	35	70	87.5
Dishwashers for restaurants:			
Up to 30 gal water capacity	15	30	50.0
Up to 50 gal water capacity	25	50	62.5
50 to 100 gal water capacity	40	80	100.0

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SC = Storage capacity factor -- minimum of 1.7  
onsite disposal - 2.5  
LF = Loading factor -- 1.25 garbage disposal &  
dishwashing  
1.0 without garbage disposal  
0.75 without dishwashing  
0.5 without dishwashing  
and garbage disposal

<sup>a</sup> Minimum size grease interceptor should be 750 gal

Thus, for a restaurant with a 75-seat dining area, an 8 hr per day operation, a typical discharge of 5 gal (19 l) per meal, a storage capacity factor of 1.7 and a loading factor of 0.8, the size of the grease interceptor is calculated as follows:

$$(75) \times (5) \times (1.7) \times \left(\frac{8}{2}\right) \times (0.8) = 2,040 \text{ gal (7,722 l)}$$

Other design considerations include: facilities for insuring that both the inlet and outlet are properly baffled; easy manhole access for cleaning; and inaccessibility of the trap to insects and vermin.

### 3.2.3 Construction Features

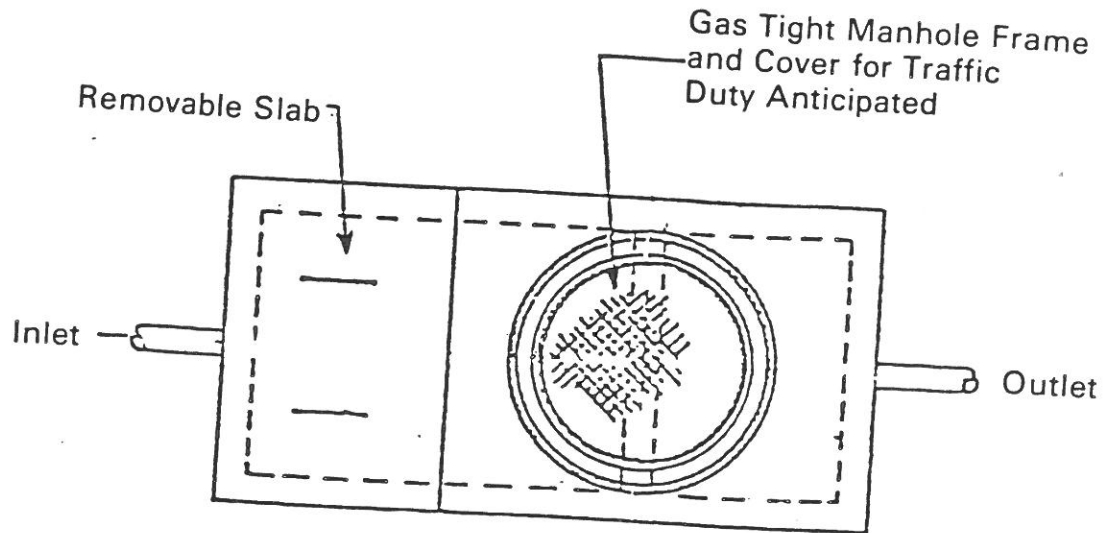
Grease traps are generally made of pre-cast concrete, and are purchased completely assembled. However, very large units may be field constructed. Grease traps come in single- and double-compartment versions. Figure 8-1 shows a typical pre-cast double-compartment trap (2).

Grease traps are usually buried so as to intercept the building sewer. They must be level, located where they are easily accessible for cleaning, and close to the wastewater source. Where efficient removal of grease is very important, an improved two-chamber trap has been used which has a primary (or grease-separating) chamber and a secondary (or grease-storage) chamber. By placing the trap as close as possible to the source of wastewaters, where the wastewaters are still hot, the separating grease at the surface of the first chamber can be removed by means of an adjustable weir and conveyed to the separate secondary chamber, where it accumulates, cools, and solidifies. This decreases the requirement for cleaning and allows better grease separation in the first chamber.

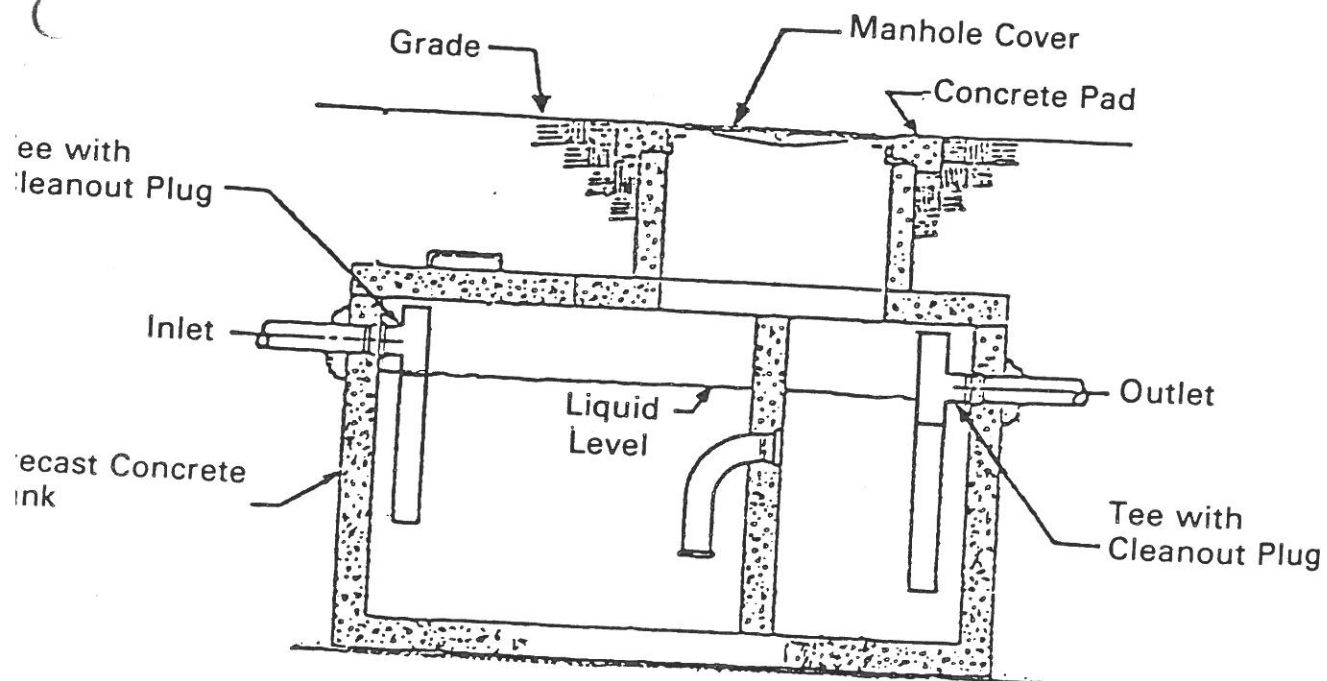


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DOUBLE-COMPARTMENT GREASE TRAP

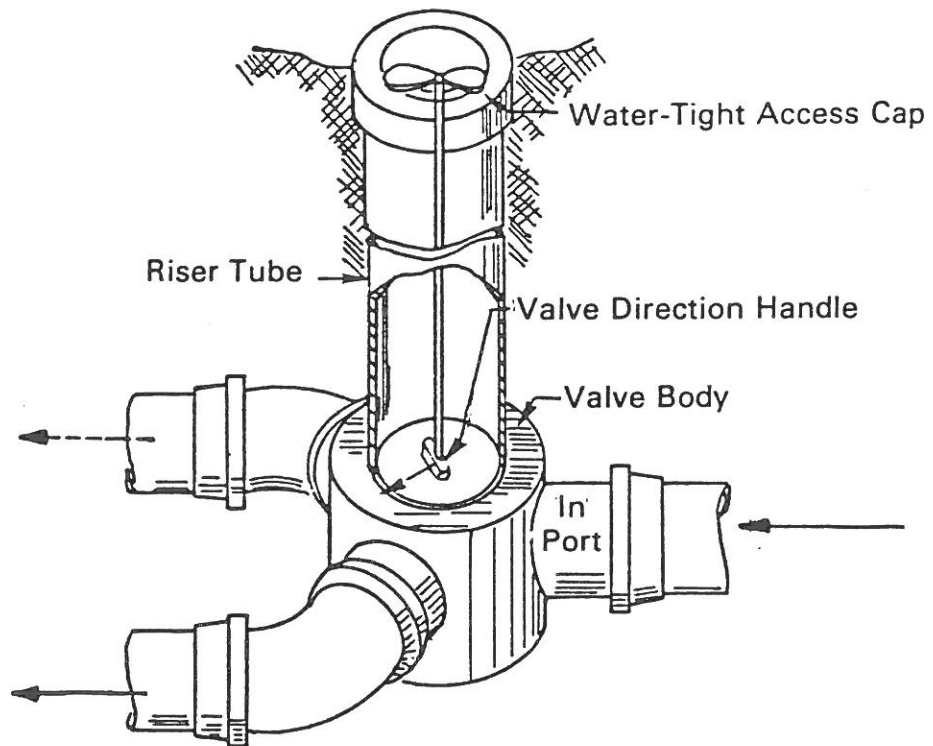


Top View



Section

# TYPICAL DIVERSION VALVE





APPENDIX V-B  
PROPOSED INSPECTION PROCEDURES  
FOR ON-SITE SYSTEM





INSPECTION PROCEDURES  
ONSITE SYSTEMS TOWN OF PARADISE

DRAFT

GENERAL PROCEDURES

All systems will be inspected initially during the inventory phase of program implementation and thereafter in accordance with the following schedule:

Residential - every 4 years

Multi-family res. - every 3 years

Comm/Industrial - every 2 years

Alternative/Special Systems - yearly

with the exception of systems that require special monitoring.

Computer files will be established by hydrologic subbasins of the Town. One month prior to inspection date, a Notice of Inspection card will be mailed to the property owner (and tenant) indicating date and time of inspection. The property owner will be required to provide tank access both at inlet and outlet ends (wood or metal access pipe - - minimum of 6 inches diameter - - at or above ground level. Pipe or box should be capped and sealed to prevent odors.)

Copies of inspection reports shall be sent to the Regional Water Quality Control Board staff as follows:

Initial Inspections -- inspection results will be reported as completed but not less than quarterly.

Failed Systems -- monthly.

Repeat Inspections -- semi-annually.

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## ROUTINE ONSITE INSPECTIONS

Upon the inspector's arrival, access ports will be opened. The following will be recorded: tank dimensions, inlet/outlet heights, baffle height(s), scum and sludge levels and other information as listed on inspection form. Computations of usable tank volume and detention time, condition and construction of tank will also be noted.

If the inspector determines that the tank does not require pumping, the system will be loaded with water. A loading schedule of five flushes per bedroom or five flushes per two persons, whichever is greater, will be followed. The rise in the tank level and the percolation rate for 1/2 hour will be recorded.

- If . . .
- a) the plumbing is sluggish or backs up,
  - b) the system overflows (surfacing effluent),
  - c) odors are detected (other than from inspection ports),
  - d) erosion caused by surfacing effluent is observed, the system will require a "failed system investigation."

If none of the above symptoms are observed and percolation equals or exceeds loading, the system will be issued a permit to operate.

### 1. Failed System Investigation

The failed system investigation may be conducted at the same time or the property owner and tenant can set a new inspection appointment.

If surfacing water is noted, an ammonia ( $\text{NH}_3$ ) and Methylene Blue Active Substance (MBAS) field test will be conducted to determine whether this is effluent. A loading test to determine the one-hour percolation rate (the drop in tank level over one hour) will be conducted and recorded. The percolation rate (extra-polated to 24 hours)

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will be compared to the average daily water usage to determine whether the drainfield is adequate. The tank volume, inlet/outlet baffle heights, liquid, scum and sludge levels (volumes), average daily water use and number of occupants will be reviewed to determine cause of failure. Property owners will be issued a Notice of Failure listing probable cause(s) of failure.

2. Special Monitoring

a) Marginal Systems

If any system has sluggish plumbing but the drainfield will absorb normal water usage (as determined by percolation rate vs. average daily water use), or if the tank volume is small in relation to to number of occupants and water use, or if the system has a history of frequent pumpouts or has shown signs of failure in the past, that system may require more frequent inspection and monitoring.

b) High Groundwater

Systems located in spring areas or high groundwater zones will require more frequent inspection and monitoring.

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TOWN OF PARADISE

ONSITE WASTEWATER SYSTEM

INVENTORY

In order to provide the necessary data on (1) existing and future numbers of systems by subbasin, (2) type of system, (3) volume and (4) location of systems as required per Section 6960 and 6960.1 of the Health and Safety Code, an inventory of existing onsite systems shall be performed in accordance with Article L of the onsite Wastewater Management Zone regulations.

APPENDIX V-C  
PROPOSED ORDINANCE REGULATING USE OF  
ON-SITE WASTEWATER DISPOSAL SYSTEMS





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ORDINANCE NO.

AN ORDINANCE REGULATING THE USE OF  
WASTEWATER DISPOSAL SYSTEMS AND  
FACILITIES, PROVIDING FOR PERMITS AND  
FEES WITH REGARD THERETO, AND  
REGULATING THE DISCHARGE OF WASTE  
OR POLLUTED WATERS

BE IT ORDAINED, by the Town Council of Paradise, Butte County,  
California, as follows:

ARTICLE I. GENERAL PROVISIONS

Section 1.1 Rules and Regulations. The following rules and regulations respecting the use of wastewater disposal systems and facilities within the Town are hereby adopted, and all work in respect thereto shall be performed as herein required and not otherwise.

Section 1.2. Purpose. This ordinance is intended to provide certain provisions and requirements for the use of wastewater disposal facilities as now or hereafter constructed, replaced, reconstructed or repaired and, in general, to enable the District to carry out the powers provided it pursuant to Part 2, Chapter 3, Section 6950 of the Health and Safety Code of the State of California, as may be now or hereafter amended, and to meet the water quality objectives set forth by the Water Quality Control Board, Central Valley Region.

Section 1.3. Short Title. This ordinance shall be known as the Town of Paradise Onsite Wastewater Disposal Zone Ordinance.

Section 1.4. Violation Unlawful. Following the effective date of this ordinance it shall be unlawful for any person to connect to, construct, replace, reconstruct, repair, maintain and/or use any means of wastewater disposal from any building in the Town except as in this ordinance provided.

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Section 1.5. Permits and Fees. No wastewater disposal system or facilities shall be replaced, reconstructed, or repaired or operated within the Town until a permit therefor has been obtained and all fees have been paid in accordance with the requirements of this ordinance.

## ARTICLE II. USE OF WASTEWATER DISPOSAL

### SYSTEMS REQUIRED

Section 2.1. Disposal of Waste. It shall be unlawful for any person to place, deposit, or permit to be deposited in an unsanitary manner upon public or private property within the Town, or in any area under the jurisdiction of the Town, any human or animal excrement, garbage, or other objectionable waste.

Section 2.2. Treatment of Waste Required. It shall be unlawful to discharge into the ground or surface waters of the Town any sewage, waste or other polluted waters except where suitable treatment has been provided in accordance with the provisions of this ordinance.

Section 2.3. Unlawful Disposal. Except as herein provided, it shall be unlawful to construct, replace, reconstruct, repair, maintain or operate any sanitary sewage, septic, or septic tank disposal system or other facility intended or used for the disposal of wastewater.

Section 2.4. Occupancy Prohibited. No building, industrial facility or other structure shall be occupied until the owner of the premises has complied with all rules and regulations of the Town.

## ARTICLE III. CONSTRUCTION, REPLACEMENT,

### RECONSTRUCTION AND REPAIR OF WASTEWATER

#### DISPOSAL SYSTEMS

Section 3.1. Construction Permit Required. Before the commencement of construction of a private wastewater disposal system to serve

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new construction the owner shall first obtain a permit therefor from the Town of Paradise, a copy of the plans and specifications for such system, and such other information as deemed necessary and required by the Town of Paradise Ordinance 103, as amended.

Section 3.2. Design Requirements. The type, capacity, location and layout of a wastewater disposal system shall comply with Town Ordinance 103. No permit shall be issued for any wastewater disposal system on a lot or parcel of land where the area of said lot or parcel is inadequate for the purpose (See Table II, Ord. 103). No wastewater disposal system shall be permitted to discharge to ground surface or to any stream or watercourse or to the contiguous seashores of the Town.

Section 3.3. Inspection Required. Town's inspector shall be allowed to inspect the repair, replacement, or reconstruction work at any stage and, in any event, the applicant for the construction permit shall notify the Town's inspector when the work is ready for final inspection and before any underground portions are covered.

Section 3.4. Additional Requirements. No statement contained in this Article shall be construed to interfere with any additional requirements that may be imposed by any law, ordinance, rule or regulation of legally constituted authority having jurisdiction in such matters.

#### ARTICLE IV. OPERATION OF WASTEWATER

##### DISPOSAL SYSTEMS

Section 4.1. Operating Permit Required. Before operating any private wastewater disposal system, the owner shall first obtain a written operating permit as per Town Ordinance 103. The application for such permit shall be made on a form furnished by the Town which

the applicant shall supplement by such other information as deemed necessary by the Town.

Section 4.2. Renewal of Operating Permits. Except as hereinafter provided, each operating permit shall be renewed biannually on or before July 1 and shall be renewed by the new owner upon transfer of title of the lot or parcel to which the permit is applicable. The Town may require more frequent renewals of operating permits with respect to special or alternative wastewater disposal systems which may require more frequent monitoring or special monitoring devices. Application for renewals of operating permits shall be made on a form furnished by the Town. A renewal fee shall be paid to the Town at the time each biannual application is filed.

Section 4.3. Criteria for Issuance and Renewal of Operating Permits. No operating permit shall be issued or renewed with respect to a wastewater disposal system if the discharge from that system does not meet the standards established in the Town's Wastewater Disposal Ordinance 103. as may be now or hereafter amended.

Section 4.4. Withdrawal of Operating Permits. If the Town's inspector determines that a wastewater disposal system is discharging in violation of the Town's standards, a notice will be forthwith mailed by the Town to the owner at his address shown on the application or as contained in the Town's records, which notice shall describe the violation and shall state that the operating permit pertaining to such system will be withdrawn on a certain date 10 days or more after the date of mailing unless, in the meantime, the owner proves, to the satisfaction of the Town's inspector, that the discharge was not produced by such system. If such proof is not made, the Town will issue, as of the indicated date, a notice of withdrawal of operating permit and such system



will be subject to the measures for mitigation of failure or to the procedures for enforcement as herein provided.

Section 4.5. Recording of Operating Permits. Certified copies of operating permits and notices of withdrawal of operating permits, when issued, will be recorded in the office of the County Recorder of Butte County.

ARTICLE V. MEASURES TO MITIGATE FAILED  
WASTEWATER DISPOSAL SYSTEMS

Section 5.1. Systems Subject to Mitigation Measures. Any wastewater disposal system which discharges in violation of the Town's standards, for whatever reason, will be deemed to be a failed system and will be subject to the mitigation measures herein provided.

Section 5.2. Repair or Reconstruction. The owner of the lot or parcel upon which there exists a failed wastewater disposal system shall be responsible for its repair, reconstruction or replacement.

Section 5.3. Abatement. Any wastewater disposal system being operated without a valid operating permit shall be subject to abatement as a public nuisance by the Town.

Section 5.4. Town Assistance. The Town shall render to owners of wastewater disposal systems subject to abatement all reasonable assistance, in the sole discretion of the Town Council, in abating the nuisance, the Town Council may, in its sole discretion, in the absence of due diligence by the owner, provide for the necessary replacement or reconstruction or repair work pursuant to the provisions of Section 6978 of the Health and Safety Code as may be now or hereafter amended.

Section 5.5. Off-Site Mitigation. Some failed wastewater disposal systems will be inherently incapable of repair, reconstruction or replacement to meet the Town's standards on the lot or parcel of land on which is

located the structure served by such system due to lack of space, inadequate soil conditions, high groundwater or other reason. To render assistance to the owners of such systems, the Town will make reasonable attempts, in the sole discretion of the Town Council, to secure lands or easements within a reasonable distance from such failed systems and to make such lands or easements available upon reasonable terms and conditions to such owners for the purpose of construction of private wastewater disposal systems. Any such system so constructed shall remain the full responsibility of owner for operation and maintenance.

#### ARTICLE VI. ENFORCEMENT

Section 6.1. Investigation Powers. The officers, inspectors, managers, and any duly authorized employees of the Town shall carry evidence establishing their position as an authorized representative of the Town, and, upon exhibiting the proper credentials and identification, shall be permitted to enter in and upon any and all dwellings, buildings, industrial facilities and properties for the purposes of inspection, re-inspection, observation, measurement, sampling, testing or otherwise performing such duties as may be necessary in the enforcement of the provisions of the ordinances, rules and regulations of the Town and provided by Section 6977 of the Health and Safety Code. If necessary under the circumstances, such officials shall obtain an inspection warrant pursuant to Title 13 of Part 3 of the Code of Civil Procedure to obtain right of entry for such purpose.

Section 6.2. Violation. Any person found to be violating any provision of this or any other ordinance, rule or regulation of Town shall be served by the Town's inspector or other authorized person with written notice stating the nature of the violation and providing a

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reasonable time limit for the satisfactory correction thereof. Said time limit shall be not less than ten days. The offender shall, within the period of time stated in such notice, permanently cease all violations. All persons shall be held strictly responsible for any and all acts of agents or employees done under the provisions of this or any other ordinance, rule or regulation of the Town. Upon being notified by the inspector of any violation of this ordinance, the person or persons having charge of said work shall correct the same within the time limit established.

Section 6.3. Public Nuisance. Continued habitation of any building or continued operation of any facility in violation of the provisions of this or any other ordinance, rule or regulation of the Town is hereby declared to be a public nuisance. The Town may cause proceedings to be brought for injunctive relief and/or for the abatement of the occupancy of the building or facility during the period of such violation. In such event there is to be paid to the Town reasonable attorney's fees and costs of suit arising in said action.

Section 6.4 Water Cut Off. As an alternative remedy for such violations, the Town may with proper notice, cause water service to the premises to be discontinued during the period of violation.

Section 6.5. Means of Enforcement Only. The Town hereby determines that the foregoing procedures are established as a means of enforcement of the terms and conditions of its ordinances, rules and regulations and not as a penalty.

Section 6.6. Liability for Violation. Any person violating any of the provisions of the ordinances, rules or regulations of the Town shall become liable to the Town for any expense, loss or damage occasioned by the Town by reason of such violation.

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## ARTICLE VII. PENALTIES

Section 7.1. Violations. Any violation of this ordinance or any rule or regulation of the Town adopted pursuant to Section 6950 of the Health and Safety Code is a misdemeanor punishable by a fine not to exceed five hundred dollars (\$500), or imprisonment not to exceed 60 days, or by both such fine and imprisonment. Each day of such a violation shall constitute a separate offense. Any violation or threatened violation of this ordinance or such rule or regulation may also be enjoined by civil suit in which event there is to be paid to the Town reasonable attorney's fees and costs of suit arising in said action.

## ARTICLE VIII. MISCELLANEOUS PROVISIONS

Section 8.1. Separability. If any article, section, subsection, sentence, clause or phrase of this ordinance or the application thereof to any person or circumstance is for any reason held to be unconstitutional or invalid, such decision shall not affect the validity of the remaining portions of this ordinance or the application of such provision to other persons or circumstances. The Board hereby declares that it would have passed this ordinance or any article, section, subsection, sentence, clause or phrase hereof irrespective of the fact that any one or more articles, sections, subsections, sentences, clauses or phrases be declared to be unconstitutional.

Section 8.2. Amendment or Rescission. This ordinance may be amended or rescinded with the approval of the Executive Officer of the California Regional Water Quality Control Board, Central Valley Region.

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ARTICLE IX. TIME OF TAKING EFFECT

Section 9.1. This ordinance shall take effect immediately upon passage.

\_\_\_\_\_  
Mayor, Town of Paradise

ATTEST:

\_\_\_\_\_  
Town Clerk

\*\*\*\*\*





APPENDIX V-D  
CALIFORNIA HEALTH AND SAFETY CODE  
CHAPTER 3, SECTION 6950-6981



§ 6694.2

**HEALTH AND SAFETY CODE**

1975 Amendment. Substituted "5" for "6" percent interest.

1975 amendment as conforming statutes with provisions of Stats.1974, c. 721, and as declaratory of existing law, see note under Health & S.C. § 4186.09.

**CHAPTER 7. FINANCES AND TAXATION**

**§ 6785. Certificate of tax rate**

When so determined, the board shall immediately certify to the county auditor of the county in which the district is situated the . . . rate of taxation fixed.

(Amended by Stats.1974, c. 208, p. 401, § 3.)

**§ 6801. Disbursement of funds by district board as alternative to functions of treasurer**

As an alternative to the functions of the treasurer, the district board may elect to disburse funds of the district. Such election shall be made by resolution of the board and the filing of a certified copy thereof with the treasurer. The treasurer shall thereupon and thereafter deliver to the district all funds of the district. Such funds shall be deposited by the board in a bank or banks, or savings and loan association or savings and loan associations, approved for deposit of public funds and shall be withdrawn only by written order of the district board, signed by the president and secretary. The order shall specify the name of the payee, the fund from which it is to be paid and state generally the purpose for which payment is to be made. Such order shall be entered in the minutes of the board. The district board shall appoint a treasurer who shall be responsible for the deposit and withdrawal of funds of the district. The treasurer shall deposit with the district, prior to October 1st of each year, a surety bond in the annual amount fixed by the district board. The deposit and withdrawal of funds of the district shall thereafter be subject to the provisions of Article 2 (commencing at Section 53630), Chapter 4, Part 1, Division 2, Title 5, of the Government Code.

(Amended by Stats.1976, c. 349, p. 974, § 30, urgency, eff. July 9, 1976.)

1976 Legislation.

Assembly Const. Amend. No. 31, 1975-76, upon the adoption of which this section was to become operative,

was adopted by the electorate at the primary election held June 8, 1976.

**CHAPTER 8. REORGANIZATION**

**§ 6823. Contracts with governmental agencies for joint facilities or use of facility**

**Notes of Decisions**

**1. Contracts**

Legislature, pursuant to this section, did not intend to grant a sanitary district contractual power to grant preference in limited disposal capacity to those outside district, not ready to use that capacity, over its inhabitants

who have a current need for such service; accordingly, portion of agreement between sanitary district and developer purporting to grant perpetual guarantee of disposal capacity to developer under all circumstances, including shortage, was ultra vires and void. Trimont Land Co. v. Truckee Sanitary Dist. (1983) 193 Cal.Rptr. 568, 145 CA3d 330.

**PART 2. OTHER SANITARY DISTRICT ACTS**

Chapter	Section
3. On-Site Wastewater Disposal Zones	6950

**CHAPTER 3. ON-SITE WASTEWATER DISPOSAL ZONES**

Article	Section
1. Definitions	6950
2. Formation	6955
3. Powers	6975

Chapter 3 was added by Stats.1977, c. 1125, p. 3610, § 1.

Underline indicates changes or additions by amendment

## ARTICLE 1. DEFINITIONS

- Sec.  
 6950. Board; board of directors.  
 6951. Public agency.  
 6952. On-site wastewater disposal system.  
 6952.5. Owner of real property.  
 6953. Zone.  
 6954. Real property.

*Article 1 was added by Stats.1977, c. 1125, p. 3610, § 1.*

§ 6950. Board; board of directors

"Board" or "board of directors" means the governing authority of a public agency.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

Library References

Municipal Corporations ⇐ 204, 270, 708.  
 C.J.S. Municipal Corporations §§ 616 to 625, 1049.

§ 6951. Public agency

"Public agency" means a city \* \* \*, a county, a special district, or any other political subdivision of the state which is otherwise authorized to acquire, construct, maintain, or operate sanitary sewers or sewage systems.

"Public agency" does not mean an improvement district organized pursuant to the Improvement Act of 1911 (Division 7 (commencing with Section 5000), Streets and Highways Code), or the Municipal Improvement Act of 1913 (Division 12 (commencing with Section 10000), Streets and Highways Code) or the Improvement Bond Act of 1915 (Division 10 (commencing with Section 8500), Streets and Highways Code), or a county maintenance district.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1526, § 1.)

§ 6952. On-site wastewater disposal system

"On-site wastewater disposal system" means any of several works, facilities, devices, or other mechanisms used to collect, treat, reclaim, or dispose of wastewater without the use of community-wide sanitary sewers or sewage systems.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6952.5. Owner of real property

"Owner of real property" means any public agency owning land and any person shown as the owner of land on the last equalized assessment roll; provided that where such person is no longer the owner, the term means any person entitled to be shown as owner on the next assessment roll and where land is subject to a recorded written agreement of sale, the term means any person shown therein as purchaser.

(Added by Stats.1978, c. 445, p. 1526, § 2.)

Library References

Waters and Water Courses ⇐ 183½.  
 C.J.S. Waters § 243.

§ 6953. Zone

"Zone" means an on-site wastewater disposal zone formed pursuant to this chapter.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6954. Real property

"Real property" means both land and improvements to land which benefit, directly or indirectly from, or on behalf of, the activities of the zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

Asterisks \* \* \* indicate deletions by amendment



ARTICLE 2 FORMATION

- Sec.
6955. Resolution of intention; declaration.
- 6955.1. Voters; minimum number in proposed zones.
6956. Resolution of intention; contents.
- 6956.1. Resolution of intention; filing.
6957. Proposals; petitions; filing; contents; signatures; certification; setting of hearing.
6958. Notice of hearing.
6959. Time of hearing.
6960. Review of proposal; local health officer; report of findings.
- 6960.1. Review of proposal; regional water quality control board; report of findings.
- 6960.2. Disposal systems; number, type, volume and location.
- 6960.3. Review and approval.
- 6960.4. Approval for proposed plan.
6961. Appearance and presentations by interested persons; hearing of reports.
6962. Hearings; protests; objections; evidence; powers and duties of board.
6963. Protests; declaration of findings; resolution.
6964. Abandonment of proceedings; number of protests.
6965. Resolution; findings and declarations.
6966. Order of formation without election or subject to confirmation by voters.
6967. Elections; petition of request; number of signatures.
6968. Elections; procedure.
6969. Elections; canvass of returns; resolution ordering formation.
6970. Public agencies; inclusion of territory included within another zone.
6971. Public agencies; inconsistent land uses.
6972. Levy of taxes.
6973. Failure of formation; abandonment of proceedings on proposal; further proceedings; time for consideration of application for subsequent proposal.
6974. Annexation of territory.
- 6974.5. Detachment of land; findings; notice; hearing.

Article 2 was added by Stats 1977, c. 1125, p. 3610, § 1.

§ 6955. Resolution of intention; declaration

Whenever the board of directors of a public agency deems it necessary to form an on-site wastewater disposal zone in all or a portion of the public agency's jurisdiction, the board shall by resolution declare that it intends to form such a zone.

(Added by Stats 1977, c. 1125, p. 3610, § 1.)

§ 6955.1. Voters; minimum number in proposed zones

A proposed zone shall contain at least 12 voters, as defined in Section 18 of the Elections Code provided that where there are fewer than 12 registered voters within a proposed zone, the public agency may form a zone if the county health officer determines that an existing or potential public health hazard exists. The board of supervisors shall receive a notice of such determination.

(Added by Stats 1978, c. 445, p. 1526, § 2.)

Library References

Waters and Water Courses → 183½  
C.J.S. Waters § 243.

§ 6956. Resolution of intention; contents

The resolution of intention shall also state:

- (a) A description of the boundaries of the territory proposed to be included within the zone. The description may be accompanied by a map showing such boundaries.
- (b) The public benefit to be derived from the establishment of such a zone.
- (c) A description of the proposed types of on-site wastewater disposal systems and a proposed plan for wastewater disposal.

Underline indicates changes or additions by amendment

## HEALTH AND SAFETY CODE

§ 6959

(d) The number of residential units and commercial users in the proposed zone which the public agency proposes to serve.

(e) The proposed means of financing the operations of the zone.

(f) The time and place for a hearing by the board on the question of the formation and extent of the proposed zone, and the question of the number and type of the residential units and commercial units that the public agency proposes to serve in the proposed zone.

(g) That at such time and place any interested persons will be heard.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6956.5. Resolution of intention; filing

The resolution of intention shall be filed for record in the office of the county recorder of the county in which all or the greater portion of the land in the proposed zone is situated.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6957. Proposals; petitions; filing; contents; signatures; certification; setting of hearing

(a) A proposal to form a zone within a public agency may also be initiated by filing a petition with the board. Such a petition shall contain all the matters specified in subdivisions (a), (b), (c), and (d) of Section 6956. Such a petition shall be signed as provided in either of the following:

(1) By not less than 10 percent of the voters who reside within the territory proposed to be included within the zone.

(2) By not less than 10 percent of the number of owners of real property, including both land and improvements to land, within the territory proposed to be included within the zone who also own not less than 10 percent of the assessed value of the real property within such territory.

(b) Each signer of a petition shall add to his or her signature, the date of signing. If the signer is signing the petition as a voter, he or she shall add to his or her signature his or her place of residence, giving street and number, or a designation sufficient to enable the place of residence to be readily ascertained. If the signer is signing the petition as an owner of real property, he or she shall add to his or her signature a description of the real property owned by him or her sufficient to identify the real property.

(c) Following certification of the petition, the board shall set the time and place of the hearing on the question of the formation of the proposed zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6958. Notice of hearing

(a) Notice of the hearing shall be given by publishing a copy of the resolution of intention or the petition, pursuant to Section 6066 of the Government Code, prior to the time fixed for the hearing in a newspaper circulated in the public agency.

(b) Notice of the hearing shall also be given to the local health officer, the board of supervisors, the governing body of any other public agency within the boundaries of the proposed zone, the governing body of any public agency whose sphere of influence, as determined pursuant to the provisions of Section 54774 of the Government Code, includes the proposed zone, the affected local agency formation commission, and the regional water quality control board in whose jurisdiction the proposed zone lies.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6959. Time of hearing

The hearing by the board on the question of the formation of the proposed zone shall be commenced no less than 45 days nor more than 60 days from adoption of a resolution of intention or the receipt of a petition containing a sufficient number of signatures and shall be completed no more than 90 days after the first day of the hearing.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1526, § 4.)

Asterisks \* \* \* indicate deletions by amendment

## § 6960

## HEALTH AND SAFETY CODE

### § 6960. Review of proposal; local health officer; report of findings

After receiving notice pursuant to subdivision (b) of Section 6958, a local health officer shall review the proposed formation and report his or her findings in writing to the board of directors of the public agency. The report shall specify the maximum number, type, volume, and location of on-site wastewater disposal systems which could be operated within the proposed zone without individually or collectively, directly or indirectly, resulting in a nuisance or hazard to public health. The local health officer may require from the public agency such information as may be reasonably necessary to make the findings required in this section.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6960.1. Review of proposal; regional water quality control board; report of findings

After receiving notice pursuant to subdivision (b) of Section 6958, the affected regional water quality control board shall review the proposed formation and report its findings in writing to the board of directors of the public agency. The report shall specify the maximum number, type, volume, and location of on-site wastewater disposal systems which could be operated within the proposed zone without individually or collectively, directly or indirectly, resulting in a pollution or nuisance, or adversely affecting water quality. The regional water quality control board may require from the public agency such information as may be reasonably necessary to make the findings required in this section.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6960.2. Disposal systems; number, type, volume and location

The number, type, volume, and location of on-site wastewater disposal systems to be operated within the zone shall not exceed the number specified pursuant to either Section 6960 or Section 6960.1.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6960.3. Review and approval

The formation of an on-site wastewater disposal zone shall be subject to review and approval by a local agency formation commission which has adopted rules and regulations affecting the functions and services of special districts pursuant to Article 4 (commencing with Section 54850) of Chapter 6.6 of Part 1 of Division 2 of Title 5 of the Government Code.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6960.4. Approval for proposed plan

Prior to any decision on the question of the formation of the proposed zone, the board shall obtain approval for the proposed plan for wastewater disposal from the affected regional water quality control board if such plan involves the disposal of wastewater to a wastewater treatment facility. For any other method of wastewater disposal, and prior to any decision, the board shall obtain approval for the proposed plan from the local health officer and the affected regional water quality control board. The affected regional water quality control board or the local health officer shall not approve any plan which does not comply with applicable requirements of federal, state, regional, or local law order, regulation, or rule relating to water pollution, the disposal of waste, or public health.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6961. Appearance and presentations by interested persons; hearing of reports

At the time and place fixed in the resolution of intention or the petition, or at any time or place to which the hearing is adjourned, any interested person may appear and present any matters material to the questions set forth in the resolution of intention or the petition. At the hearing the board shall also hear the reports of any local health officer, and any public agency with statutory responsibilities for setting water quality standards, regarding any matters material to the questions set forth in the resolution of intention or the petition.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

Underline indicates changes or additions by amendmer

## HEALTH AND SAFETY CODE

§ 6966

### § 6962. Hearings; protests; objections; evidence; powers and duties of board

At the hearing the board shall also hear and receive any oral or written protests, objections, or evidence which shall be made, presented, or filed. Any person who shall have filed a written protest may withdraw the same at any time prior to the conclusion of the hearing. The board shall have the following powers and duties:

(a) To exclude any territory proposed to be included in a zone when the board finds that such territory will not be benefited by becoming a part of such zone.

(b) To include any additional territory in a proposed zone when the board finds that such territory will be benefited by becoming a part of such zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6963. Protests; declaration of findings; resolution

At the close of the hearing the board shall find and declare by resolution that written protests, filed and not withdrawn prior to the conclusion of the hearing, represent one of the following:

(a) Less than 35 percent of either of the following:

(1) The number of voters who reside in the proposed zone.

(2) The number of owners of real property in the proposed zone who also own not less than 35 percent of the assessed value of the real property within the proposed zone.

(b) Not less than 35 percent but less than 50 percent of either of the following:

(1) The number of voters who reside in the proposed zone.

(2) The number of owners of real property in the proposed zone who also own not less than 35 percent but less than 50 percent of the assessed value of the real property within the proposed zone.

(c) Not less than 50 percent of either of the following:

(1) The number of voters who reside in the proposed zone.

(2) The number of owners of real property in the proposed zone who also own not less than 50 percent of the assessed value of the real property within the proposed zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6964. Abandonment of proceedings; number of protests

If the number of written protests filed and not withdrawn is the number described in subdivision (c) of Section 6963, the board shall abandon any further proceedings on the question of forming a proposed zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6965. Resolution; findings and declarations

If the number of written protests filed and not withdrawn is the number described in subdivision (a) of Section 6963, the board shall find and declare by resolution all of the following:

(a) A description of the exterior boundaries of the zone as proposed or modified.

(b) The number of on-site wastewater disposal systems which the public agency proposes to acquire, operate, maintain, or monitor.

(c) That the operation of the proposed zone will not result in land uses that are not consistent with applicable general plans, zoning ordinances, or other land use regulations.

(d) The method of financing the operations of the zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1526, § 5.)

### § 6966. Order of formation without election or subject to confirmation by voters

The board may order the formation of the zone either without election or subject to confirmation by the voters within the zone upon the question of such formation. However, the board shall not order

Asterisks \* \* \* indicate deletions by amendment

§ 6966

HEALTH AND SAFETY CODE

any such formation without an election if the number of written protests filed and not withdrawn is a number described in subdivision (b) of Section 6963.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1527, § 6.)

§ 6967. Elections; petition of request; number of signatures

If the board does not order the formation of the proposed zone, an election on the question shall be conducted if, within 30 days of the date upon which the board did not order the formation, the board receives a petition requesting such an election signed by either of the following:

(a) Not less than 35 percent of the voters who reside within the territory proposed to be included within the zone.

(b) Not less than 35 percent of the number of owners of real property within the territory proposed to be included within the zone who also own not less than 35 percent of the assessed value of the real property within such territory.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6968. Elections; procedure

Any election conducted pursuant to the provisions of this chapter shall be conducted pursuant to the provisions of \* \* \* law \* \* \* pertaining to regular or special elections held in the public agency.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1527, § 7.)

§ 6969. Elections; canvass of returns; resolution ordering formation

After the canvass of returns of any election on the question of forming a proposed zone, the board shall adopt a resolution ordering the formation of the zone if a majority of votes cast at such election are in favor of such formation.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6970. Public agencies; inclusion of territory included within another zone

No public agency shall form a zone which includes any territory already included within another zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6971. Public agencies; inconsistent land uses

No public agency shall form a zone if such formation will permit other land uses which are not consistent with the general plans, zoning ordinances, or other land use regulations of any county or city within which the proposed zone is located.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6972. Levy of taxes

After the formation of the zone pursuant to this article, all taxes levied to carry out the purposes of the zone shall be levied exclusively upon the property taxable in the zone by the public agency.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6973. Failure of formation; abandonment of proceedings on proposal; further proceedings; time for consideration of application for subsequent proposal

If the board does not form a zone after the close of a hearing in accordance with Section 6967 and no petition is filed pursuant to Section 6967, or if the board abandons proceedings on the proposal to form a zone, or if the formation of a zone is not confirmed by the voters, no further proceeding shall be taken thereon. No application for a subsequent proposal involving \* \* \* substantially the same territory and undertaken pursuant to the provisions of this chapter shall be considered or acted upon by the public agency for at least one year after the date of disapproval of, abandonment of, or election on the proceedings.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1527, § 8.)

Underline indicates changes or additions by amendment



## HEALTH AND SAFETY CODE

§ 6976

### § 6974. Annexation of territory

Territory within the public agency may be annexed to a zone, provided that such territory is not part of another zone. The requirements and proceedings for the annexation of territory shall be the same as the requirements and proceedings for formation of a zone.

(Added by Stats.1978, c. 445, p. 1527, § 9.)

#### Library References

Waters and Water Courses ⇐ 183½  
C.I.S. Waters § 243.

### § 6974.5. Detachment of land; findings; notice; hearing

Land already a part of a zone may be detached if the board finds and determines, following notice and hearing in the same manner provided for formation of the zone, that the land will not be benefited by its continued inclusion in the zone.

(Added by Stats.1978, c. 445, p. 1527, § 10.)

#### Library References

Waters and Water Courses ⇐ 183½  
C.I.S. Waters § 243.

## ARTICLE 3. POWERS

### Sec.

- 6975. Purposes of formation; public agencies.
- 6976. Disposal zones; powers.
- 6977. Compliance with law; authority of district; right of entry on premises.
- 6978. Violation of rules or regulations; abatement as public nuisance; assessment of costs; liens.
- 6979. Repair or replacement of systems; requests by owners of real property; liens; payment of costs by zone.
- 6980. Financial powers; exercise by board; assessments or taxes.
- 6981. Assessments; levy by public agencies.

Article 3 was added by Stats.1977, c. 1125, p. 3610, § 1.

### § 6975. Purposes of formation; public agencies

An on-site wastewater disposal zone may be formed to achieve water quality objectives set by regional water quality control boards, to protect existing and future beneficial water uses, protect public health, and to prevent and abate nuisances. Whenever an on-site wastewater disposal zone has been formed pursuant to this chapter, the public agency shall have the powers set forth in this article, which powers shall be in addition to any other powers provided by law. A public agency shall exercise its powers on behalf of a zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6976. Disposal zones; powers

An on-site wastewater disposal zone shall have the following powers:

- (a) To collect, treat, reclaim, or dispose of wastewater without the use of communitywide sanitary sewers or \* \* \* sewage systems and without degrading water quality within or outside the zone.
- (b) To acquire, design, own, construct, install, operate, monitor, inspect, and maintain on-site wastewater disposal systems, not to exceed the number of systems specified pursuant to either Section 6960 or Section 6960.1, within the zone in a manner which will promote water quality, prevent the pollution, waste, and contamination of water, and abate nuisances.
- (c) To conduct investigations, make analyses, and monitor conditions with regard to water quality within the zone.

Asterisks \* \* \* indicate deletions by amendment

## § 6976

## HEALTH AND SAFETY CODE

(d) To adopt and enforce reasonable rules and regulations necessary to implement the purposes of the zone. Such rules and regulations may be adopted only after the board conducts a public hearing after giving public notice pursuant to Section 6066 of the Government Code.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1527, § 11.)

### § 6977. Compliance with law; authority of district; right of entry on premises

The \* \* \* public agency shall \* \* \* do all such acts as are reasonably necessary to secure compliance with any federal, state, regional, or local law, order, regulation, or rule relating to water pollution or the discharge of pollutants, waste, or any other material within the \* \* \* zone. For such purpose, any authorized representative of the \* \* \* public agency, upon presentation of his credentials, or, if necessary under the circumstances, after obtaining an inspection warrant pursuant to Title 13 (commencing with Section 1822.50) of Part 3 of the Code of Civil Procedure, shall have the right of entry to any premises on which a water pollution, waste, or contamination source, including, but not limited to, septic tanks, is located for the purpose of inspecting such source, including securing samples of discharges therefrom, or any records required to be maintained in connection therewith by federal, state, or local law, order, regulation, or rule.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1528, § 12.)

### § 6978. Violation of rules or regulations; abatement as public nuisance; assessment of costs; liens

(a) Violation of any of the provisions of a rule or regulation adopted pursuant to subdivision (d) of Section 6976 may be abated as a public nuisance by the board. The board may by regulation establish a procedure for the abatement of such a nuisance and to assess the cost of such abatement to the violator. If the violator maintains the nuisance upon real property in which he has a fee title interest, the assessment shall constitute a lien upon such real property in the manner provided in subdivision (b).

(b) The amount of any costs, which are incurred by the zone in abating such a nuisance upon real property, shall be assessed to such real property and shall be added to, and become part of, the annual taxes next levied upon the real property subject to abatement and shall constitute a lien upon that real property as of the same time and in the same manner as does the tax lien securing such annual taxes. All laws applicable to the collection and enforcement of county ad valorem taxes shall be applicable to such assessment, except that if any real property to which such lien would attach has been transferred or conveyed to a bona fide purchaser for value, or if a lien of a bona fide encumbrancer for value has been created and attached thereon, prior to the date on which such delinquent charges appear on the assessment roll, then a lien which would otherwise be imposed by this section shall not attach to such real property and the delinquent and unpaid charges relating to such property shall be transferred to the unsecured roll for collection. Any amounts of such assessments collected are to be credited to the funds of the zone from which the costs of abatement were expended.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6979. Repair or replacement of systems; requests by owners of real property; liens; payment of costs by zone

(a) The owner of any real property upon which is located an on-site wastewater disposal system, which system is subject to abatement as a public nuisance by the \* \* \* public agency, may request the \* \* \* public agency to replace or repair, as necessary, such system. If replacement or repair is feasible, the board may provide for the necessary replacement or repair work.

(b) The person or persons employed by the board to do the work shall have a lien, subject to the provisions of subdivision (b) of Section 6978, for work done and materials furnished, and the work done and materials furnished shall be deemed to have been done and furnished at the request of the owner. The zone, in the discretion of the board, may pay all, or any part, of the cost or price of the work done and materials furnished; and, to the extent that the zone pays the cost or price of the work done and materials furnished, the zone shall succeed to and have all the rights, including, but not limited to, the lien, of such person or persons employed to do the work against the real property and the owner.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1528, § 13.)

Underline indicates changes or additions by amendment

## HEALTH AND SAFETY CODE

§ 7010  
Note 1

### § 6980. Financial powers; exercise by board; assessments or taxes

A board may exercise all of the public agency's existing financial powers on behalf of a zone, excepting that any assessment or tax levied upon the real property of a zone shall be subject to the provisions of Sections 6978 and 6981.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6981. Assessments; levy by public agencies

Notwithstanding any other provision of law, a public agency may levy an assessment reasonably proportional to the benefits derived from the zone, as determined by the board, and subject to the approval of the voters pursuant to the provisions of Article 6 (commencing with Section 2285) of Chapter 3 of Part 4 of Division 1 of the Revenue and Taxation Code. Such benefit assessment shall be in addition to any other charges, assessments, or taxes otherwise levied by the public agency upon the property in the zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1528, § 13.)

## DIVISION 7. DEAD BODIES

### PART 1. GENERAL PROVISIONS

#### Chapter

#### 3.7. Death

#### 3.9. Natural Death Act

#### Section

7180

7185

### CHAPTER 1. DEFINITIONS

#### § 7002. Cremated remains

"Cremated remains" means human remains after incineration and necessary processing under Section 7054.1 in a crematory.

(Amended by Stats.1972, c. 541, p. 930, § 1.)

#### § 7003. Cemetery

##### Notes of Decisions

Holding facility for bodies in cryonic suspension 2

a columbarium, a burial park or mausoleum amply equipped at all times for the interment of remains of bodies cremated at the crematory. 55 Ops.Atty.Gen. 402, 11-14-72.

##### 1. In general

A "crematory" is not a "cemetery" within meaning of this section. Cemetery Bd. v. Telophase Soc. of America (1978) 151 Cal.Rptr. 248, 87 CA3d 847.

A crematory under this section is a cemetery and by § 8340 must have in conjunction with its operation either

2. Holding facility for bodies in cryonic suspension. The holding of human bodies in cryonic suspension does not constitute the operation of a cemetery within the meaning of either this section or § 8100. 63 Ops.Atty.Gen. 879, 12-11-80.

#### § 7009. Interment

##### Notes of Decisions

##### 1. In general

Business which accepted human remains for cremation only where arrangements had been made for disposition

by other persons or entities elsewhere, primarily by burial at sea, did not make "interments" within meaning of this section. Cemetery Bd. v. Telophase Soc. of America (1978) 151 Cal.Rptr. 248, 87 CA3d 847.

#### § 7010. Cremation

##### Notes of Decisions

##### 1. In general

Although business operated a crematory and incinerated human remains, it did not perform "cremations" within definition provided by this section where it accepted

remains for cremation only where arrangements had been made for disposition by other persons or entities elsewhere, primarily by burial at sea. Cemetery Bd. v. Telophase Soc. of America (1978) 151 Cal.Rptr. 248, 87 CA3d 847.

Asterisks \* \* \* indicate deletions by amendment

APPENDIX V-E  
WATER WELLS IN TOWN OF PARADISE





**APPENDIX E**  
**TOWN OF PARADISE**

**WELL OWNERSHIP AND LOCATION  
DIRECTORY  
FOR  
FIGURE 4.**

(Source: Paradise Irrigation District Records)

KEY NUMBER SEE Fig.	ACCOUNT NO.	ADDRESS	OWNER	A.P. NO.	REMARKS
1	0077/01-1475	600 Hillcrest	McKenna	52-26-23	With backflow preventer
2	0120/01-7325	5424 Foster Rd.	Mendon and Mendon, Inc.	52-37-6	"
3	0293/01-5325	486 Eldredge Dr.	Duckett	55-15-7	"
4	0310/01-4550	4929 Foster Rd.	Griffin	55-10-4	"
5	0537/02-0850	3949 Neal Rd.	Peters, C.	51-25-45	"
6	0440/02-7200	5623 Wilson Ln.	Miller, T.	55-04-51	"
7	0446/02-7300	5623 Wilson Ln.	Miller, T.	55-04-51	"
8	0452/02-7700	5566 Wilson Ln.	Potter	55-04-42	"
9	0479/02-9200	285 Roe Rd.	Churchill	55-02-8	"
10	0592/03-4075	5402 Hickory Way	Mount, R.	52-271-55	"
11	0625/03-2825	631 Circlewood	Klingbeil	52-38-7	"
12	0630/03-2700	644 Circlewood	Cook, E.	52-38-34	"
13	0631/03-2675	642 Circlewood	Harris, E.	52-38-39	"
14	0668/03-1750	444 Green Oaks Dr.	Welch, A.	52-274-3	"
15	0815/04-4550	5423 Princeton Way	Colman, W.	51-26-16	"
16	0872/04-2900	5576 Vista Way	Ferguson, L.	52-25-57	"
17	0884/04-5650	5538 Skyway	Townsend, O.	52-26-81	"
18	0886/04-2650	5571 Skyway 5615 Jewell Rd.	Bailes, R.	52-25-78 52-25-2	Parcel with We Adj. Parcel

KEY NUMBER SEE Fig.	ACCOUNT NO.	ADDRESS	OWNER	A.P. NO.	REMARKS
19	0895/04-2325	5616 Jewell Rd.	Black, J. W.	52-182-46	With backflow preventer (2 meters)
20	0928/04-1975	5907 Skyway	Schneider, J.	52-211-6	
21	0929/04-1950				
22	1033/04-0500	5589 Honeyview Ter.	Leonard	51-21-20	"
23	1034/04-0525	5581 Honeyview Ter.	Harding, J.	51-21-13	"
24	1073/05-8500	520 W. Fir St.	Warren, J.	52-13-34	"
25	1176/05-6250	5936 Pineview	Clewett, S.	52-30-11	
26	1257/05-4525	6186/88 Center St.	Hinds, F.	52-04-84	"
27	4434/20-1650	1368 Brill Rd.	Pound, H.	53-19-3	"
28	4493/20-2150	6094 N. Libby Rd.	Hanrion, H.	53-15-165	"
29	4504/20-2375	6160 Libby Rd.	Makau, L.	53-15-151	"
30	4515/20-0225	6186 Mainord Ln.	Marshall, P.	53-15-141	"
31	4548/20-6350	6523 Clark Rd.	Armstrong, E.	50-19-35	"
32	4679/20-4525	1548 West Dr.	Yoder, D.	50-18-35	"
33	1707/21-5075	6992 Wright Way Ln.	Jenkins, C.	50-081-28	"
34	4753/21-0725	1620 Cypress Ln.	Futoran, J.	50-14-32	"
35	4769/21-5525	6682 Moore Rd.	Liddiard, D.	50-081-34	"
36	4791/21-1100	6946 Clark Rd.	Price, L.	50-082-9	"
37	4808/21-4850	1543 Warren Rd.	Morris, N.	50-051-15	"
38	4816/21-4750	1547 Warren Rd.	Stanton, R.	50-051-21	"
39	4969/22-0150	7171 Pentz Rd.	Matteis, H.	50-04-26	"
40	4961/23-5600	7194 Pentz Rd.	Fraser, B.	50-10-2	"
41	5004/23-4525	1820 Drayer Rd.	Fillerup, L.	50-10-29	"
42	5216/23-1650	6807 Rexdale	Combes, K.	50-22-49	"
43	5206/23-1800	6830 Pentz Rd.	Barulich, J.	50-22-126	"

KEY NUMBER SEE Fig.	ACCOUNT NO.	ADDRESS	OWNER	A.P. NO.	REMARKS
44	5230/23-1300	1777 Merrill Rd.	Van Order, H.	50-22-131	With backflow preventer
45	5148/23-3000	1961 Dean Rd.	Melashenko, L.	50-12-64 pt.	"
46	5058/23-4025	1805 Sunrise Ln.	Anderson, R.	50-10-59	"
47	5068/23-3800	7080 Pentz Rd.	Hanford, P. C.	50-11-27 & 28	"
48	5101/23-2100	6902 Farber Ln.	Dale, G.	50-12-68	"
49	5104/23-2125	1744 Dean Rd.	Moilan, T.	50-12-51	"
50	5109-/23-2175	1792 Dean Rd.	Janney, B.	50-12-108	"
51	5110/23-3475	1789 Dean Rd.	Jackson, F.	50-12-7	"
52	5137/23-2450	6917 Lunar Ln.	Booth, W.	50-12-99	"
53	1342/05-3300	7337 Skyway	Bowles, L.	53-021-81	"
54	1404/06-7200	967 Thomasson Ln.	Elarth, V.	51-151-28	"
55	8975/06-7480	896 Thommason Ln.	Stuart, R.	51-152-31	"
56	1444/06-6900	8321 Skyway	Paradise	51-131-13	"
57	1451/06-6800	8423 Skyway	Ready-Mix Witt, G.	51-104-33	"
58	1479/06/5150	8585 Ridgecrest	Gervasi, J.	51-104-79	"
59	1496/06-6500	8405 Montana Dr.	Russell, W.	51-103-12	"
60	1538/06-0625	8566 Skyway	Mathews, G.	51-132-42	"
61	1543/06-0650	8596 Skyway	Glenn, E.	51-102-10	"
62	1636/06-3025	8837 Skyway	Mayhew, K.	50-07-6 (1 mtr removed 2/10/78)	"
63	1642/06-2975	8861 Skyway	Abshier	50-07-4	2 active wells
64		8871 Skyway	Abshier	50-06-83	adj. pcl. no met
65	1716/06-1500	9000 Skyway	Gashler, A.	50-06-75	"
66	1720/07-5650	1319 Taylor Ln.	Settergren, R.	50-15-45	"
67	1733/07-5725	6571 Rocky Ln.	Schwab, L.	51-102-26	(11/84)
68	8553/07-2579	6405 Parkwood Way	Kliment, P.	50-36-1	"
69	8554/07-2577	6407 Parkwood Way	McClure.	50-36-2	"

KEY NUMBER SEE Fig.	ACCOUNT NO.	ADDRESS	OWNER	A.P. NO.	REMARKS
70	8948/07-2421	6404 Parkwood Way	Mace, C.	50-36-12	With backflow preventer
71	1923/07-6850	1273 Wagstaff Rd.	Philipp, R.	51-132-101	"
72	2064/08-0800	6440 Gregory	Mattson, R.	51-12-32	"
73	3053/08-2850	761 Wagstaff	Wimmer, L.	51-05-27	"
74	3317/09-2975	6379 Graham Rd.	Kline, N.	51-081-8	"
75	3371/09-7225	6337 Oliver Rd.	Holmes, R.	51-071-2	"
76	3372/09-7250	7325 Oliver Rd.	Novotny, J.	51-071-3	"
77	3606/09-7075	6334 Baston Ln.	Kocman, S.	51-071-72	"
78	3618/09-7550	6221 Oliver Rd.	Mittag, J.	51-017-35	"
79	3633/10-5025	625 Sunset Dr.	Gay, J.	52-022-38	"
80	3638/10-8275	690 Sunset Dr.	Koehne, K.	52-011-37	"
81	3669/10-7850	717 Edwards Ln.	Holzwarth, M.	52-011-87	"
82	3853/11-6075	5931 Ronsue	Rose, R.	51-18-94	"
83	3854/11-0950	423 Valley View	Keller, R.	51-18-82	"
84	3935/11-5525	395 Rankin Way	Olesky, A.	51-37-4	"
85	4270/12-7925 8478/12-7910	6217 Forgotten Way	Heidel, D.	51-171-49	"
86	2225/13-3225	6090 Rossi Way	Howard, W.	53-15-86	"
87	2226/13-3200	6074 Rossi Way	Smith, P.	53-15-55	"
88	2271/13-2650	1232 Lovely Ln.	Ottinger, L.	53-103-18	"
89	8742/13-0449	951 American Way	Fairbanks, J.	55-18-77	"
90	9101/13-2730	1280 Kling Ct.	Kling, D.	53-04-55	pt. "
91	2531/14-6325	771 Buschmann Rd.	Pdse. Com. Med. Center	52-244-42	"
92	2612/14-4000	5390 Scottwood Rd.	MacKay, C.	52-29-29	"
93	2679/14-1975	5207 Scottwood Rd.	Cummings, T.	55-14-2	"
94	2559/14-0050	678 Buschmann Rd.	Moore, T.	52-36-07	"

KEY NUMBER SEE Fig.	ACCOUNT NO.	ADDRESS	OWNER	A.P. NO.	REMARKS
95	2592/14-0875	5476 Foster Rd.	Jones, M.	52-36-21	With backflow preventer
96	2779/15-0400	5733 Copeland Rd.	Friend, A.	54-29-19	"
97	2868/15-2050	5720 Roundtree	Kottinger, J.	54-141-67	"
98	2869/15-2025	5710 Roundtree	A & L Trust	54-141-68	"
99	2871/15-1975	5709 Roundtree	Albi, F.	54-141-64	"
100	2935/16-3200	1249 Elliott Rd.	Bunich, B.	53-104-2	"
101	2952/16-3575	1181 Elliott Rd.	Wrobel	53-103-27	"
102	4061/16-5800	6020 Crestview	Hubbard, P.	52-033-11	"
103	4089/16-3875	5941 Crestview	Butler, A.	52-07-55	"
104	4403/16-1675	1366 Meriam Rd.	Gramcko, L.	53-19-92	"
105	5145/23-2925	1909 Dean Rd.	NCCASDA/Rea	50-12-115	"
106	5149/23-3025	6712 Chapman Ln.	Shane, C.	50-12-15	"
107	5162/23-2900	1913 Dean Rd.	Redwood, P.	50-12-116	"
108	5218/23-1600	6815 Rexdale Ln.	Theis, F.	50-22-47	"
109	5222/23-1500	6806 Rexdale Ln.	Thorpe, M.	50-22-43	"
110	5241/23-1025	6815 Leone Way	Derby, H.	50-22-95	"
111	5252/23-0750	1851 Merrill Rd.	Gothé, R.	50-22-12 & 13	"
112	5274/22-6100	6674 Shay Ln.	Sonntag, W.	50-23-21	"
113	5278/22-6000	6664 Shay Ln.	Roy, R.	50-37-3	"
114	5280/22-5950	1886 Andrew Pl.	Dewhirst, P.	50-37-35	"
115	5282/22-5900	1880 Andrew Pl.	Petersen, R.	50-37-34	"
116	5294/22-5600	6673 Shay Ln.	Smith, J.	50-23-19	"
117	5295/22-5575	6675 Shay Ln.	Sundwell, O.	50-23-18	"
118	5346/22-3018	1681 W. Merrill Rd.	Towle, R.	50-14-30	"
119	5455/24-7125	1767 Whitaker	Frank, E.	50-24-73	"
120	5465/24-5975	6540 Pentz Rd.	Kennedy, L.	50-25-1	"



KEY NUMBER SEE Fig.	ACCOUNT NO.	ADDRESS	OWNER	A.P. NO.	REMARKS
121	5494/24-6250	1866 Stark Ln.	Showalter, P.	50-25-63	With backflow preventer
122	5618/24-1700	1764 Heynen Rd.	Blom, G.	53-25-15	"
123	5662/24-3475	5955 Canyon View	Strauss, G.	53-26-22	"
124	5685/24-3075	1863 Del Rio Way	NCCASDA/Lee	53-26-50	"
125	5714/24-2500 5719/24-2475	5974 Pentz Rd.	Feather River Hospital	53-35-2	" "
126	5733/25-1425	5724 Chaney Ln.	Sands, A.	54-21-104	"
127	5740/25-1250	5701 Chaney Ln.	Robinson, A.	54-21-9	"
128	5741/25-1225	5731 Chaney Ln.	Berto, C.	54-21-88	"
129	5765/25-0825	5825 Fickett Ln.	Huston, M.	53-272-26	"
130	5766/25-0225	5826 Fickett Ln.	Blackwelder	53-272-28	"
131	5769/25-0300	5842 Fickett Ln.	Shields, E.	53-272-7	"
132	5807/25-1650	5863 Pentz Rd.	Fausser, V.	54-21-24	"
133	5905/25-2950	1851 Salida Way	Gustin, J.	54-28-11	"
134	5907/25-3000	1854 Salida Way	Tromblay, E.	54-28-15	"
135	6203/26-0005	5011 Country Club	Kasza, K.	55-44-16	"
136	6252/27-0525	6293 Virginia Way	Fisher, L.	50-211-10	"
137	6325/27-1350	1529 Forest Circle	Cosgrove, F.	50-32-7	"
138	6326/27-1325	1525 Forest Circle	Geitner, C.	50-32-9	"
139	6361/27-1875	6224 Lancaster Dr.	Mohr, M.	50-28-14	"
140	6536/28-1200	5954 Hazel Way	Rikalo, E.	53-20-13	"
141	6554/28-0900	5891 Hazel Way	Anderson	53-21-14	Meter damaged - cust refused to install device
142	6626/28-6125	5922 Sawmill Rd.	Ban, J.	53-18-62	"
143	6667/28-2075	5828 Grape Ln.	Cathey, J.	53-33-45	"
144	6835/29-0875	5657 Woodglen Dr.	Cunningham	54-131-58	"
145	6870/29-2050	5744 Woodglen Dr.	Schnakenberg	54-132-42	Well on pc1.

KEY NUMBER SEE Fig.	ACCOUNT NO.	ADDRESS	OWNER	A.P. NO.	REMARKS
146	6871/29-2075	1622 Nunneley Rd.	Schnakenberg	54-132-41 Adj. pcl.	With backflow preventer
147	6899/29-0325	1604 Nunneley Rd.	Morris, G.	54-131-59	"
148	6912/29-2650	1678 Nunneley Rd.	Nielsen, C.	54-132-40	"
149	6928/29-2975	5784 Kibler Rd.	Smith, E.	53-23-103	"
150	6979/29-3675	5956 Kibler Rd.	Nicholas, M.	53-18-36	"
151	7153/30-2425	5427 S. Edgewood	Schieber, C.	54-201-44	"
152	7187/30-2750	5265 Edgewood	Barkley, W.	55-201-13	"
153	7317/31-0700	5553 Foland Rd.	Vera, R.	54-152-12	"
154	7380/31-6175	1443 Gracephil	Burkhardt, J.	54-182-40	"
155	7414/31-5600	1438 Toni Dr.	Ramsey, W.	54-182-45	"
156	7544/31-3550	5150 S. Edgewood	Geroy	55-22-11	"
157	7550/31-3625	1470 Bennett Rd.	Gates, B.	55-22-37	"
158	7361/31-1225	5369 Newland Rd.	Mann, T.	54-181-2	Active 8/84
159	7591/32-0575	1261 Bennett Rd.	Chaney, L.	55-18-40	"
160	7883/33-1475	5696 Brookview	Tall, B.	54-01-53	"
161	7811/33-1025	5570 Heavenly Pl.	Ames, S.	54-31-30	"
162	7940/33-2975	5699 Academy Dr.	S.D.A. Church	52-242-49	"
	7944/33-2525	" " "	& School	54-04-136	"
	7943/33-2500	" " "	"		"
163	7946/33-2950	5741 Academy Dr.	Foster, T.	52-242-50	"
164	8005/33-3350	5718 Shady Ln.	Britton, J.	52-242-43	"
165	8960/34-2395	897 Elliott Rd.	Malekos, G.	53-111-15	"
166	8242/34-1600	5806 Greenthumb Ln.	Meyer, G.	53-12-30	"
167	8382/35-1175	900 Central Park	Coverston, J.	53-07-47	"

KEY NUMBER SEE FIG.	OWNER	ADDRESS	A.P. NO.	REMARKS	
168	Anderson, H.	1883 Mo11 Rd.	50-22-117	11-470 (old) removed 7/7/80	No meter or back- flow preventer
169	Baker, R.	7209 Skyway	53-021-88	3-615 (old) removed 3/6/80	"
170	Burgess, C.	5311 Skyway	51-22-44	2-642 (old) removed 2/26/79	"
171	Cain, B.	6141 N. Libby	53-15-9	10-210 (old) removed 10/12/77	"
172	Charlton, E.	5370 Orchard Dr.	51-26-33	2-488-1 (old) removed 11/18/77	"
173	Cody, J.	6154 Alamo Way	53-15-119	12-666-5 (old) removed 6/17/77	"
174	Conner, H.	5336 Sawmill Rd.	54-201-19	14-420-10 (old) removed 1/25/78	"
175	Cox, O. J.	1459 Nunneley Rd.	53-33-95	13-314 (old) removed 9/13/77	"
176	Davis, R.	1460 Summer Ln.	54-142-76	14-476-30 (old) removed 6/17/77	"
177	Fagin, J.	6030 Kibler Rd.	53-17-21	13-930 (old) removed 6/9/77	"
178	Fisher, C.	6805 Larsen Ln.	50-22-105	No meter	"
179	Green, E.	6249 Forest Ln.	50-212-6	12-635-15 (old) removed 9/29/77	"
180	Hatter, C.	5250 California	55-211-72	14-952 (old) removed 10/6/77	"
181	Kempton, R.	1879 June Way	50-37-9 & 10	11-462-65 (old) removed 8/8/77	"
182	Knibb, J.	6743 Moore Rd.	50-06-39	4-520 (old) removed 7/15/77	"
183	Knibb, J.	6755 Moore Rd.	50-06-77	(1711/21-5025) Adj pc1	"
184	Lovell, O.	1874 June Way	50-37-15	11-462-26 (old) removed 5/27/77	"
185	Mallan, D.	480 Pearson Rd.	54-05-49	15-565 (old) removed 6/13/77	"
186	Miller, R.	6656 Pentz Rd. (Ponderosa Pk.)	50-24-79	11-561-3 (old) removed 4/6/78	"
187	Moore, B.	5708 Roundtree Dr.	54-141-63	9-627-7 (old) removed 10/10/77	"
188	Noble, V.	6755 Chapman Ln.	50-11-16	11-360 (old) removed 10/12/77	"
189	Prouty, P.	5227 Squire Ln.	55-211-50	14-960-3 (old) removed 8/30/77	"
190	Redway, B.	1558 Orput Ln.	53-162-54	10-80-21 (old) removed 9/16/77	"
191	Schlotthauer	5800 Sawmill Rd.	53-23-131	13-271 (old) removed 10/23/78	"
192	Steever, L.	1780 Stark Ln.	50-25-6	11-649 (old) removed 2/13/80	"

KEY NUMBER SEE FIG.	OWNER	ADDRESS	A.P. NO.	REMARKS	
193	Storey, H.	1383 Wagstaff Rd.	50-34-34	4-730 (old) removed 6/13/77	No meter or back- flow preventer
194	Weaver, R.	6406 Parkwood Way	50-36-11	4-749-11 (old) removed 6/3/77	"
195	West, M.	5583 Angel Dr.	54-31-49	15-277-18 (old) removed 7/9/80	"
196	Wilson, C.	1572 Adams Rd.	50-14-60	10-559-1 (old) removed 6/9/77	"
197	Klomp, W.	6452 Rix Ln.	50-36-17	4-760 (old) removed 10/25/77	"

KEY NUMBER SEE Fig.	ACCOUNT NO.	ADDRESS	OWNER	A.P. NO.	REMARKS
198	0082/01-1175	573 Hillcrest	Shock, W.	52-26-83	No pump
199	0113/01-7450	5462 Foster Rd.	Humphrey, G.	52-36-23	Well Dry Pump Pulled 3/7
200	0597/03-3925	469 Circlewood	Stinnett	52-271-60	No Pump
201	0823/04-3150	4867 Skyway	White, R.	51-22-52	Well Dry
202	0879/04-2775	5435-47 Skyway	Bridges	52-29-94	Water too low for pump
203	1647/06-2950	8891 Skyway	Worth	50-06-82	Well Dry
204	3365/09-3325	746 Roberts	DeMartini, E.	51-082-41	Well not in use
205	3623/09-7600	631 Bille Rd.	Van Oosting	51-071-37	No Pump
206	4339/12-6575	6209 Azalea Ln.	McEwen, S.	51-172-18	No Pump
207	2377/13-1775	691 Pearson Rd.	Bailey, J.	54-01-99	
208	2467/14-6050	5595 Linrich Ln.	Barton, R.	54-05-82	No Pump
209	2676/14-2725	5218 Scottwood Rd.	Fulton, L.	55-14-13	Well Dry
210	4856/21-4400	7143 Clark Rd.	Knight, G.	50-04-17	No Pump
211	4857/21-2125	7148 Clark Rd.	Scott, J.	50-04-36	No Pump
212	5148/23-3000	1961 Dean Rd.	Melashenko, L.	50-12-64	No Pump
213	5061/23-3775	7050 Pentz Rd.	Noble, V.	50-11-29	Well Dry
	5074/23-3700	"	"	"	Not connected
	5086/23-3675	"	"	"	to PID lines
	5121/23-3750	"	"	"	"
214	5115/23-2225	1834 Dean Rd.	Murphy, J.	50-12-109	No Pump
215	5203/23-1875	1827 Rockhouse Rd.	Cooper, J.	50-22-128	Irrig. Meter Sealed
216	5552/24-5125	1824 Paige Ln.	McDaniel, D.	53-24-14	No Pump
217	6143/25-4151	2213 DeMille	Scarborough -	55-261-26	Has Meter
218		2213 DeMille	A/S Nordstrom	55-261-27	Has Well
219	9207/28-3660	1422 Nunneley Rd.	Prieto, I.	54-142-26	Well Capped
220	6925/29-5575	5785 Kibler Rd.	Stafford, W.	53-23-51	No Pump
221	7546/31-3575	5154 Laurel Oaks	Anderson, E.	55-22-51	No Pump
222	7624/32-1400	5112 Warnke Rd.	Walker, A.	55-18-67	Well Dis- connected



DRAFT

RULES AND REGULATIONS

TOWN OF PARADISE

ONSITE

WASTEWATER MANAGEMENT PROGRAM

V - F



TABLE OF CONTENTS

DRAFT

- A. ONSITE WASTEWATER MANAGEMENT NEEDS ANALYSIS.
- B. HEALTH AND SAFETY CODE Part 2, Chapter 3.
- C. ORDINANCE - - - - - REGULATING THE USE OF WASTEWATER DISPOSAL SYSTEMS AND FACILITIES, PROVIDING FOR PERMITS AND FEES WITH REGARD THERETO, AND REGULATING THE DISCHARGE OF WASTE OR POLLUTED WATERS.
- D. ORDINANCE 103 - - - - - PROVIDING DESIGN AND LOCATION STANDARDS FOR WASTEWATER DISPOSAL SYSTEMS (AS AMENDED).
- D<sup>1</sup>. ONSITE WASTEWATER SYSTEM INVENTORY.
- E. RESOLUTION - - - - - ESTABLISHING POLICIES REGARDING THE PREPARATION AND IMPLEMENTATION OF HYDRAULIC/CHEMICAL LIMITS FOR TOWN OF PARADISE 20 SUBBASINS.
- F. RESOLUTION - - - - - ESTABLISHING WATER CONSERVATION POLICIES.
- G. ONSITE WASTEWATER SYSTEM MANAGEMENT ZONE BUDGET PROPOSALS.
- H. PROPOSED FEE SCHEDULE.
- I. STAFFING, ORGANIZATION AND ADMINISTRATIVE DETAILS.
- J. RESOLUTION - - - - - RESOLUTION OF INTENTION TO CREATE ONSITE WASTEWATER MANAGEMENT/DISPOSAL ZONES.
- K. HEALTH OFFICER'S REPORT TO TOWN COUNCIL & REVIEW BY RWQCB.
- L. INSPECTION PROCEDURES
  - 1. Onsite Inspection Methodology.
  - 2. Special Monitoring.
- M. SUBBASIN WATER QUALITY MONITORING PROGRAM.



## ON-SITE WASTEWATER MANAGEMENT NEEDS ANALYSIS

The Town of Paradise encompassing 18 square miles has a current population of approximately 24,000. Adjacent to but outside the Town boundaries are topographically and hydrologically related areas designated as Upper Ridge, Central Butte and Stirling City. These areas account for about another 7,000 inhabitants.

Sewage in the area for residential, commercial, institutional and industrial dischargers is all conventional septic tanks and leachfields. Previous studies (Anon 1983 and Anon 1980) have identified the problem of:

- continued growth;
- site limitations due to high groundwater, shallow soils and excessively slow percolation rates; and
- system failures and dwelling repairs due to system age, excessively high density, soil clogging in leachfields and/or improper septic tank maintenance.
- too high application rates.

The composition of the Town do not favor large capital expenditures which would place an unusually high tax or use fee burden on the moderate income level population. The median age for the community is reported as 47, placing it well within the retirement age limits for U.S. communities (U.S. Dept. of Housing and Urban Development, Demographics of Retirement Communities in the U.S., 1982).

State law provides the mechanism by which unsewered communities can select another sewerage option and retain septic systems (onsite systems). The statute, Onsite Wastewater Disposal Zones, Chapter 3, Section 6950,



allows the creation of onsite wastewater disposal zones for the purpose of inspecting, monitoring and requiring repair or replacement of failing onsite systems (Section 6979).

Management of onsite systems would permit the orderly growth of the community to occur without creation of an enormous public debt and would further provide the controls by means of pre-set subbasin hydraulic/chemical limits to prevent the degradation of groundwater and surface water resources.

An inventory of existing systems and the establishment of hydraulic loading/chemical loading limits for each Town subbasin would be an essential precursor to the implementation of the onsite wastewater management program.

Partial sewerage of selected zones of the high land use density commercial areas along the Skyway, would be an early candidate for early implementation. Plans and costs will be set forth to identify conveyance routes, effluent storage and effluent irrigation sites. Operation and maintenance of the sewers, trunkline, interceptor sewers and disposal system can be a corollary function of the Onsite Management District as administered through the Town organization.

§ 6694.2

1975 Amendment. Substituted "5" for "6" percent interest. 1975 amendment as conforming statutes with provisions of Stats. 1974, c. 721, and as declaratory of existing law, see note under Health & S.C. § 4186.09.

CHAPTER 7. FINANCES AND TAXATION

§ 6785. Certificate of tax rate

When so determined, the board shall immediately certify to the county auditor of the county which the district is situated the rate of taxation fixed.  
(Amended by Stats. 1974, c. 208, p. 401, § 3.)

§ 6801. Disbursement of funds by district board as alternative to functions of treasurer

As an alternative to the functions of the treasurer, the district board may elect to disburse funds of the district. Such election shall be made by resolution of the board and the filing of a certified copy thereof with the treasurer. The treasurer shall thereupon and thereafter deliver to the district funds of the district. Such funds shall be deposited by the board in a bank or banks, or savings loan association or savings and loan associations, approved for deposit of public funds and shall be withdrawn only by written order of the district board, signed by the president and secretary. The order shall specify the name of the payee, the fund from which it is to be paid and state generally the purpose for which payment is to be made. Such order shall be entered in the minutes of the board. The district board shall appoint a treasurer who shall be responsible for the deposit and withdrawal of funds of the district. The treasurer shall deposit with the district, prior to October 1st of each year, a surety bond in the annual amount fixed by the district board. The deposit and withdrawal of funds of the district shall thereafter be subject to the provisions of Article 2 (commencing at Section 534) Chapter 4, Part 1, Division 2, Title 5, of the Government Code.  
(Amended by Stats. 1976, c. 349, p. 974, § 30, urgency, eff. July 9, 1976.)

1976 Legislation.  
Assembly Const. Amend. No. 31, 1975-76, upon the adoption of which this section was to become operative,

was adopted by the electorate at the primary election held June 8, 1976.

CHAPTER 8. REORGANIZATION

§ 6823. Contracts with governmental agencies for joint facilities or use of facility

Notes of Decisions

1. Contracts

Legislature, pursuant to this section, did not intend to grant a sanitary district contractual power to grant preference in limited disposal capacity to those outside district, not ready to use that capacity, over its inhabitants

who have a current need for such service; accordingly, portion of agreement between sanitary district and developer purporting to grant perpetual guarantee of disposal capacity to developer under all circumstances, including shortage, was ultra vires and void. Trimont Land & Truckee Sanitary Dist. (1983) 193 Cal.Rptr. 568, C.A.3d 330.

PART 2. OTHER SANITARY DISTRICT ACTS

Chapter

3. On-Site Wastewater Disposal Zones

Sec

6

CHAPTER 3. ON-SITE WASTEWATER DISPOSAL ZONES

Article

1. Definitions

2. Formation

3. Powers

Sec

6

6

6

Chapter 3 was added by Stats. 1977, c. 1125, p. 3610, § 1

Underline indicates changes or additions by amendment

## HEALTH AND SAFETY-CODE

§ 6954

### ARTICLE 1. DEFINITIONS

Sec.

- 6950. Board; board of directors.
- 6951. Public agency.
- 6952. On-site wastewater disposal system.
- 6952.5. Owner of real property.
- 6953. Zone.
- 6954. Real property.

Article 1 was added by Stats.1977, c. 1125, p. 3610, § 1.

#### § 6950. Board; board of directors

"Board" or "board of directors" means the governing authority of a public agency.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

#### Library References

Municipal Corporations ← 204, 270, 708.  
C.J.S. Municipal Corporations §§ 616 to 625, 1049.

#### § 6951. Public agency

"Public agency" means a city \* \* \* a county, a special district, or any other political subdivision of the state which is otherwise authorized to acquire, construct, maintain, or operate sanitary sewers or sewage systems.

"Public agency" does not mean an improvement district organized pursuant to the Improvement Act of 1911 (Division 7 (commencing with Section 5000), Streets and Highways Code), or the Municipal Improvement Act of 1913 (Division 12 (commencing with Section 10000), Streets and Highways Code) or the Improvement Bond Act of 1915 (Division 10 (commencing with Section 8500), Streets and Highways Code), or a county maintenance district.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1526, § 1.)

#### § 6952. On-site wastewater disposal system

"On-site wastewater disposal system" means any of several works, facilities, devices, or other mechanisms used to collect, treat, reclaim, or dispose of wastewater without the use of community-wide sanitary sewers or sewage systems.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

#### § 6952.5. Owner of real property

"Owner of real property" means any public agency owning land and any person shown as the owner of land on the last equalized assessment roll; provided that where such person is no longer the owner, the term means any person entitled to be shown as owner on the next assessment roll and where land is subject to a recorded written agreement of sale, the term means any person shown therein as purchaser.

(Added by Stats.1978, c. 445, p. 1526, § 2.)

#### Library References

Waters and Water Courses ← 183½.  
C.J.S. Waters § 243.

#### § 6953. Zone

"Zone" means an on-site wastewater disposal zone formed pursuant to this chapter.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

#### § 6954. Real property

"Real property" means both land and improvements to land which benefit, directly or indirectly from, or on behalf of, the activities of the zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

Asterisks \* \* \* indicate deletions by amendment



ARTICLE 2 FORMATION

- Sec.  
 6955. Resolution of intention; declaration.  
 6955.1. Voters; minimum number in proposed zone.  
 6956. Resolution of intention; contents.  
 6956.5. Resolution of intention; filing.  
 6957. Proposals; petitions; filing; contents; signatures; certification; setting of hearing.  
 6958. Notice of hearing.  
 6959. Time of hearing.  
 6960. Review of proposal; local health officer; report of findings.  
 6960.1. Review of proposal; regional water quality control board; report of findings.  
 6960.2. Disposal systems; number, type, volume and location.  
 6960.3. Review and approval.  
 6960.4. Approval for proposed plan.  
 6961. Appearance and presentations by interested persons; hearing of reports.  
 6962. Hearings; protests; objections; evidence; powers and duties of board.  
 6963. Protests; declaration of findings; resolution.  
 6964. Abandonment of proceedings; number of protests.  
 6965. Resolution; findings and declarations.  
 6966. Order of formation without election or subject to confirmation by voters.  
 6967. Elections; petition of request; number of signatures.  
 6968. Elections; procedure.  
 6969. Elections; canvass of returns; resolution ordering formation.  
 6970. Public agencies; inclusion of territory included within another zone.  
 6971. Public agencies; inconsistent land uses.  
 6972. Levy of taxes.  
 6973. Failure of formation; abandonment of proceedings on proposal; further proceedings; time for consideration of application for subsequent proposal.  
 6974. Annexation of territory.  
 6974.5. Detachment of land; findings; notice; hearing.

Article 2 was added by Stats.1977, c. 1125, p. 3610, § 1.

§ 6955. Resolution of intention; declaration

Whenever the board of directors of a public agency deems it necessary to form an on-site wastewater disposal zone in all or a portion of the public agency's jurisdiction, the board shall by resolution declare that it intends to form such a zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6955.1. Voters; minimum number in proposed zones

A proposed zone shall contain at least 12 voters, as defined in Section 18 of the Elections Code, provided that where there are fewer than 12 registered voters within a proposed zone, the public agency may form a zone if the county health officer determines that an existing or potential public health hazard exists. The board of supervisors shall receive a notice of such determination.

(Added by Stats.1978, c. 445, p. 1526, § 3.)

Library References

Waters and Water Courses ← 183½  
 C.J.S. Waters § 243.

§ 6956. Resolution of intention; contents

The resolution of intention shall also state:

- (a) A description of the boundaries of the territory proposed to be included within the zone. The description may be accompanied by a map showing such boundaries.
- (b) The public benefit to be derived from the establishment of such a zone.
- (c) A description of the proposed types of on-site wastewater disposal systems and a proposed plan for wastewater disposal.

Underline indicates changes or additions by amendment

## HEALTH AND SAFETY CODE

§ 6959

(d) The number of residential units and commercial users in the proposed zone which the public agency proposes to serve.

(e) The proposed means of financing the operations of the zone.

(f) The time and place for a hearing by the board on the question of the formation and extent of the proposed zone, and the question of the number and type of the residential units and commercial units that the public agency proposes to serve in the proposed zone.

(g) That at such time and place any interested persons will be heard.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6956.5. Resolution of intention; filing

The resolution of intention shall be filed for record in the office of the county recorder of the county in which all or the greater portion of the land in the proposed zone is situated.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6957. Proposals; petitions; filing; contents; signatures; certification; setting of hearing

(a) A proposal to form a zone within a public agency may also be initiated by filing a petition with the board. Such a petition shall contain all the matters specified in subdivisions (a), (b), (c), and (d) of Section 6956. Such a petition shall be signed as provided in either of the following:

(1) By not less than 10 percent of the voters who reside within the territory proposed to be included within the zone.

(2) By not less than 10 percent of the number of owners of real property, including both land and improvements to land, within the territory proposed to be included within the zone who also own not less than 10 percent of the assessed value of the real property within such territory.

(b) Each signer of a petition shall add to his or her signature, the date of signing. If the signer is signing the petition as a voter, he or she shall add to his or her signature his or her place of residence, giving street and number, or a designation sufficient to enable the place of residence to be readily ascertained. If the signer is signing the petition as an owner of real property, he or she shall add to his or her signature a description of the real property owned by him or her sufficient to identify the real property.

(c) Following certification of the petition, the board shall set the time and place of the hearing on the question of the formation of the proposed zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6958. Notice of hearing

(a) Notice of the hearing shall be given by publishing a copy of the resolution of intention or the petition, pursuant to Section 6066 of the Government Code, prior to the time fixed for the hearing in a newspaper circulated in the public agency.

(b) Notice of the hearing shall also be given to the local health officer, the board of supervisors, the governing body of any other public agency within the boundaries of the proposed zone, the governing body of any public agency whose sphere of influence, as determined pursuant to the provisions of Section 54774 of the Government Code, includes the proposed zone, the affected local agency formation commission, and the regional water quality control board in whose jurisdiction the proposed zone lies.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6959. Time of hearing

The hearing by the board on the question of the formation of the proposed zone shall be commenced no less than 45 days nor more than 60 days from adoption of a resolution of intention or the receipt of a petition containing a sufficient number of signatures and shall be completed no more than 90 days after the first day of the hearing.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1526, § 4.)

Asterisks \* \* \* indicate deletions by amendment



## § 6960

## § 6960. Review of proposal; local health officer; report of findings

After receiving notice pursuant to subdivision (b) of Section 6958, a local health officer shall review the proposed formation and report his or her findings in writing to the board of directors of the public agency. The report shall specify the maximum number, type, volume, and location of on-site wastewater disposal systems which could be operated within the proposed zone without individually or collectively, directly or indirectly, resulting in a nuisance or hazard to public health. The local health officer may require from the public agency such information as may be reasonably necessary to make the findings required in this section.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

## § 6960.1. Review of proposal; regional water quality control board; report of findings

After receiving notice pursuant to subdivision (b) of Section 6958, the affected regional water quality control board shall review the proposed formation and report its findings in writing to the board of directors of the public agency. The report shall specify the maximum number, type, volume, and location of on-site wastewater disposal systems which could be operated within the proposed zone without individually or collectively, directly or indirectly, resulting in a pollution or nuisance, or adversely affecting water quality. The regional water quality control board may require from the public agency such information as may be reasonably necessary to make the findings required in this section.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

## § 6960.2. Disposal systems; number, type, volume and location

The number, type, volume, and location of on-site wastewater disposal systems to be operated within the zone shall not exceed the number specified pursuant to either Section 6960 or Section 6960.1.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

## § 6960.3. Review and approval

The formation of an on-site wastewater disposal zone shall be subject to review and approval by a local agency formation commission which has adopted rules and regulations affecting the functions and services of special districts pursuant to Article 4 (commencing with Section 54850) of Chapter 6.6 of Part 1 of Division 2 of Title 5 of the Government Code.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

## § 6960.4. Approval for proposed plan

Prior to any decision on the question of the formation of the proposed zone, the board shall obtain approval for the proposed plan for wastewater disposal from the affected regional water quality control board if such plan involves the disposal of wastewater to a wastewater treatment facility. For any other method of wastewater disposal, and prior to any decision, the board shall obtain approval for the proposed plan from the local health officer and the affected regional water quality control board. The affected regional water quality control board or the local health officer shall not approve any plan which does not comply with applicable requirements of federal, state, regional, or local law order, regulation, or rule relating to water pollution, the disposal of waste, or public health.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

## § 6961. Appearance and presentations by interested persons; hearing of reports

At the time and place fixed in the resolution of intention or the petition, or at any time or place to which the hearing is adjourned, any interested person may appear and present any matters material to the questions set forth in the resolution of intention or the petition. At the hearing the board shall also hear the reports of any local health officer, and any public agency with statutory responsibility for setting water quality standards, regarding any matters material to the questions set forth in the resolution of intention or the petition.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

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## HEALTH AND SAFETY CODE

§ 6966

### § 6962. Hearings; protests; objections; evidence; powers and duties of board

At the hearing the board shall also hear and receive any oral or written protests, objections, or evidence which shall be made, presented, or filed. Any person who shall have filed a written protest may withdraw the same at any time prior to the conclusion of the hearing. The board shall have the following powers and duties:

(a) To exclude any territory proposed to be included in a zone when the board finds that such territory will not be benefited by becoming a part of such zone.

(b) To include any additional territory in a proposed zone when the board finds that such territory will be benefited by becoming a part of such zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6963. Protests; declaration of findings; resolution

At the close of the hearing the board shall find and declare by resolution that written protests, filed and not withdrawn prior to the conclusion of the hearing, represent one of the following:

(a) Less than 35 percent of either of the following:

(1) The number of voters who reside in the proposed zone.

(2) The number of owners of real property in the proposed zone who also own not less than 35 percent of the assessed value of the real property within the proposed zone.

(b) Not less than 35 percent but less than 50 percent of either of the following:

(1) The number of voters who reside in the proposed zone.

(2) The number of owners of real property in the proposed zone who also own not less than 35 percent but less than 50 percent of the assessed value of the real property within the proposed zone.

(c) Not less than 50 percent of either of the following:

(1) The number of voters who reside in the proposed zone.

(2) The number of owners of real property in the proposed zone who also own not less than 50 percent of the assessed value of the real property within the proposed zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6964. Abandonment of proceedings; number of protests

If the number of written protests filed and not withdrawn is the number described in subdivision (c) of Section 6963, the board shall abandon any further proceedings on the question of forming a proposed zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6965. Resolution; findings and declarations

If the number of written protests filed and not withdrawn is the number described in subdivision (a) of Section 6963, the board shall find and declare by resolution all of the following:

(a) A description of the exterior boundaries of the zone as proposed or modified.

(b) The number of on-site wastewater disposal systems which the public agency proposes to acquire, operate, maintain, or monitor.

(c) That the operation of the proposed zone will not result in land uses that are not consistent with applicable general plans, zoning ordinances, or other land use regulations.

(d) The method of financing the operations of the zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1526, § 5.)

### § 6966. Order of formation without election or subject to confirmation by voters

The board may order the formation of the zone either without election or subject to confirmation by the voters within the zone upon the question of such formation. However, the board shall not order

Asterisks \* \* \* indicate deletions by amendment



§ 6966

HEALTH AND SAFETY CODE

any such formation without an election if the number of written protests filed and not withdrawn is a number described in subdivision (b) of Section 6963.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1527, § 8.)

§ 6967. Elections; petition of request; number of signatures

If the board does not order the formation of the proposed zone, an election on the question shall be conducted if, within 30 days of the date upon which the board did not order the formation, the board receives a petition requesting such an election signed by either of the following:

(a) Not less than 35 percent of the voters who reside within the territory proposed to be included within the zone.

(b) Not less than 35 percent of the number of owners of real property within the territory proposed to be included within the zone who also own not less than 35 percent of the assessed value of the real property within such territory.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6968. Elections; procedure

Any election conducted pursuant to the provisions of this chapter shall be conducted pursuant to the provisions of law pertaining to regular or special elections held in the public agency.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1527, § 7.)

§ 6969. Elections; canvass of returns; resolution ordering formation

After the canvass of returns of any election on the question of forming a proposed zone, the board shall adopt a resolution ordering the formation of the zone if a majority of votes cast at such election are in favor of such formation.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6970. Public agencies; inclusion of territory included within another zone

No public agency shall form a zone which includes any territory already included within another zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6971. Public agencies; inconsistent land uses

No public agency shall form a zone if such formation will permit other land uses which are not consistent with the general plans, zoning ordinances, or other land use regulations of any county or city within which the proposed zone is located.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6972. Levy of taxes

After the formation of the zone pursuant to this article, all taxes levied to carry out the purposes of the zone shall be levied exclusively upon the property taxable in the zone by the public agency.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

§ 6973. Failure of formation; abandonment of proceedings on proposal; further proceedings; time for consideration of application for subsequent proposal

If the board does not form a zone after the close of a hearing in accordance with Section 6967 and no petition is filed pursuant to Section 6967, or if the board abandons proceedings on the proposal to form a zone, or if the formation of a zone is not confirmed by the voters, no further proceeding shall be taken thereon. No application for a subsequent proposal involving substantially the same territory and undertaken pursuant to the provisions of this chapter shall be considered or acted upon by the public agency for at least one year after the date of disapproval of, abandonment of, or election on the proceedings.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1527, § 8.)

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# HEALTH AND SAFETY CODE

## § 6974. Annexation of territory

Territory within the public agency may be annexed to a zone, provided that such territory is not part of another zone. The requirements and proceedings for the annexation of territory shall be the same as the requirements and proceedings for formation of a zone.  
(Added by Stats.1978, c. 445, p. 1527, § 9.)

Library References  
Waters and Water Courses § 183½  
C.J.S. Waters § 243.

## § 6974.5. Detachment of land; findings; notice; hearing

Land already a part of a zone may be detached if the board finds and determines, following notice and hearing in the same manner provided for formation of the zone, that the land will not be benefited by its continued inclusion in the zone.  
(Added by Stats.1978, c. 445, p. 1527, § 10.)

Library References  
Waters and Water Courses § 183½  
C.J.S. Waters § 243.

## ARTICLE 3. POWERS

### Sec. 6975. Purposes of formation; public agencies

- 6975. Purposes of formation; public agencies.
- 6976. Disposal zones; powers.
- 6977. Compliance with law; authority of district; right of entry on premises.
- 6978. Violation of rules or regulations; abatement as public nuisance; assessment of costs; liens.
- 6979. Repair or replacement of systems; requests by owners of real property; liens; payment of costs by zone.
- 6980. Financial powers; exercise by board; assessments or taxes.
- 6981. Assessments; levy by public agencies.

Article 3 was added by Stats.1977, c. 1125, p. 3610, § 1

### § 6975. Purposes of formation; public agencies

An on-site wastewater disposal zone may be formed to achieve water quality objectives set by regional water quality control boards, to protect existing and future beneficial water uses, protect public health, and to prevent and abate nuisances. Whenever an on-site wastewater disposal zone has been formed pursuant to this chapter, the public agency shall have the powers set forth in this article, which powers shall be in addition to any other powers provided by law. A public agency shall exercise its powers on behalf of a zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6976. Disposal zones; powers

An on-site wastewater disposal zone shall have the following powers:

- (a) To collect, treat, reclaim, or dispose of wastewater without the use of communitywide sanitary sewers or sewage systems and without degrading water quality within or outside the zone.
- (b) To acquire, design, own, construct, install, operate, monitor, inspect, and maintain on-site wastewater disposal systems, not to exceed the number of systems specified pursuant to either Section 6960 or Section 6960.1, within the zone in a manner which will promote water quality, prevent the pollution, waste, and contamination of water, and abate nuisances.
- (c) To conduct investigations, make analyses, and monitor conditions with regard to water quality within the zone.

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## § 6976

(d) To adopt and enforce reasonable rules and regulations necessary to implement the purposes of the zone. Such rules and regulations may be adopted only after the board conducts a public hearing after giving public notice pursuant to Section 6066 of the Government Code.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1527, § 11.)

## § 6977. Compliance with law; authority of district; right of entry on premises

The . . . public agency shall . . . do all such acts as are reasonably necessary to secure compliance with any federal, state, regional, or local law, order, regulation, or rule relating to water pollution or the discharge of pollutants, waste, or any other material within the . . . zone. For such purpose, any authorized representative of the . . . public agency, upon presentation of his credentials, or, if necessary under the circumstances, after obtaining an inspection warrant pursuant to Title 13 (commencing with Section 1822.50) of Part 3 of the Code of Civil Procedure, shall have the right of entry to any premises on which a water pollution, waste, or contamination source, including, but not limited to, septic tanks, is located for the purpose of inspecting such source, including securing samples of discharges therefrom, or any records required to be maintained in connection therewith by federal, state, or local law, order, regulation, or rule.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1528, § 12.)

## § 6978. Violation of rules or regulations; abatement as public nuisance; assessment of costs; liens

(a) Violation of any of the provisions of a rule or regulation adopted pursuant to subdivision (d) of Section 6976 may be abated as a public nuisance by the board. The board may by regulation establish a procedure for the abatement of such a nuisance and to assess the cost of such abatement to the violator. If the violator maintains the nuisance upon real property which he has a fee title interest, the assessment shall constitute a lien upon such real property in the manner provided in subdivision (b).

(b) The amount of any costs, which are incurred by the zone in abating such a nuisance upon real property, shall be assessed to such real property and shall be added to, and become part of, the annual taxes next levied upon the real property subject to abatement. It shall constitute a lien upon that real property as of the same time and in the same manner as the tax lien securing such annual taxes. All laws applicable to the collection and enforcement of county ad valorem taxes shall be applicable to such assessment, except that if any real property to which such lien would attach has been transferred or conveyed to a bona fide purchaser for value, or if a lien of a bona fide encumbrancer for value has been created and attached upon, prior to the date on which such delinquent charges appear on the assessment roll, then any such lien would otherwise be imposed by this section shall not attach to such real property and the unpaid charges relating to such property shall be transferred to the unsecured or collection. Any amounts of such assessments collected are to be credited to the funds of the zone from which the costs of abatement were expended.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

## § 6979. Repair or replacement of systems; requests for real property; liens; payment of costs by zone

(a) The owner of any real property upon which is an on-site wastewater disposal system, which system is subject to abatement as a public nuisance . . . public agency, may request the . . . public agency to replace or repair, as necessary, the system. If replacement or repair is feasible, the board may provide for the necessary repair or repair work.

(b) The person or persons employed by the board to work shall have a lien, subject to the provisions of subdivision (b) of Section 6978, for work and materials furnished, and the work done and materials furnished shall be deemed to have been and furnished at the request of the owner. The zone, in the discretion of the board, may or any part, of the cost or price of the work done and materials furnished; and, to the extent the zone pays the cost or price of the work done and materials furnished, the zone shall succeed to all the rights, including, but not limited to, the lien, of such person or persons employed by the zone against the real property and the owner.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1528, § 13.)

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## HEALTH AND SAFETY CODE

## HEALTH AND SAFETY CODE

### § 6980. Financial powers; exercise by board

A board may exercise all of the public powers excepting that any assessment or tax levied pursuant to the provisions of Sections 6978 and 6981.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6981. Assessments; levy by public agency

Notwithstanding any other provision of law, a public agency may levy an assessment proportional to the benefits derived from the approval of the voters pursuant to the provisions of Chapter 3 of Part 4 of Division 1 of the Revenue and Taxation Code, in addition to any other charges, assessments, or taxes levied on property in the zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

## DIVISION

## PART 1. G

### Chapter

3.7. Death . . . . .

3.9. Natural Death Act . . . . .

## CHAPTER

### § 7002. Cremated remains

"Cremated remains" means human remains which have been cremated in a crematory.

(Amended by Stats.1972, c. 541, p. 930, § 1.)

### § 7003. Cemetery

#### Notes of Decisions

Holding facility for bodies in cryonic suspension

#### 1. In general

A "crematory" is not a "cemetery" within the meaning of this section. *Cemetery Bd. v. Telophase Soc. of A.* (1978) 151 Cal.Rptr. 248, 87 CA3d 847.

A crematory under this section is a cemetery . . . § 8340 must have in conjunction with its operation

### § 7009. Interment

#### Notes of Decisions

#### 1. In general

Business which accepted human remains for cremation only where arrangements had been made for disposal

### § 7010. Cremation

#### Notes of Decisions

#### 1. In general

Although business operated a crematory and incinerated human remains, it did not perform "cremations" within the definition provided by this section where it was not a crematory.

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## HEALTH AND SAFETY CODE

§ 7010

Note 1

### § 6980. Financial powers; exercise by board; assessments or taxes

A board may exercise all of the public agency's existing financial powers on behalf of a zone, excepting that any assessment or tax levied upon the real property of a zone shall be subject to the provisions of Sections 6978 and 6981.

(Added by Stats.1977, c. 1125, p. 3610, § 1.)

### § 6981. Assessments; levy by public agencies

Notwithstanding any other provision of law, a public agency may levy an assessment reasonably proportional to the benefits derived from the zone, as determined by the board, and subject to the approval of the voters pursuant to the provisions of Article 6 (commencing with Section 2285) of Chapter 3 of Part 4 of Division 1 of the Revenue and Taxation Code. Such benefit assessment shall be in addition to any other charges, assessments, or taxes otherwise levied by the public agency upon the property in the zone.

(Added by Stats.1977, c. 1125, p. 3610, § 1. Amended by Stats.1978, c. 445, p. 1528, § 13.)

## DIVISION 7. DEAD BODIES

### PART 1. GENERAL PROVISIONS

#### Chapter

#### 3.7. Death

#### Section

#### 3.9. Natural Death Act.

7180

7185

### CHAPTER 1. DEFINITIONS

#### § 7002. Cremated remains

"Cremated remains" means human remains after incineration and necessary processing under Section 7054.1 in a crematory.

(Amended by Stats.1972, c. 541, p. 930, § 1.)

#### § 7003. Cemetery

##### Notes of Decisions

Holding facility for bodies in cryonic suspension 2

a columbarium, a burial park or mausoleum amply equipped at all times for the interment of remains of bodies cremated at the crematory. 55 Ops.Atty.Gen. 402, 11-14-72.

##### 1. In general

A "crematory" is not a "cemetery" within meaning of this section. Cemetery Bd. v. Telophase Soc. of America (1978) 151 Cal.Rptr. 248, 87 CA3d 847.

A crematory under this section is a cemetery and by § 8340 must have in conjunction with its operation either

2. Holding facility for bodies in cryonic suspension  
The holding of human bodies in cryonic suspension does not constitute the operation of a cemetery within the meaning of either this section or § 8100. 63 Ops. Atty.Gen. 879, 12-11-80.

#### § 7009. Interment

##### Notes of Decisions

##### 1. In general

Business which accepted human remains for cremation only where arrangements had been made for disposition

by other persons or entities elsewhere, primarily by burial at sea, did not make "interments" within meaning of this section. Cemetery Bd. v. Telophase Soc. of America (1978) 151 Cal.Rptr. 248, 87 CA3d 847.

#### § 7010. Cremation

##### Notes of Decisions

##### 1. In general

Although business operated a crematory and incinerated human remains, it did not perform "cremations" within definition provided by this section where it accepted

remains for cremation only where arrangements had been made for disposition by other persons or entities elsewhere, primarily by burial at sea. Cemetery Bd. v. Telophase Soc. of America (1978) 151 Cal.Rptr. 248, 87 CA3d 847.

Asterisks \* \* \* indicate deletions by amendment

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ORDINANCE NO.

AN ORDINANCE REGULATING THE USE OF  
WASTEWATER DISPOSAL SYSTEMS AND  
FACILITIES, PROVIDING FOR PERMITS AND  
FEES WITH REGARD THERETO, AND  
REGULATING THE DISCHARGE OF WASTE  
OR POLLUTED WATERS

BE IT ORDAINED, by the Town Council of Paradise, Butte County,  
California, as follows:

ARTICLE I. GENERAL PROVISIONS

Section 1.1 Rules and Regulations. The following rules and regulations respecting the use of wastewater disposal systems and facilities within the Town are hereby adopted, and all work in respect thereto shall be performed as herein required and not otherwise.

Section 1.2. Purpose. This ordinance is intended to provide certain provisions and requirements for the use of wastewater disposal facilities as now or hereafter constructed, replaced, reconstructed or repaired and, in general to enable the District to carry out the powers provided it pursuant to Part 2, Chapter 3, Section 6950 of the Health and Safety Code of the State of California, as may be now or hereafter amended, and to set the water quality objectives set forth by the Water Quality Control Board, Central Valley Region.

Section 1.3. Short Title. This ordinance shall be known as the Town of Paradise Onsite Wastewater Disposal Zone Ordinance.

Section 1.4. Violations. Following the effective date of this ordinance it shall be unlawful for any person to connect to, construct, replace, rectify, repair, maintain and/or use any means of wastewater disposal by building in the Town except as in this ordinance provided.

Section 1.5. Permits and Fees. No wastewater disposal system or facilities shall be replaced, reconstructed, or repaired or operated within the Town until a permit therefor has been obtained and all fees have been paid in accordance with the requirements of this ordinance.

## ARTICLE II. USE OF WASTEWATER DISPOSAL

### SYSTEMS REQUIRED

Section 2.1. Disposal of Waste. It shall be unlawful for any person to place, deposit, or permit to be deposited in an unsanitary manner upon public or private property within the Town, or in any area under the jurisdiction of the Town, any solid or liquid waste.

Section 2.2. Treatment of Waste Required. It shall be unlawful to discharge into the ground or surface waters of the Town any sewage, waste or other polluted waters except where suitable treatment has been provided in accordance with the provisions of this ordinance.

Section 2.3. Unlawful Disposal. Except as herein provided, it shall be unlawful to construct, replace, reconstruct, repair, maintain or operate any sanitary sewage, septic, or septic tank disposal system or other facility intended or used for the disposal of wastewater.

Section 2.4. Occupancy Prohibited. No new or resold building, industrial facility or other structure shall be occupied until the owner of the premises has complied with all rules and regulations of the Town.

## ARTICLE III. CONSTRUCTION, REPLACEMENT,

### RECONSTRUCTION AND REPAIR OF WASTEWATER

#### DISPOSAL SYSTEMS

Section 3.1. Construction Permit Required. Before the commencement of construction of a private wastewater disposal system to serve



new construction the owner shall first obtain a permit therefor from the Town of Paradise, a copy of the plans and specifications for such system, and such other information as deemed necessary and required by the Town of Paradise Ordinance 103, as amended.

Section 3.2. Design Requirements. The type, capacity, location and layout of a wastewater disposal system shall comply with Town Ordinance 103. No permit shall be issued for any wastewater disposal system on a lot or parcel of land where the area of said lot or parcel is inadequate for the purpose (See Table II, Ord. 103). No wastewater disposal system shall be permitted to discharge to ground surface or to any stream or watercourse of the town.

Section 3.3. Inspection Required. Town's inspector shall be allowed to inspect the repair, replacement, or reconstruction work at any stage and, in any event, the applicant for the construction permit shall notify the Town inspector when the work is ready for final inspection and before any underground portions are covered.

Section 3.4. Additional Requirements. No statement contained in this Ordinance shall be construed to interfere with any additional requirements that may be imposed by any law, ordinance, rule or regulation of any legally constituted authority having jurisdiction in such matters.

#### ARTICLE IV. OPERATION OF WASTEWATER DISPOSAL SYSTEMS

Section 4.1. Operating Permit Required. Before operating any new or private wastewater disposal system, the owner shall first obtain a wastewater operating permit as per Town Ordinance 103. The application for the permit shall be made on a form furnished by the Town which the

the applicant shall supplement by such other information as deemed necessary by the Town.

Section 4.2. Renewal of Operating Permits. Except as hereinafter provided, each operating permit shall be renewed biannually on or before July 1 and shall be renewed by the new owner upon transfer of title of the lot or parcel to which the permit is applicable. The Town may require more frequent renewals of operating permits with respect to special or alternative wastewater disposal systems which may require more frequent monitoring or special monitoring devices. Application for renewals of operating permits shall be made on a form furnished by the Town. A renewal fee shall be paid to the Town at the time each biannual application is filed.

Section 4.3. Criteria for Issuance and Renewal of Operating Permits. No operating permit shall be issued or renewed with respect to wastewater disposal system if the components and discharge from that system do not meet the standards established in the Town's Wastewater Disposal Ordinance 103, as may be not or hereafter amended.

Section 4.4. Withdrawal of Operating Permits. If the Town Inspector determines that a wastewater disposal system is discharging in violation of the Town's standards, a notice will be forthwith by certified mail or delivered in person by the Town to the owner at the address shown on the application or as contained in the Town's records (Assessor's Tax Records), which notice shall describe the violation and shall state that the operating permit pertaining to such system is withdrawn on a certain date 10 days or more after the date of notification. Unless, in the meantime, the owner proves, to the satisfaction of the Town Inspector, that the discharge was not produced by such system, if proof is not made, the Town will issue, as of the indicated date, a notice of withdrawal of operating permit and such system will be subject to



measures for mitigation of failure or to the procedure here in provided.

Section 4.5. Recording of Operating Permits. Certified copies of operating permits and notices of withdrawal of operating permits, when issued, will be recorded in the office of the Public Works Department of the Town of Paradise.

#### ARTICLE V. MEASURES TO MITIGATE FAILED WASTEWATER DISPOSAL SYSTEMS

Secn 5.1. Systems Subject to Mitigation Measures. Any wastewater disposal system which discharges in violation of the Town's standards, for whatever reason, will be deemed to be a failed system and will be subject to the mitigation measures herein provided.

Secn 5.2. Repair or Reconstruction. The owner or tenant of the lot or parcel upon which there exists a failed wastewater disposal system shall be responsible for its repair, reconstruction and replacement.

Secn 5.3. Abatement. Any wastewater disposal system being operated without a valid operating permit shall be subject to abatement as a public nuisance by the Town.

Secn 5.4. Town Assistance. The Town shall render reasonable assistance, in its discretion, in abating the nuisance, the Town may, in its sole discretion, in the absence of due diligence by the owner, provide by the necessary replacement or reconstruction or repair pursuant to the provisions of Section 6978 of the Health and Safety Code as may be now or hereafter amended.

Secn 5.5. Off-Site Mitigation. Some failed wastewater disposal systems may be inherently incapable of repair, reconstruction or replacement. If the Town's standards on the lot or parcel of land on which is

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ted the structure served by such system due to lack of space, in-  
adequate soil conditions, high groundwater or other reasons. To render  
assistance to the owners of such systems, the Town will make reasonable  
attempts, in the sole discretion of the Town Council, to secure lands  
or easements within a reasonable distance from such failed systems and  
to make such lands or easements available upon reasonable terms and  
conditions to such owners for the purpose of construction private  
wastewater disposal systems. Any such system so constructed shall  
remain the full responsibility of owner for operation and maintenance.

#### ARTICLE VI. ENFORCEMENT

Section 6.1. Investigation Powers. The officers, inspectors, managers, and any duly authorized employees of the Town shall carry evidence establishing their position as an authorized representative of the Town, and, upon exhibiting the proper credentials and identification, shall be permitted to enter in and upon any and all buildings, industrial facilities and properties for the purpose of inspection, re-inspection, observation, measurement, sampling, or otherwise performing such duties as may be necessary in enforcement of the provisions of the ordinances, rules and regulations of the Town and provided by Section 6977 of the Health and Safety Code necessary under the circumstances, such officials shall obtain a search and seizure warrant pursuant to Title 13 of Part 3 of the Code of Procedure to obtain right of entry for such purpose.

Section 6.2. Violation. Any person found to be violating any provision of this or any other ordinance, rule or regulation shall be served by the Town's inspector or other authorized person with written notice stating the nature of the violation and providing

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reasonable time limit for the satisfactory correction thereof. Said time limit shall be not less than ten days. The offender shall, within the period of time stated in such notice, permanently cease all violations. All persons shall be held strictly responsible for any and all acts of agents or employees done under the provisions of this or any other ordinance, rule or regulation of the Town. Upon being notified by the inspector of any violation of this ordinance, the person or persons having charge of said work shall correct the same within the time limit established.

Section 6.3. Public Nuisance. Continued habitation of any building or continued operation of any facility in violation of the provisions of this or any other ordinance, rule or regulation of the Town is hereby declared to be a public nuisance. The Town may cause proceedings to be brought for injunctive relief and/or for the abatement of the occupancy of the building or facility during the period of such violation. In such event there is to be paid to the Town reasonable attorney's fees and costs of suit arising in said action.

Section 6.4 Water Cut Off. As an alternative remedy for such violations, the Town may with proper notice, cause water service to the premises to be discontinued during the period of violation.

Section 6.5. Means of Enforcement Only. The Town hereby determines that the foregoing procedures are established as a means of enforcement of the terms and conditions of its ordinances, rules and regulations and not as a penalty.

Section 6.6. Liability for Violation. Any person violating any of the provisions of the ordinances, rules or regulations of the Town shall become liable to the Town for any expense, loss or damage occasioned by the Town by reason of such violation.

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ARTICLE VII. PENALTIES

Section 7.1. Violations. Any violation of this ordinance or any rule or regulation of the Town adopted pursuant to Section 6950 of the Health and Safety Code is a misdemeanor punishable by a fine not to exceed five hundred dollars (\$500), or imprisonment not to exceed 60 days, or by both such fine and imprisonment. Each day of such a violation shall constitute a separate offense. Any violation or threatened violation of this ordinance or such rule or regulation may also be enjoined by civil suit in which event there is to be paid to the Town reasonable attorney's fees and costs of suit arising in said action.

ARTICLE VIII. MISCELLANEOUS PROVISIONS

Section 8.1. Separability. If any article, section, subsection, sentence, clause or phrase of this ordinance or the application thereof to any person or circumstance is for any reason held to be unconstitutional or invalid, such decision shall not affect the validity of the remaining portions of this ordinance or the application of such provision to other persons or circumstances. The Board hereby declares that it would have passed this ordinance or any article, section, subsection, sentence, clause or phrase hereof irrespective of the fact that any one or more articles, sections, subsections, sentences, clauses or phrases be declared to be unconstitutional.

Section 8.2. Amendment or Rescission. This ordinance may be amended or rescinded with the approval of the Executive Officer of the California Regional Water Quality Control Board, Central Valley Region.



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ARTICLE IX. TIME OF TAKING EFFECT

Section 9.1. This ordinance shall take effect immediately upon passage.

\_\_\_\_\_  
Mayor, Town of Paradise

ATTEST:

\_\_\_\_\_  
Town Clerk

\* \* \* \* \*





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ORDINANCE NO. 103

TOWN OF PARADISE  
SEWAGE DISPOSAL ORDINANCE

THE TOWN COUNCIL OF THE TOWN OF PARADISE, STATE OF CALIFORNIA, DOES  
ORDAIN AS FOLLOWS:

Section 1. PURPOSES. The purposes of this ordinance are:

A. To facilitate an orderly development within the Town of Paradise.

B. To protect the ground and surface water quality within the Town of Paradise's hydrologic basins.

C. To implement the recommendations of the Montgomery Phase I, 201 Report concerning Surface Wastewater accepted by the Paradise Town Council in April, 1983.

Section 2. APPLICATION OF ORDINANCE; WAIVER OF PROVISIONS OF ORDINANCE. This ordinance shall apply to all real properties located within the Town of Paradise. The health officer shall waive the permit and inspection requirements contained in this ordinance when the provisions of this ordinance are superseded by any State law.

Section 3. DEFINITIONS. For the purposes of this ordinance, the following words and phrases shall have the meanings respectively ascribed to them by this Section:

A. Auxiliary System - A secondary sewage system designed to dispose of a portion of the sewage from a building.

B. Building - Single family residence, multi-family residence, place of business, or other structure where persons reside, congregate, or are employed and accessory buildings.

C. Development - Any change in the density or intensity of the land use, or any construction or alteration of an existing structure or land use.

D. Health Officer - Health officer shall mean the legally designated health authority of the Town of Paradise or his authorized representative.

E. Impervious Stratum - A layer or lense of fine grained soil, rock, cemented material, or similar soil structure in which the percolation rate exceeds one hundred twenty (120) min./inch or in which twelve (12) inches of water depth will not seep completely away in a twenty-four (24) hour period, shall be deemed to be impervious.

F. Living Unit - A residential building or portion thereof providing complete, independent living facilities for one family, including permanent provisions for living, sleeping, eating, cooking and sanitation.

G. Sewage - Includes any and all waste substance, liquid or solid associated with human habitation, or which contains or may be contaminated with human or animal excreta, offal or any feculant matter.

H. Sewage Disposal System - Sewage disposal system shall include septic tank, drain field, seepage pit, chemical toilet and any other structure or system used for the treatment, discharge or disposal of sewage.

I. Curtain Drain - A curtain drain is a trench backfilled with drain rock and perforated pipe for (1) intercepting a laterally moving perched water table, spring or other subsurface flow above a leachfield site or (2) to lower water table elevations in an area with seasonal groundwater levels less than 5 feet below a leachfield trench.

J. Bedroom or Sleeping Quarters - For purposes of calculating average daily sewage volumes, a bedroom or sleeping quarters are rooms that are or will be used for sleeping purposes more than 25 percent of the time.

K. Bottom Design - A "bottom design" leachfield trench shall include on the bottom gross area of the trench in calculating the required soil absorption area for a given installation.

L. Sidewall Design - A "sidewall design" leachfield trench shall include a reduction in the standard bottom design absorption area required based upon the depth of drain rock below the perforated pipe as described in a subsequent subsection.

M. On-Site Wastewater Disposal System - On-site wastewater disposal system means any of several works, facilities, devices, or other mechanisms used to collect, treat, reclaim, or dispose of wastewater without the use of community-wide sanitary sewers or sewage system. May be used interchangeably with septic systems or sewage disposal system in this ordinance. (California Health and Safety Code, Part 2, Chapter 3, Section 6950).

N. Alternative Ssytems - Alternative sewage disposal systems (on-site systems) can be one of a number of designs incorporating non-standard features. Artificial leaching areas (mound systems), sand filters and evapotranspiration beds are examples of alternative systems. Alternative designs are also referred to as special designs herein (Section 73).

Section 4. SANITARY SEWAGE DISPOSAL SYSTEM REQUIRED. It shall be unlawful for any person to maintain, occupy or use any building not

provide with a sewage disposal system which disposes of sewage in a sanitary manner.

Section 5. UNLAWFUL DISPOSAL METHODS. It shall be unlawful for any person to construct, maintain or use any sewage disposal system which results in any of the following:

- A. Sewage overflowing any lands whatever.
- B. Sewage emptying, flowing, seeping or draining into any stream, spring, river, lake or other waters within the Town.
- C. Sewage being accessible to rodents, insects or humans.

It is provided, however, that when sewage is treated and disposed of in such manner that it does not constitute a hazard to the public health or does not create a nuisance, and that adequate requirements for such disposal are set by the Central Valley Regional Water Quality Control Board pursuant to Division 7, Department 4, Article 2 of the State Water Code, then such disposal shall be considered to be lawful.

#### Section 6. PERMITS - REQUIRED

A. No person shall begin or cause to have begun construction of any development or any sewage disposal system without review and approval by the health officer. All developments requiring a sewage disposal system, or an alteration, enlargement or repair of an existing system must submit plans showing the means of sewage disposal to the health officer and obtain a permit therefor from the health officer. Sewage disposal permits shall be obtained prior to the issuance of building permits.

B. Permit Valid for One Year. Permits issued pursuant to this ordinance shall be valid for one year and shall automatically become void one year from the date of issuance, unless renewed prior to the expiration date. Only two, one-year renewals shall be permitted. Permits for repair, alteration, replacement, abandonment or enlargement shall be valid for one year from the date of issuance and are not renewable.

C. Auxiliary Systems. No person shall construct an auxiliary sewage disposal system for a building presently served by a sewage disposal system without first submitting plans of the proposed means of sewage disposal to the health officer and obtaining a permit therefor from the health officer.

#### D. Repairs.

- (1) No person shall alter, repair, relocate, add to or replace any existing sewage disposal system without first securing a permit from the health officer.

- (2) With respect to the repair of existing sewage disposal systems, the health officer may allow lesser distances as contained in Section 22 (Table III) as he shall determine are necessary to avoid undue hardship, but that will accomplish the general purposes and intent of this ordinance.
- (3) No installation shall be permitted under this subsection in areas not owned or controlled by the property owner, unless the area is dedicated for sewage disposal purposes, in a document recorded in the Recorder's Office of the County of Butte.

E. Abandonment.

- (1) No person shall abandon a septic tank or cesspool or discontinue from further use without first obtaining a permit from the health officer.

F. A permit shall be required for the construction of a curtain drain even though not installed as part of an individual on-site wastewater system.

Section 7. APPLICATION FOR PERMIT. The following items shall be required in order to process a sewage disposal application:

A. The required scale plot plan shall include the following information:

- (1) Lot boundaries and dimensions.
- (2) Locations of proposed and existing buildings and sewage disposal facilities.
  - (a) Location of proposed leachfield and one hundred (100) percent replacement area for leachfield.
  - (b) Location and elevation of house sewer outlet and proposed location and elevation of septic tank and leachfield.
- (3) A floor plan of the building, the number of bedrooms and other potential sleeping quarters, and all proposed appurtenant structures.
- (4) Source of domestic water and location and treatment, if required. If a well is proposed as a domestic water source, well drilling permit application shall be made at the time a sewage disposal permit application is submitted.
- (5) Ditches, creeks, springs, other surface water on the premises and within 200 feet in any direction of the proposed sewage disposal area. Lakes or reservoirs within 200 feet of the proposed sewage disposal areas.



- (6) Location of known or proposed wells on property and within 100 feet of property lines.
- (7) Topography including contours and rock outcroppings, cliffs, etc.
- (8) Setbacks from property lines.
- (9) Driveways, patios, walkways, parking areas and other impervious surfaces.
- (10) Such other additional information as deemed necessary by the health officer to process the application.
- (11) Existing or proposed curtain drains (See Section 3, Definitions).
- (12) Location of any tree greater than 6" in diameter which may affect the location of septic tank or leachfield.
- (13) Easements.
- (14) Water pipelines.

B. Additional information and/or testing may also be required at the discretion of the health officer. Such information or testing may include but not be limited to the following:

- (1) Water table depth determinations. The time of year that these tests are performed shall be determined by the health officer based upon drainage characteristics, topography, soil types or strata, precipitation in the area, snow melt, and/or other pertinent factors (generally after 70 percent of the average annual rainfall has occurred).
- (2) Soil mantle depth determinations.
- (3) Detailed engineering plans shall be submitted for approval of all special design systems, sewage treatment plants, and any deviations from standard practice.
- (4) Design criteria to accommodate anticipated flows.

#### Section 7A. WASTEWATER TEMPERATURE CONTROL (COMMERCIAL SYSTEMS)

A. Certain commercial establishments which produce a large proportion of higher temperature sewage, (above 120°F), such as restaurants, laundromats and the like, shall be required to present special design features for the system which will permit the efficient entrappment of grease, soaps and detergents.

- (1) Grease, soaps and detergents are not readily congealed or flocculated and settled at high wastewater temperatures. Carry-over of these suspended materials to the leachfield will produce soil clogging and failure.

(2) Design options can include:

- (a) blending the wastestream with cold water upstream of the grease trap and/or septic tank.
- (b) sand filtration.
- (c) combine with cold wastewater from other commercial establishment on the same parcel.
- (d) Lint removal.

(3) Town Sanitarian shall establish temperature limits and may require laboratory testing of effluent to verify best temperature limits for grease and soap removal.

Section 8. PERMITS - FEES. Every applicant for a permit required by Section 6 shall pay a fee at the time of application for each permit or for renewal of each permit. The fees shall be established by resolution by the Paradise Town Council, and said resolution shall include a fee for a variance.

If development on a lot or parcel is begun or if construction of a sewage disposal system or an auxiliary sewage disposal system has begun prior to obtaining the required permit, the permit fee above specified shall be doubled, but shall not relieve any persons from fully complying with the requirements of this ordinance nor from any other penalties prescribed herein.

Section 9. INSPECTIONS - REQUIRED; CERTIFICATE OF INSPECTION. No person shall back-fill or cover with earth, or put into use any sewage disposal system constructed under provisions of this ordinance until an inspection of the sewage disposal system has been made by the health officer and a certificate of inspection has been issued by the health officer.

If the sewage system is not installed in accordance with the plot plan as a built plot plan showing the exact location of the sewage system shall be submitted prior to issuance of an inspection certificate.

Section 10. HIGH GROUNDWATER, SPRINGS, SEEPS AND CURTAIN DRAIN CONSTRUCTION. (Also see Section 6A (12), Permits Required.)

A. Permits shall be required for all curtain drain construction whether or not installed in connection with a septic system. Normal foundation perimeter drains are excluded.

B. Curtain drains shall have a minimum setback of 5 feet from all property lines and shall not encumber uphill property without a recorded easement.

C. Curtain drains shall be designed and constructed in accordance with Attachment "A" or an approved design prepared by a registered Civil Engineer, Geologist or Sanitarian.

## Section 11. MOUND SYSTEMS AND OTHER ALTERNATIVE SYSTEMS.

A. Mound systems shall be designed in accordance with the California Criteria (Design and Construction Manual for California Mounds, State of California, State Water Resources Control Board and the Uniform Plumbing Code 1979).

B. Other non-standard designs or commercially available alternative systems shall be approved on a case-by-case basis.

C. Projects which exceed an average daily flow of 2500 gallons per day will also require approval and concurrence of the State Water Quality Control Board, unless a variance is received by the Health Department.

D. The Town Sanitarian shall ensure that the homeowner or commercial enterprise are aware of the additional special attention required for some alternative systems over and above that required for the traditional on-site system. Failure to maintain the system properly will result in the imposition of a Maintenance Bond to defray the operating costs to be incurred by the town or other legally responsible entity.

E. Composting toilets and cesspools are prohibited in the Town of Paradise.

## Section 12. POLICY FOR PAVING OR INSTALLATION OF OTHER IMPERVIOUS SURFACES OVER LEACHFIELDS.

A. Parking lots, driveway, sidewalk, asphalt paving or the installation of other impervious surfaces over leachfields shall be prohibited unless space limitations on the site offer no other alternatives.

B. Pervious pavement (1) or surfacing shall be installed over all leaching trenches when the remainder of the field is under impervious paving.

(1) Pervious surfacing can be one of several commercially available cement blocks with the void spaces backfilled with sand or peagravel.

## Section 13. WATER CONSERVATION FIXTURE POLICY.

A. The installation of low water using plumbing fixtures shall be encouraged for new construction and specified for old systems with a repair permit, when in the opinion of the Town Sanitarian to fail to do so, would impair the long-term operation of the system.

B. Past water bills shall be used as a basis for assessing patterns of water consumption and whether in the opinion of the Town Sanitarian installation of water conservation fixtures would significantly affect future sewage volume.

## Section 14. SEWAGE DISPOSAL SYSTEMS

A. Septic Tank Specifications. Septic tank shall be two compartment construction and shall be of the size and type constructed in accordance with the requirements of the health officer and in accordance with the

Uniform Plumbing Code. The septic tank and all inlets and outlets thereto shall be watertight.

- (1) Size. The minimum liquid capacity of septic tank shall be one thousand (1,000) gallons. Lesser capacities may be authorized by the health officer for auxilliary septic tanks.

<u>No. Bedrooms</u>	<u>Tank Capacity</u>
equal to or less than 3	1,000
4	1,500
more than 4	+ 500 gallons for each additional bedroom
-----	
garbage grinder	+ 500 gallons to volume required for number of bedrooms
-----	
commercial/institution*	$1125 + 0.75 \times \text{avg. daily sewage flow}$

\*Due to nature of wastewater substantial increases in septic tank sizing may be necessary.

- (2) Materials. The septic tank shall be constructed of concrete, or other durable material satisfactory to the health officer. (See note) The interior of concrete tanks and distribution boxes shall be coated with a coal tar epoxy with a minimum of 20 mil thickness.

B. Leach Field. The effluent from the septic tank shall be discharged into an absorption field of the size and type constructed in accordance with the requirements of the health officer.

The leach lines shall be laid at a grade not to exceed four (4) inches per one hundred (100) feet. For systems with dosing siphons leach lines shall be laid flat. Leach lines shall be installed in a trench not less than twenty-four (24) inches wide on the bottom of which has been placed a six-inch layer of one-half to two and one-half inch loose clean rock. Leach lines shall be covered with a layer of one-half inch to two and one-half inch rock at least two inches thick. A minimum of one hundred fifty (150) square feet of leaching area shall be provided in the trench bottom.

C. Minimum Criteria.

- (1) When a project has an average daily sewage flow in excess of four hundred (400) gallons per day, one hundred (100) percent of original and alternate field shall be installed along with accessible diverter valve or its equivalent.

NOTE: Because of the high rate of concrete tank failures believed to be due in part to the moderately high acidic soils all new concrete septic tanks and concrete replacement septic tanks shall be fabricated from non-reactive cement, ASTM Type II Modified or equal.

- (2) Soil depth below the bottom of the leaching trench shall not be less than five (5) feet.
- (3) Depth to groundwater below the bottom of the leaching trench shall not be less than two (2) feet.
- (4) Ground slope in the disposal area shall not be greater than thirty percent (30%). Variances will be considered for special low flow, large lot conditions for slopes up to sixty percent (60%) in accordance with Section 11.
- (5) There shall be available suitable area upon the subject property for the installation of the initial sewage disposal system and a two hundred percent (200%) replacement of that system. A replacement area does not have to be a gravity flow condition.
- (6) Soil composition shall be such that it will serve as an effective filter for septic tank effluent.
- (7) Individual leach fields shall not be excavated when the soil is wet enough to compact or smear easily.
- (8) Any soil testing performed pursuant to meeting the above criteria may, at the discretion of the health officer, be witnessed by a representative from the Health Department.
- (9) Paved areas, or areas proposed to be paved, which exceed sixty (60) min./inch of percolation rate shall not be used to determine net lot area of a parcel.
- (10) When the total length of leachlines exceed 500 feet, a dosing siphon shall be required grade permitting, otherwise separate distribution systems. (See Attachment B.)
- (11) Credit shall be given for added absorption area of the sidewalls of trenches and standard "bottom design" trenches may be decreased by the following percentages.

Percentage of length of standard trench(1)  
(After USPHS Manual 526)

Depth of Gravel Below Pipe in Inches(2)	Trench width 12"	Trench width 18"	Trench width 24"	Trench width 36"	Trench width 48"	Trench width 60"
12 . . . . .	75	78	80	83	86	87
18 . . . . .	60	64	66	71	75	78
24 . . . . .	50	54	57	62	66	70
30 . . . . .	43	47	50	55	60	64
36 . . . . .	37	41	44	50	54	58
42 . . . . .	33	37	40	45	50	54



- (1) The standard absorption trench is one in which the filter material extends two inches above and six inches below the pipe.
- (2) For trenches or beds having width not shown, the percent of length of standard absorption trench may be computed as follows:

$$\text{Percent of length standard trench} = \frac{w + 2}{w + 1 + 2d} \times 100$$

Where w = width of trench in feet

d = depth of gravel below pipe in feet

D. Design Criteria for Development Using Septic Systems. The following requirements are applicable to all development using septic systems:

- (1) Where the average soil depth on the parcel is less than seven (7) feet, special design systems may be approved, and development shall be limited to uses which generate three hundred (300) gallons or less per day per increment of Section 21 (Table II). Also see alternative systems, Section 11.
- (2) Grease traps for commercial establishments shall be designed in accordance with Attachment "C."

The Health Officer together with the State Regional Water Quality Control Board shall formulate guidelines for special design systems. Special design systems designated by the Health Department, shall be located, designed and installed under the direction of a Registered Civil Engineer, Registered Engineering Geologist, or Registered Sanitarian and so certified in a manner acceptable to the Health Department.

- (3) Commercial/institutional or industrial installations with average daily sewage flows of 1,000 gallons per day or greater and/or raw sewage B.O.D. values of greater than 500 mg/l (24 hour composite value), may require the use of a dosing siphon and/or 1.25 times the calculated absorption area for the soils found at the site. This will apply to all industrial installations who cannot show proof that the B.O.D. will be less than domestic sewage.
- (4) Where the average soil depth on the parcel exceeds seven (7) feet, net lot areas shall be sized according to Section 21 (Table II). Septic systems shall be constructed in accordance with this ordinance. Net lot area shall mean that a portion of a parcel not including the following areas:
  - (a) Private and public easements for access or roadway purposes
  - (b) Areas within the minimum separation distances shown in Section 22 (Table III) except required setbacks for buildings and streets.
  - (c) Areas with a slope in excess of thirty (30) percent, unless the flow is equal to or less than 300 gpd, the land available for disposal exceeds 2/3 acres, a variance is requested

and in the opinion of the Town Sanitarian slope stability analyses, geotechnical studies and seepage analyses clearly demonstrate that:

- (i) effluent will not surface down slope from the leachfield.
- (ii) saturation of the slope and removal of vegetation will not produce structural failure at the slope.
- (iii) severe erosion of the slope will not occur.
- (d) Areas where the percolation rate is in excess of one hundred twenty (120) min./inch or less than 5 min./inch.
- (e) Areas with less than seven (7) feet of soil above impervious stratum or winter groundwater, unless special design sewage disposal systems are proposed. Also see alternative systems, Section 11.
- (f) Easements dedicated or reserved for sewage disposal purposes in a document recorded in the Recorder's Office of the County of Butte. Such recorded documents shall apply only to repairs and to existing lots of record on the effective date of this ordinance.

Each parcel shall provide the minimum net lot area for sewage disposal found in Section 21 (Table II) attached. Areas shown in Section 21 (Table II) up to and including 2.0 acres are net lot areas for sewage disposal as defined above. Areas in Section 21 (Table II) in excess of two (2) acres are minimum gross parcel sizes provided, however, that such gross parcels shall contain not less than two (2) acres of net lot area as defined above.

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## Section 11. VARIANCES.

A. A variance may be granted only when special circumstances are applicable to the property, involving the soil characteristics, topography or surrounding property characteristics. Variances may be granted only to the specifications required in Section 10D of this Ordinance. Cumulative effects within the hydrologic basin shall be considered prior to issuance of any variance.

B. Applications for variances shall be made in writing on a form prescribed by the Health Department. Upon receipt of the application, the Health Officer together with the Town Engineer and Town Planning Director in consultation with State Water Quality Control Board shall make an investigation to determine whether a variance should be granted under the provisions of Subsection (11) above. After conclusion of the investigation, the Health Department shall prepare a written order granting or denying the variance, and shall include in such written order specific findings of fact and reasons for its granting or denial.

C. If the Health Department should deny the application for variance, the applicant may file an appeal to the State Regional Water Quality Control Board within ten (10) days after denial. Such decision by the State Regional Water Quality Control Board shall be final.

Section 12. SEPTIC TANKS - BUILDINGS UNDER DIFFERENT OWNERSHIP. No permit shall be issued for a septic tank system where the buildings it is to serve are under different ownership, nor for buildings proposed to go under separate ownership. When the development is to utilize a sewage disposal system(s) under common ownership, and an association of property owners is formed and which is responsible for maintenance and repair of the sewage disposal system(s) according to the written articles of the association, then the health officer may grant an exception to this section.

## Section 13. SEPTIC TANK ABANDONMENT.

A. Every cesspool, septic tank and seepage pit which has been abandoned or has been discontinued otherwise from further use or to which no waste or soil pipe from a plumbing fixture is connected, shall have the sewage removed therefrom in a manner acceptable to the health officer and shall be sufficiently uncovered to allow an examination of structural integrity and a determination of appropriate means of processing.

B. Processing of abandoned septic tanks and cesspools shall depend upon materials of construction and structural integrity at the time of abandonment.

- (1) Systems constructed entirely of concrete, including compartment covers, which are confirmed to be structurally sound by the health officer, may be left in place without further action. Such systems which are structurally sound except for the top or cover may be processed in this manner provided a new top or cover, cast in concrete, is added prior to final abandonment.
- (2) Systems constructed of fiberglass may be left in place provided they are covered with a layer of welded wire fabric reinforced concrete of not less than four (4) inches nominal thickness, and the slab shall extend one (1) foot beyond outside wall of tank.
- (3) All other systems, including those made of wood, steel, and concrete or fiberglass not processed as above provided, shall be completely filled with earth, sand, gravel, concrete or other approved material as follows:

The top of the septic tank shall be demolished before filling and the filling shall not extend above the top of the vertical portions of the side walls or above the level of any outlet pipe until inspection has been called and the fill material has been inspected. After such inspection the cesspool, septic tank or seepage pit shall be filled to the level of the top of the ground.

- (4) If the abandoned tank, etc. is going to be under a structural stem wall or pier and soil is used for backfill, the soil shall be compacted as determined by the building official.
- (5) Nothing herein shall prevent the health officer from requiring additional or other processing in the furtherance of health and safety.

Section 14. Privies. Pit or vault privies are prohibited within the Town of Paradise.

"Section 15. EXCEPTION. If a building or a portion thereof is destroyed by fire or other natural disaster, that building(s) will be exempt from Sections 20 and 21 (Tables I and II) of this ordinance provided the building is not expanded beyond its original foundation and/or the occupancy of the building does not change."

Section 16. ENFORCEMENT OF ORDINANCE. It shall be the duty of the health officer to enforce the provisions of this ordinance and the health officer, or his duly authorized representative, is hereby empowered to enter at any reasonable hour any premises necessary in the enforcement of this ordinance.

Section 17. VIOLATIONS. Any person who violates any provision of this ordinance is guilty of a misdemeanor. Each offense shall be punishable by a fine of not less than Twenty-Five Dollars (\$25) nor more than Five Hundred Dollars (\$500), or by imprisonment in the county jail for a term not exceeding six (6) months, or by both such fine and imprisonment. Each day a violation exists shall be considered a separate offense.

"Section 18. LIABILITY OF TOWN. This ordinance shall not be construed as imposing upon the Town or Butte County any liability or responsibility for damage resulting from the defective construction of any sanitary disposal system, as herein provided; nor shall the Town or any official, employee, or any contract agency, its employees, agents, or servants thereof be held as assuming any such liability or responsibility by reason of standards, requirements, or inspection authorized thereunder."

Section 19. EFFECTIVE DATE. This ordinance shall take effect thirty (30) days from the date of this ordinance. Before the expiration of fifteen (15) days after its passage, this ordinance shall be published in a newspaper of general circulation published and circulated within the Town of Paradise along with the names of the members of the Town Council of Paradise voting for and against same.

PASSED AND ADOPTED by the Town Council of the Town of Paradise, County of Butte, State of California, this 21st day of

June, 1983, by the following vote:

AYES: IVAN C. ANN, ROBERT D. JEFFORDS, JR., JOHN J. WILLIAMS, WALTER M. WINN AND RICHARD L. CRABTREE, MAYOR

NOES: NONE

ABSENT: NONE

NOT VOTING: NONE



Section 20

TABLE I

- a. Net lot areas are based on a wastewater generation rate of 300 gallons per day (gpd). Net lot areas shall be adjusted proportionately using the following wastewater generation rates:

<u>Type of Development (Each Living Unit)</u>	<u>Wastewater Generation Rate, gpd</u>
One Bedroom	150
Two Bedroom	225
Three Bedroom	300
Each additional bedroom, add	75
Commercial, Industrial, Institutional	

Wastewater generation rate to be determined by the Butte County Health Department based on water use records or published wastewater generation data. (In U.P.C., EPA Manual or Manual of Septic Tank practices)

- b. An impervious stratum is a layer or lense of fine grained soil, rock, cemented material, or similar soil structure in which the percolation rate exceeds 120 minutes per inch or in which 12 inches of water depth will not seep completely away in a 24-hour period.
- c. Areas with less than two feet of soil, slopes in excess of 30 percent, or percolation values in excess of 120 min/inch are generally unsuitable for on-site wastewater treatment and disposal.
- d. In addition to the other requirements of these standards, sewage disposal areas must be of such a configuration that it is practicable to use them based upon standard practices for the installation of on-site wastewater treatment and disposal systems.
- e. Net lot area necessary to accommodate the sewage flow from a private or multiple family residence(s) shall be based upon the number of bedrooms or other potential sleeping quarters in the residence, and upon the average percolation rate in the proposed sewage disposal area.
- f. Special consideration will be given to allow alternative wastewater disposal systems on lots with existing buildings when both the original and replacement leaching fields fail and there is no more room for a conventional leaching field.

Section 21 (TABLE 11)

MINIMUM NET LOT AREAS BASED ON WASTEWATER GENERATION RATE OF 300 GALLONS PER DAY  
AVERAGE SOIL DEPTH ABOVE WINTER GROUNDWATER OR IMPERVIOUS STRATUM

SLOPE	PERC VALUE  (min./in.)	Conventional Septic Systems 7' or Greater  (sq./ft.)	Special Design Systems					
			7' to 6'	6' to 5'	5' to 4'	4' to 3'	3' to 2'	
0 to 10%	0-10	14,520	20,520	25,520	35,520	80,860	5 acres	
	11-20	16,520	22,520	27,520	37,520	82,860	5 acres	
	21-40	18,520	24,520	29,520	39,520	84,860	5 acres	
	41-60	20,520	24,520	31,520	41,520	86,860	5 acres	
	61-80	31,520	34,520	41,520	51,520	2.0 acres	5 acres	
	81-100	41,520	44,520	51,520	61,520	2.25 acres	5 acres	
	101-120	61,520	64,520	71,520	81,520	2.75 acres	5 acres	
OVER 10% to 20%	0-10	16,520	30,520	38,520	53,520	2.25 acres	5 acres	
	11-20	18,520	32,520	40,520	55,520	2.5 acres	5 acres	
	21-40	20,520	34,520	42,520	57,520	2.5 acres	5 acres	
	41-60	27,520	36,520	44,520	59,520	2.75 acres	5 acres	
	61-80	39,520	46,520	54,520	69,520	2.75 acres	5 acres	
	81-100	49,520	56,520	64,520	79,520	3.0 acres	5 acres	
	101-120	69,520	76,520	84,520	99,520	3.5 acres	5 acres	
OVER 20% to 30%	0-10	20,520	40,520	50,520	74,080	3.5 acres	10 acres	
	11-20	22,520	42,520	52,520	76,080	3.5 acres	10 acres	
	21-40	24,520	44,520	54,520	78,080	3.75 acres	10 acres	
	41-60	31,520	46,520	56,520	80,080	3.75 acres	10 acres	
	61-80	46,520	56,520	66,520	90,080	4.0 acres	10 acres	
	81-100	56,520	66,520	76,520	100,080	4.25 acres	10 acres	
	101-120	76,520	86,520	2.25 acres	2.75 acres	4.75 acres	10 acres	

## Section 22

TABLE III

Standards for Location and Placement  
of Sewage Disposal Systems

DRAFT

Minimum Horizontal Distance Required From	Septic Tank	Leaching Trench
Building or structures	5' (A)	5' (A)
Roadway setbacks	20' (C)	20' (C)
Private Water Wells	50'	100'
Public Water Wells	100'	100'
Lakes, reservoirs or other water impoundments	50' (D)	200' (D)
Groundwater drainage systems such as "french" drains, founda- tion perimeter, curtain drains, etc.	25' (E)	50' (E)
Springs, seeps, lava outcroppings	50'	50' to 100'
Intermittent and perennial streams, irrigation ditches or other perennial water courses (J)	50' (B)(D)(I)	100' (B)(D)(I)
Ravine, drainage way or ephemeral stream (J)	50' (B)(D)	50' (B)(D)
Leaching Trench	1'	6'
Swimming Pools	5'	5'
Water Lines *	5'	5'
Water Mains *	10'	10'
Driveway or Parking Area	yes (G)	yes (H)
Cut Bank or Fill	25'	4 x height of cut or fill (F)
Surface Storm Drainage Pipe	5' (E)	25' (E)
Large Trees	10'	10'
Property Lines	5'	5'

Section 22, TABLE III (Continued)

- (A) Including porches and steps whether covered or uncovered, breezeways, roofed patios, carports, covered walks, covered driveways and similar structures or appurtenances.
- (B) Culverting these drainage ways by tight joined corrugated metal, concrete or plastic pipe will decrease the setback for leach-fields to 50 feet and septic tanks for any basin except Honey Run, Neal and Little Dry Creeks or others as may be designated by the Health Officer.
- (C) Greater or less distances are required depending on size of right of way.
- (D) Distance from high waterline of ten-year recurrent storm.
- (E) Greater or lesser distances may be required. Depending on site characteristics.
- (F) Four times the height of the bank, measured from the top edge of bank (with a 100' maximum distance).
- (G) Only if access provided and minimum 1 foot cover provided.
- (H) Only if percolation rate under 60 min./inch.
- (I) 200' sewage disposal setback required for property within the "Middle and Upper Honey Run Basins" as described in the "Wastewater Management Study of 1983," unless proven by a hydro-geological water assimilation study provided by a Registered Geotechnical Engineer that a smaller setback will not result in wastewater surfacing to the ground or into the stream channel.
- (J) Intermittent, perennial, ephemeral streams as described below, of the Paradise Master Storm Drainage Study (1980):
  - (1) ephemeral - carry only surface runoff and where the water table is always below the stream bottom.
  - (2) intermittent - water courses that are wet during the rainy season and generally dry during the rest of the year. The streambed may be below the groundwater table in the winter time.
  - (3) perennial - flowing all the time.

\*Minimum distance to water lines or water mains is 25 feet for a pressurized wastewater disposal system or pipe.

Section 4. EFFECTIVE DATE; URGENCY ORDINANCE. This ordinance is adopted as an urgency measure and shall take effect immediately based upon the finding by this Council that its adoption will protect the public safety, health, and welfare of the citizens of the Town of Paradise; and that its adoption will implement the Phase I, 201 Surface Water Quality Study adopted by the Town Council in April, 1983. Before the expiration of fifteen (15) days after its passage, this ordinance shall be published in a newspaper of general circulation published and circulated within the Town of Paradise along with names of the members of the Town Council of Paradise voting for and against same.

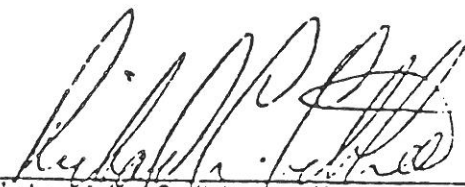
PASSED AND ADOPTED by the Town Council of the Town of Paradise, County of Butte, State of California, on this 17th day of January 1984, by the following vote:

AYES: Ivan C. Amy, Robert D. Jeffords, Jr., John J. Williams, Walter M. Winn, and Richard L. Crabtree, Mayor

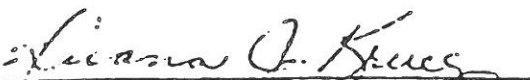
NOES: None

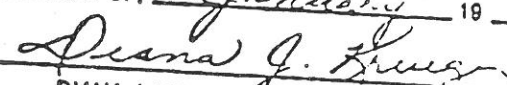
ABSENT: None

NOT VOTING: None

  
Richard L. Crabtree, Mayor

ATTEST:

By:   
Diana J. Krueger, Town Clerk

I, DIANA J. KRUEGER, TOWN CLERK OF THE TOWN OF PARADISE, DO HEREBY CERTIFY THAT THIS IS A TRUE AND CORRECT COPY OF ORDINANCE NO. 115 ADOPTED BY THE COUNCIL OF THE TOWN OF PARADISE AT a regular MEETING HELD ON 17th DAY OF January 1984  
  
DIANA J. KRUEGER, TOWN CLERK





ATTACHMENTS

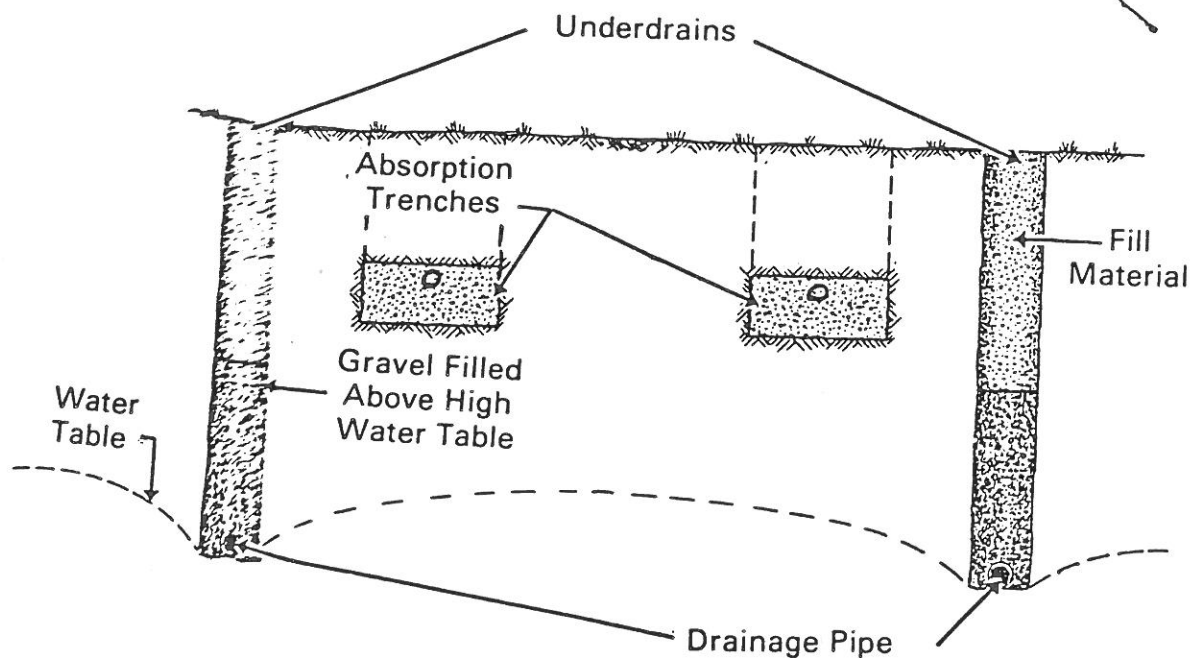
ORDINANCE 103

See Section V-A

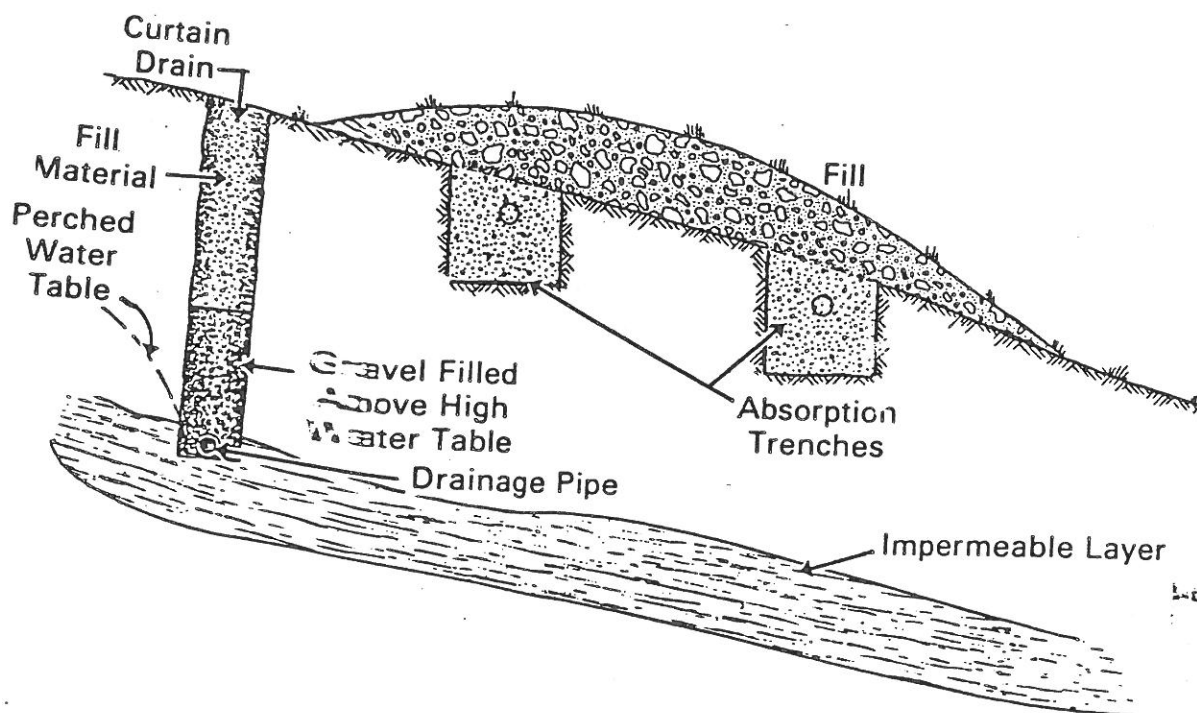


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# UNDERDRAINS USED TO LOWER WATER TABLE

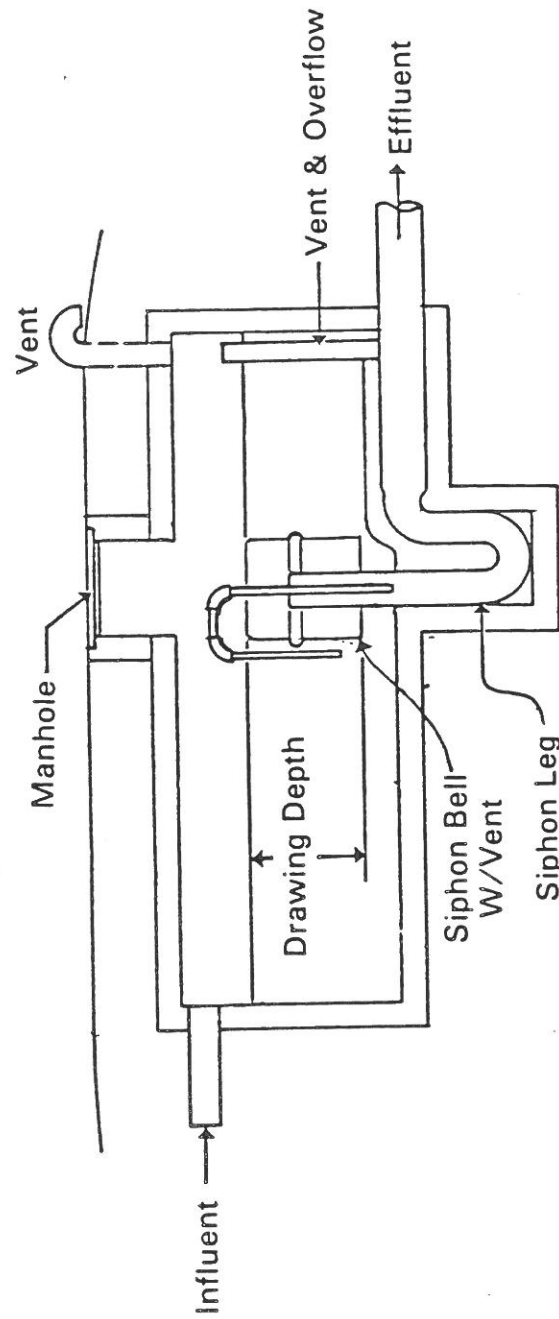


## CURTAIN DRAIN TO INTERCEPT LATERALLY MOVING PERCHED WATER TABLE CAUSED BY A SHALLOW, IMPERMEABLE LAYER



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TYPICAL DOSING CHAMBER WITH SIPHON





GREASE TRAP DESIGN CRITERIA  
(After EPA Design Manual On-Site Wastewater  
Treatment and Disposal Systems)

ATTACHMENT C  
**DRAFT**

Sizing of grease traps is based on wastewater flow and can be calculated from the number and kind of sinks and fixtures discharging to the trap. In addition, a grease trap should be rated on its grease retention capacity, which is the amount of grease (in pounds) that the trap can hold before its average efficiency drops below 90%. Current practice is that grease-retention capacity in pounds should equal at least twice the flow capacity in gallons per minute. In other words, a trap rated at 20 gpm (1.3 l/sec) should retain at least 90% of the grease discharged to it until it holds at least 40 lb (18 kg) of grease (1). Most manufacturers of commercial traps rate their products in accordance with this procedure.

Recommended minimum flow-rate capacities of traps connected to different types of fixtures are given in Table 8-1.

Another design method has been developed through years of field experience (3). The following two equations are used for restaurants and other types of commercial kitchens:

1. RESTAURANTS:

$$(D) \times (GL) \times (ST) \times \left(\frac{HR}{2}\right) \times (LF) = \text{Size of Grease Interceptor, gallons}^a$$

where:

- D = Number of seats in dining area
- GL = Gallons of wastewater per meal, normally 5 gal
- ST = Storage capacity factor -- minimum of 1.7  
onsite disposal - 2.5
- HR = Number of hours open
- LF = Loading factor -- 1.25 interstate freeways  
1.0 other freeways  
1.0 recreational areas  
0.8 main highways  
0.5 other highways

2. HOSPITALS, NURSING HOMES, OTHER TYPE COMMERCIAL KITCHENS WITH  
VARIED SEATING CAPACITY:

$$(M) \times (GL) \times (ST) \times (2.5) \times (LF) = \text{Size of Grease Interceptor, gallons}^a$$

where:

- M = Meals per day
- GL = Gallons of wastewater per meal, normally 4.5

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TABLE 8-1

## RECOMMENDED RATINGS FOR COMMERCIAL GREASE TRAPS (1)

<u>Type of Fixture</u>	<u>Flow Rate gpm</u>	<u>Grease Retention Capacity Rating lb</u>	<u>Recommended Maximum Capacity Per Fixture Connected to Trap gal</u>
Restaurant kitchen sink	15	30	50.0
Single-compartment scullery sink	20	40	50.0
Double-compartment scullery sink	25	50	62.5
2 single-compartment sinks	25	50	62.5
2 double-compartment sinks	35	70	87.5
Dishwashers for restaurants:			
Up to 30 gal water capacity	15	30	50.0
Up to 50 gal water capacity	25	50	62.5
50 to 100 gal water capacity	40	80	100.0

SC = Storage capacity factor -- minimum of 1.7  
onsite disposal - 2.5  
LF = Loading factor -- 1.25 garbage disposal &  
dishwashing  
1.0 without garbage disposal  
0.75 without dishwashing  
0.5 without dishwashing  
and garbage disposal

<sup>a</sup>Minimum size grease interceptor should be 1,000 gallons

<sup>b</sup>Grease traps then provided in multiples of 500 gallons

Thus, for a restaurant with a 75-seat dining area, an 8 hr per day operation, a typical discharge of 5 gal (19 l) per meal, a storage capacity factor of 1.7 and a loading factor of 0.8, the size of the grease interceptor is calculated as follows:

$$(75) \times (5) \times (1.7) \times \left(\frac{8}{2}\right) \times (0.8) = 2,500 \text{ gallons}$$

Other design considerations include: facilities for insuring that both the inlet and outlet are properly baffled; easy manhole access for cleaning; and inaccessibility of the trap to insects and vermin.

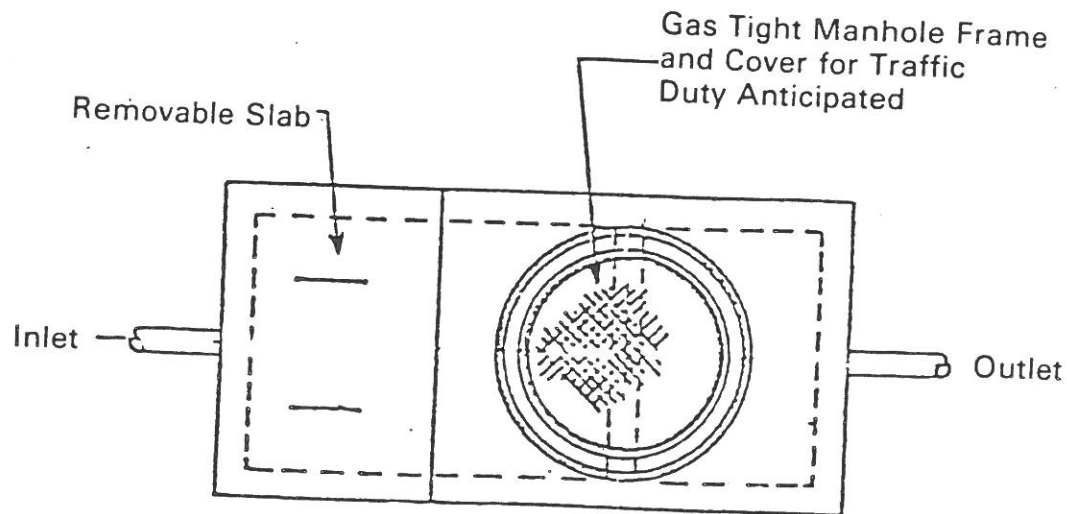
### 3.2.5 Construction Features

Grease traps are generally made of pre-cast concrete, and are purchased completely assembled. However, very large units may be field constructed. Grease traps come in single- and double-compartment versions. Figure 8-1 shows a typical pre-cast double-compartment trap (2).

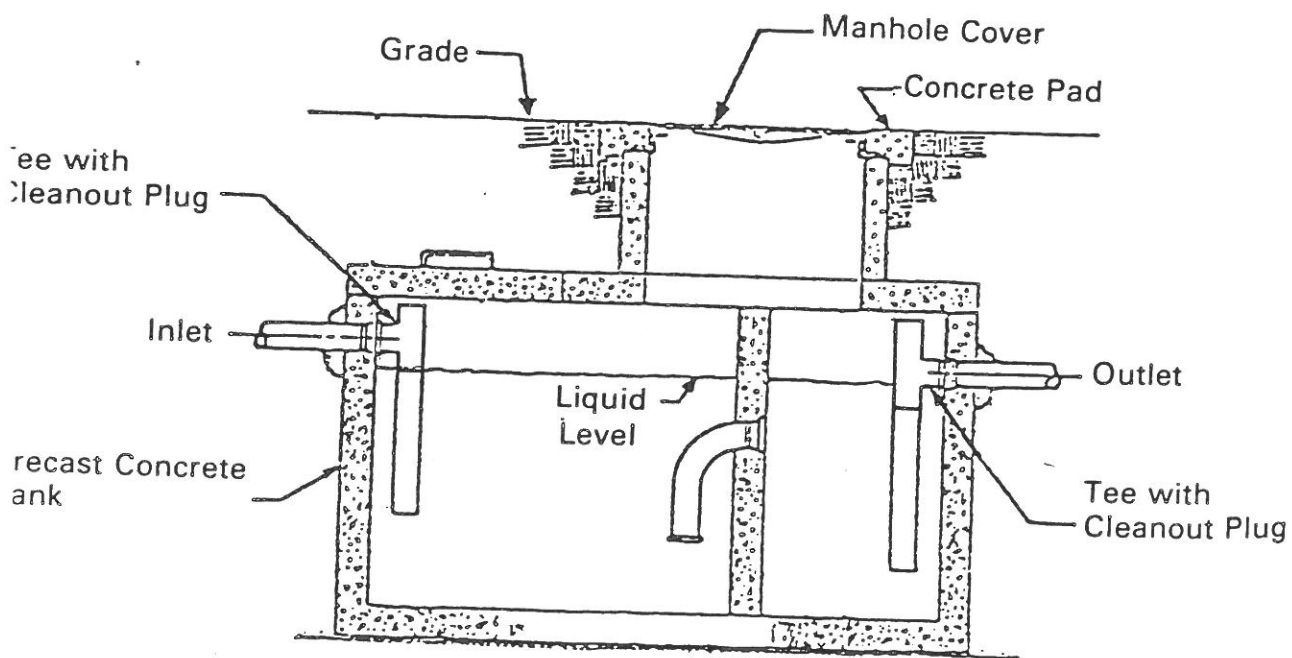
Grease traps are usually buried so as to intercept the building sewer. They must be level, located where they are easily accessible for cleaning, and close to the wastewater source. Where efficient removal of grease is very important, an improved two-chamber trap has been used which has a primary (or grease-separating) chamber and a secondary (or grease-storage) chamber. By placing the trap as close as possible to the source of wastewaters, where the wastewaters are still hot, the separating grease at the surface of the first chamber can be removed by means of an adjustable weir and conveyed to the separate secondary chamber, where it accumulates, cools, and solidifies. This decreases the requirement for cleaning and allows better grease separation in the first chamber.

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DOUBLE-COMPARTMENT GREASE TRAP

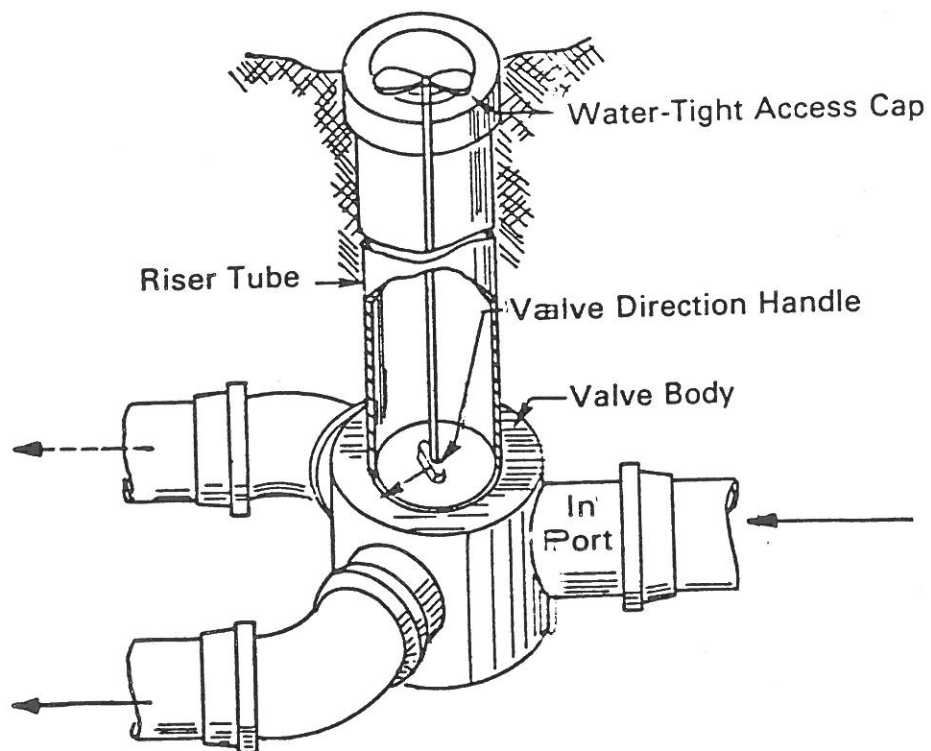


Top View



Section

# TYPICAL DIVERSION VALVE





RESOLUTION NO. \_\_\_\_\_

A RESOLUTION ESTABLISHING POLICIES REGARDING  
THE ACQUISITION OF LANDS OR EASEMENTS FOR  
OFF-SITE MITIGATION OF FAILED WASTEWATER  
DISPOSAL SYSTEMS

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RESOLVED, by the Town Council of the Town of Paradise, Butte County, State of California, that WHEREAS, the Town intends to provide for, and carry out, onsite wastewater system management program pursuant to ordinances, rules and regulations heretofore, and hereafter to be adopted;

WHEREAS, the program provides for regulation by the Town of individual onsite wastewater disposal systems;

WHEREAS, to provide for the mitigation of certain failed disposal systems, it may be necessary for the Town to acquire off-site lands or easements to be made available for the construction thereon of replacement systems; and

WHEREAS, the Town Council desires to establish certain policies with regard to the acquisition by the Town of lands or easements for such purpose;

NOW, THEREFORE, IT IS HEREBY DETERMINED, as follows:

1. The acquisition of lands or easements by the Town of Paradise for the purpose of off-site mitigation will be considered by the Town Council only if all other means of mitigation, other than vacating the premises, have been explored and determined to be inadequate, impractical or unavailable.
2. Other means of mitigation include, but are not limited to, the installation or repair of onsite wastewater disposal systems, water conservation measures, installation of water conserving appliances or devices or any combination of the foregoing.

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3. Other means of mitigation shall also include installation of off-site wastewater disposal systems on lands or easements acquired at private expense.

4. In considering the acquisition of lands and easements by the Town for purposes of off-site mitigation, the Town Council shall first determine if a site is available that is practical in terms of location, size and cost.

5. If such a site is available the Town will acquire same, subject to availability of funding, and will make same available for off-site mitigation either at the direct expense of the owner of the system to be mitigated or at the expense of the Town with provision for repayment secured by a lien on the property or properties benefited by such off-site mitigation.

6. Off-site wastewater disposal systems located on lands or easements owned by the Town will remain the responsibility of the user thereof for proper operation and maintenance.

---

Mayor

ATTEST:

---

Town Clerk

Assessor's Parcel Number \_\_\_\_\_

TOWN OF PARADISE  
PERMIT TO CONSTRUCT  
CURTAIN DRAIN

Owner \_\_\_\_\_

Mailing Address \_\_\_\_\_

Drain Installation Address \_\_\_\_\_

Attach sketch of lot, topography to 2 foot contour, internal buildings, septic tank, leach field, drives, trees over 6 inch diameter, water and sewer lines, and adjacent properties to terminus of drain. Show elevations, depths, profiles, etc.

The proposed size, slope, type and construction of curtain drain shall be shown, together with water level elevation and capacity.

Date of Application \_\_\_\_\_

Date Permit Issued \_\_\_\_\_

Date of Construction Final Inspection \_\_\_\_\_

Special Conditions Notation \_\_\_\_\_

The permit to operate shall be filed with

1. Town of Paradise, Sanitarian
2. Town of Paradise, Engineer
3. The Owner

Application To: The Town of Paradise, Engineer

RESOLUTION NO. \_\_\_\_\_

F. RESOLUTION ESTABLISHING WATER CONSERVATION POLICIES

Resolved by the Town Council of the Town of Paradise, Butte County, State of California, that WHEREAS, the Town intends to provide for, and carry out, a water conservation program pursuant to ordinances, rules and regulations heretofore, and hereafter to be adopted;

WHEREAS, the purpose is to conserve water and reduce the amount of wastewater for disposal to on-site wastewater disposal systems or a central wastewater collection and disposal system.

WHEREAS, the Town Council desires to establish certain policies and service fees for the disposal of wastewater and to encourage by fee reduction water conservation;

NOW, THEREFORE, IT IS HEREBY DETERMINED, as follows:

1. All new houses and other buildings must be fitted or resold houses or buildings retrofitted with water conservation devices to include a pressure reducing valve on the water supply set for a maximum pressure of 40 psi, water closets of 3 gpm maximum flush tank capacity, thermal insulation of all hot water piping, showerheads or restrictors of a maximum 3 gpm capacity, aerating faucets and such other devices to reduce normal domestic water use to no more than 60 gallons per day, or commercial establishments with a minimum 25% savings of normal water use.

2. The Town of Paradise will periodically publish and distribute information on water conservation measures, appropriate water conservation devices and how water conservation measures and less applied wastewater will allow marginal leach fields to continue to be utilized without backup or water surfacing.

3. As a part of the On-Site Wastewater Management District service fee there will be a reduction of 25% of the monthly costs for homes and businesses that can demonstrate retrofit with water conservation fixtures and at least a 25% reduction in water consumption for a period of not less than three months following installation and certification of the water conservation fixture installation. This discount in service fees will continue until such time as there is an increase by as much as 10% for a three-month period from whence first a water conservation deduction qualification was established.

\_\_\_\_\_  
Mayor

Attest: \_\_\_\_\_  
Town Clerk

Assessor's Parcel Number \_\_\_\_\_

TOWN OF PARADISE

PERMIT TO OPERATE WASTEWATER DISPOSAL SYSTEM

Owner \_\_\_\_\_

Mailing Address \_\_\_\_\_

System Address \_\_\_\_\_

Lot Size \_\_\_\_\_

Parcel Number of Off-lot Leachfield (if required) \_\_\_\_\_

Attach sketch of system layout. If off-lot attach additional sketch showing off-lot leachfield.

Date Issued \_\_\_\_\_

Date of Construction \_\_\_\_\_ Date of Mitigation \_\_\_\_\_

System Capacity \_\_\_\_\_

Maximum Hydraulic Loading Rate - Total and Unit (GPD/SF) \_\_\_\_\_

Percolation Rate (Attach Calculations and Test Report)

Area, Length and Configuration of Leachfield (attach design calculations)

Field Monitoring (necessary if exempted from minimum depth to ground water)

Location of Monitoring Points (show on system sketch. Identify as Sampling Station 1, 2, 3 . . .) \_\_\_\_\_

The Permit to Operate shall be filed with:

1. Town of Paradise, Town Sanitarian
2. Town of Paradise, Engineer
3. The Owner

Application To: Town of Paradise, Engineer



G. ON-SITE WASTEWATER SYSTEM MANAGEMENT  
ZONE ANNUAL BUDGET

(See Table V-5, Page V-13 Of Step II Wastewater Management Plan Report)

#### H. TOWN OF PARADISE FEE SCHEDULE

- |   |                |
|---|----------------|
| 1. INSPECTION/PERMIT TO OPERATE<br>(or may be paid in monthly service fee for<br>initial period)  | \$200.00       |
| 2. INTERMITTENT INSPECTIONS   |                |
| a. Alleged Failure Inspection   | \$ 50.00       |
| b. Design Review/Permit to Construct  | 100.00         |
| c. Final Inspection   | 50.00          |
| 3. CONDITIONED PERMIT TO OPERATE<br>(for marginal systems that require special<br>monitoring)   | \$ 20.00/month |
| 4. TOWN COSTS<br>Expenses incurred by the Town for the design,<br>installation; and/or financing or wastewater<br>disposal systems shall be charged to the property<br>owner at cost. |                |
| 5. CURTAIN DRAIN PERMIT AND INSPECTION  | \$ 80.00       |
| 6. SERVICE FEES   |                |
| a. Single Family Residence  | \$ 4.00/month  |
| b. Multi-Family Residential Unit<br>(Per dwelling unit)   | \$ 6.00/month  |
| c. Commercial/Industrial Facilities<br>(per Equivalent Dwelling Unit Flow of 175 gpd)   | \$ 8.00/month  |
| d. Restaurant-Laundromat Facilities<br>(Per Equivalent Dwelling Unit Flow of 175 gpd)   | \$ 16.00/month |
| 7. SENIOR CITIZENS (over 65 head of household) Discount<br>25% of monthly fee.  |                |
| 8. WATER CONSERVATION DISCOUNT - 25% of monthly fee<br>(Persons can qualify for both Senior Citizen and<br>Water Conservation Discounts)  |                |

I. STAFFING, ORGANIZATION & ADMINISTRATIVE DETAILS

(See Table V-5, Page V-13 of Phase II Wastewater Management Plan)

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J. HEARING PROCEDURES

1. Owner in violation is informed of citation by registered return-receipt mail.
2. Citation requires owner to make contact with appropriate authorities of Town of Paradise within 15 days of receipt signature date, or
3. File for an appeal from the citation with the Town of Paradise within 15 days of receipt signature date.
4. If the request for appeal is filed within the proper time limit, the Town will hold the appeal hearing within 15 days of filing.
5. If owner fails to respond within 15 days or fails to appear for Town appeal hearing when scheduled, then the Town will cause an abatement notice to be filed within 30 days of posting the citation and will proceed to perfect said abatement in accordance with Section 6978, Health and Safety Code.
6. Where the Town is shown that an immediate threat to the public health exists, the Town will seek injunctive relief in accordance with Health and Safety Code, Section 6978, or Water Code Section 31145 et. seq.

K. RESOLUTION OF INTENT TO CREATE ON-SITE WASTEWATER  
MANAGEMENT/DIPOSAL ZONES

RESOLVED, by the Town Council of the Town of Paradise, Butte County, State of California, that WHEREAS, the Town intends to provide for, and carry out, an on-site wastewater system management program pursuant to regulations and requirements of Chapter 3, Section 6950-6981 of the California Health and Safety Code and ordinances, rules and regulations heretofore and hereafter to be adopted:

WHEREAS the program provides for regulation by the Town of individual on-site wastewater disposal system.

NOW THEREFORE, IT IS HEREBY DETERMINED as follows:

1. The on-site wastewater management zone will be comprised of all lands within the boundaries and limits of the Town of Paradise.
2. All on-site wastewater systems of the following classifications of property will be inspected and tested within the initial two years following enactment of this ordinance. Hence, they will be inspected at the following frequencies;  
  
Single Family Residential - 4 years  
Multi-Family Residential - 3 years  
Commercial-Industrial - 2 years  
Restaurants & Laundromats - 1 year  
Speical "Alternative" systems - 1 year
3. The benefits of establishing an on-site wastewater management zone are the protect the public health, maintain on-site disposal system in the highest degree of effluency and effectiveness, prevent or minimize pollution or degradation of surface and groundwaters, extend to the maximum period possible the effective functioning of on-site systems, and defer or eliminate the need for costlier central sewer wastewater collection and disposal systesm.
4. On-site wastewater systems include individual or community septic tank and leaching field disposal systems or alternatives as approved by the Town and Butte County Departmnet of Environmental Health.
5. The estimated number of systems total approximately 10,000 divided into approximately 9,000 single family residential units, 500 multi-family, 400 commercial and industrial establishments and 100 restaurants and laundromats.
6. The on-site wastewater management district will be funded by monthly fees to be assessed by the Town to each property owner or tenant with an on-site wastewater disposal system.
7. These fees will be set from time to time by the Town to fully fund the on-site wastewater management program and use as initially provided in the attached rate schedule.



8. A public hearing on the intent to create the on-site wastewater management zone will be held at 7:30 p.m. in the Town Hall, thirty (30) days hence.

\_\_\_\_\_  
Mayor

Attest:

\_\_\_\_\_  
Town Clerk

K. HEALTH OFFICER'S REPORT TO TOWN COUNCIL

- Eventual submittal and review by RWQCB

L. INSPECTION PROCEDURES ONSITE  
SYSTEMS TOWN OF PARADISE

GENERAL PROVISIONS

All systems will be inspected initially during the inventory phase of program implementation and thereafter in accordance with the following schedule:

- Residential - every 4 years
- Multi-family res. - every 3 years
- Comm/Industrial - every 2 years
- Restaurants/Laundromats - yearly
- Alternative/Special Systems - yearly

with the exception of systems that require special monitoring.

Computer files will be established by hydrologic subbasins of the Town.

One month prior to inspection date, a Notice of Inspection card will be mailed to the property owner (and tenant) indicating date and time of inspection. The property owner must have the septic tank pumped out and cleaned prior to the inspection and provide a copy of a certificate signed by the septage hauler that has been done. The property owner will be required to provide tank access both at inlet and outlet ends (wood or metal access pipe -- minimum of 6 inches diameter -- at or above ground level. Pipe or box should be capped and sealed to prevent odors.) If access is not provided, it will be done by the Town at the time of initial inspection and the property owner charged for that installation.

Copies of the inspection reports shall be sent quarterly to the Regional Water Quality Control Board staff as follows:

Initial Inspections --

Failed Systems --

Repeat Inspections --

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## ROUTINE ONSITE INSPECTIONS

Upon the inspector's arrival, access ports will be opened. The following will be recorded: tank dimensions, inlet/outlet heights, baffle height(s), scum and sludge levels and other information as listed on inspection form. Computations of usable tank volume and detention time, condition and construction of tank will also be noted.

If the inspector determines that the tank does not require pumping, the system will be loaded with water. A loading schedule of five flushes per bedroom or five flushes per two persons, whichever is greater, will be followed. The rise in the tank level and the percolation, (water loss), rate for 1/2 hour will be recorded.

- If . . .
- a) the plumbing is sluggish or backs up,
  - b) the system overflows (surfacing effluent),
  - c) odors are detected (other than from inspection ports),
  - d) erosion caused by surfacing effluent is observed, the
- system will require a "failed system investigation."

If none of the above symptoms are observed and percolation equals or exceeds loading, the system will be issued a permit to operate.

### 1. Failed System Investigation

The failed system investigation may be conducted at the same time or the property owner and tenant can set a new inspection appointment.

If surfacing water is noted, an ammonia ( $\text{NH}_3$ ) and Methylene Blue Active Substance (MBAS) field test will be conducted to determine whether this is effluent. A loading test to determine the percolation rate (the drop in tank level over a half hour) will be conducted and recorded. The percolation rate (extra-polated to 24 hours)

DRAFT

will be compared to the average loading rate as determined by average daily water usage to determine whether the drainfield is adequate. The tank volume, inlet/outlet baffle heights, liquid, scum and sludge levels (volumes), average daily water use and number of occupants will be reviewed to determine cause of failure. Property owners will be issued a Notice of Failure listing probable cause(s) of failure.

2. Special Monitoring

a) Marginal Systems

If any system has sluggish plumbing but the drainfield will absorb normal water usage (as determined by percolation rate vs. average daily water use), or if the tank volume is small in relation to to number of occupants and water use, or, if the system has a history of frequent pumpouts or has shown signs of failure in the past, that system may require more frequent inspection and monitoring.

b) High Groundwater

Systems located in spring areas or high groundwater zones will require more frequent inspection and monitoring.



TOWN OF PARADISE  
WATER QUALITY  
M. MONITORING PROGRAM

(See Table V-1, page V-8 of Step 2  
Wastewater Management Plan Report)

DRAFT

TOWN OF PARADISE  
D<sup>1</sup> ONSITE WASTEWATER SYSTEM  
INVENTORY

In order to provide the necessary data on (1) existing and future numbers of systems by subbasin, (2) type of system, (3) volume and (4) location of systems as required per Section 6960 and 6960.1 of the Health and Safety Code, an inventory of existing onsite systems shall be performed in accordance with Article L of the onsite Wastewater Management Zone regulations.

DRAFT

E. ESTABLISHING POLICIES REGARDING  
THE PREPARATION AND IMPLEMENTATION  
OF HYDRAULIC/CHEMICAL LIMITS  
FOR THE 20 SUBBASINS WITHIN THE  
TOWN OF PARADISE

History

The onsite wastewater system management history is relatively short and incomplete on a number of key elements. Taking advantage of this history and experience for the Town of Paradise is essential in structuring and demonstrating long-term operational feasibility for any sewerage management scheme. So called cumulative impact studies have been performed for a number of critical basins in California and elsewhere, where the continued use of septic tanks has been questioned regarding the limiting capacity of the soil body and groundwater to assimilate waste.

The Community of Inveness in western Marin County and Black Point in northeastern Marin had detailed studies to determine the safe number of septic tanks that could be installed and operated without degrading surface or groundwater quality. These findings have been used by the Marin County Planning Department in guiding future development at those locations.

The unsewered section of Carmel Valley in Monterey County was analyzed for its "holding capacity" for septic systems. Limits were set for hydrologic subbasins based upon a hydraulic mass balance and selected critical chemical elements and their known transport dynamics.

Subbasin Hydraulic/Chemical Limits

The Town has topographic and hydrologic boundaries which delimit the Town into some 20 small subbasins or drainage areas each with its own set of physical, vegetative and hydrologic characteristics.

In order to establish a rational basis for management of the onsite systems under the Town's General Plan and projected rate of growth, it is proposed that finite limits be set for an adopted set of chemical and hydraulic criteria, for each of the 20 subbasins, that will in conjunction with a water quality monitoring program give a rational planning tool for a decision by the Town, when a subbasin has reached its capacity to assimilate wastewater.

To provide such data, a cumulative impact study would be required to yield the kind of information necessary to predict approximately when a subbasin had reached its capacity. The Town would have the option to prohibit further wastewater contributions in that subbasin or provide the subbasin with the option of sewers and waste treatment.

It is conceivable that in the high density areas of the Town that such limits may have already been reached or exceeded and that sewerage of that subbasin is a necessary action by the Town.

The technology for the cumulative impact studies is currently available and is essential to the successful functioning of the onsite system management program, if adopted by the Community.

APPENDIX VIII-I

DRAFT ORDINANCE

TOWN OF PARADISE  
COMMERCIAL HAZARDOUS WASTE MANAGEMENT PLAN

The Town Council of the Town of Paradise, State of California, does ordain as follows:

Section 1. PURPOSES. The purposes of this ordinance are:

- A. To protect ground and surface waters from contamination resulting from commercial discharges of hazardous wastes
- B. To regulate containment and disposal of hazardous wastes from commercial activities.

Section 2. APPLICATION OF ORDINANCE; WAIVER OF PROVISIONS OF ORDINANCE. This ordinance shall apply to all real properties located within the Town of Paradise. The health officer shall waive the permit and inspection requirements contained in this ordinance when the provisions of this ordinance are superceded by any State law.

Section 3. DEFINITIONS. For the purposes of this ordinance, the following words and phrases shall have the meanings respectively ascribed to them by this Section.

Authorized Facility. An authorized facility is any person, firm or public entity duly licensed under the laws of the State of California to transport, store, treat or dispose of hazardous wastes.

Commercial Discharger. Any discharger which operates an establishment primarily involved in the manufacture, sales or distribution of goods or services to the general public, said establishment requiring commercial licensing by the Town of Paradise.

Direct Discharge. Discharge to any water course either directly or via storm drain or similar untreated conveyance; or discharge via direct untreated application to the soil surface.

District Officer. Any legally empowered employee of the Septic Tank Management District.

Hazardous Waste. Any material specifically listed as a hazardous material by 22 California Administrative Code 4, or hazardous waste by 40 CFR 261 or meeting the designations contained therein for ignitable waste, corrosive waste, reactive waste, EP toxic waste, acute hazardous waste, toxic waste wet, or infectious wastes. Any material containing a hazardous waste as defined herein.



Premises. The physical plot occupied by a discharger and all contiguous properties.

Sewage Disposal System. Sewage disposal system shall be defined as any septic tank, drain field, seepage pit, chemical toilet, community sewer, any other structure, system or combination of the above used for the treatment, discharge or disposal of sewage.

Town. The incorporated Town of Paradise, California.

Water Course. A stream, spring, river, lake or other natural occurring water body or water conveyance channel, whether perennial or ephemeral in nature.

Section 4. DIRECT DISCHARGE PROHIBITED. Direct discharge of hazardous wastes, radiator flushings, oily washwaters, or any waste stream containing commercial or industrial chemical residues by a commercial discharger is prohibited.

Section 5. LANDFILL OF CONTAINERIZED HAZARDOUS WASTE PROHIBITED. No hazardous wastes shall be containerized for landfill in other than an authorized facility.

Section 6. APPROVED DISCHARGE. Discharge of hazardous waste to a licensed hazardous waste handler or facility shall be an Approved Discharge provided:

- A. Records of waste discharge are maintained in accordance with this ordinance and in accordance with 22 California Administrative Code 4;
- B. No incompatible wastes are combined in the same container.

Section 7. WASTE CRANKCASE OIL. All waste crankcase oil of commercial origin shall be disposed of by delivery to an authorized facility. Direct discharge to soil is prohibited.

Section 8. RETENTION ON SITE. Each hazardous waste discharger shall maintain facilities for containment of all hazardous waste streams on-site for collection and storage prior to approved disposal. Containment systems shall:

- A. Be physically separate from building plumbing, storm drains, sewage disposal systems or water courses.
- B. Be constructed of materials suitable for containment of the anticipated wastes.
- C. Conform to all applicable codes for venting, installation and construction.

- D. Not have an installed drain or outlet connection in the case of an underground collection facility. Evacuation of said facilities shall be possible by above ground pumping only.

Section 9. RETENTION OF MIXED WASTE STREAMS. A discharger who discharges multiple hazardous wastes shall be responsible for determination of the compatibility of the wastes for containment on-site. Non-compatible waste streams shall be segregated. In the case of laboratory or similar installations, containment systems shall be labeled as to acceptable waste streams.

Section 10. MANIFEST AND RECORDKEEPING. Each discharger shall prepare a manifest for each shipment of waste transported off-site in accordance with, and maintain such records as required by, Sections 66484, 66492 and 66504 of 22 California Administrative Code 4.

Section 11. PERMITS AND LICENSES. Upon application for, or renewal of, a business license in the Town of Paradise, the license applicant shall be furnished with a listing of hazardous wastes and a questionnaire. Said questionnaire shall be completed to determine the potential volume, character and disposal methods of hazardous wastes, if any, which would result from the proposed commercial activity. The completion of the Hazardous Waste Questionnaire shall be required of all applicants. Furnishing of false information shall result in fines and/or imprisonment as specified herein.

Section 12. PENALTIES FOR FURNISHING FALSE INFORMATION. Any person who knowingly furnishes false information is guilty of a misdemeanor punishable by a fine of not less than Twenty-Five Dollars (\$25.00), nor more than Five Hundred Dollars (\$500.00), or by imprisonment in the County Jail for a term not exceeding six (6) months, or by both such fine and imprisonment.

Section 13. ACCESS TO PREMISES. It shall be the duty of the District Officer to enforce the provisions of this ordinance and the District Officer, or his duly authorized representative, is hereby empowered to enter any dischargers premises at any reasonable hour to inspect the discharger's purchasing and disposal records, inspect facilities for hazardous waste catchment, retention, treatment or disposal, and perform such tests as are required to determine and/or enforce compliance with this Article.

Section 14. VARIANCES.

- A. A variance may be granted only when special circumstances are applicable to the discharger, involving the waste characteristics, amount of waste or on-site treatment of waste. Cumulative effects within the hydrologic basin shall be considered prior to issuance of any variance.

- B. Applications for variances shall be made in writing on a form prescribed by the District. Upon receipt of the application, the District Officer, together with the Town Engineer and Town Planning Director, shall make an investigation to determine whether a variance should be granted under the provisions of Subsection (14) above. After conclusion of the investigation, the District shall prepare a written order granting or denying the variance, and shall include in such written order specific findings of fact and reason for its granting or denial.
- C. If the District should deny the application for variance, the applicant may file an appeal to the State Department of Health Services within ten (10) days after denial. Such decision by the State Department of Health Services shall be final.

Section 15. PENALTIES FOR VIOLATIONS. Any person who violates any provision of this ordinance is subject to fines and imprisonment as specified by the Hazardous Waste Control Law of the California Administrative Code.

Section 16. HAZARDOUS WASTE LISTING. The following listing is excerpted from 22 California Administrative Code 4, and consists of commonly used wastes. Refer to 22 California Administrative Code 4 and 40 CFR for concise definitions of hazardous waste classifications.

# APPENDIX VIII-II

## COMMERCIAL HAZARDOUS WASTE GENERATORS

MARCH 1985

<u>Company</u>	<u>Address</u>	<u>Telephone</u>
Corcorans Paving	P.O. 591	877-0315
Le Rosignol	P.O. 491	877-7398
AA Auto Body & Repair	4780 Skyway	877-8173
Bills Body Shop	5747 Skyway	877-4794
Jay's Auto Body & Frame	798-B Elliott	877-8072
Johnny's Auto Body	8075 Skyway	877-5467
Mittags Body Shop	52 Pearson Rd.	877-4502
Paradise Auto Body	1122 Elliott	877-8060
Skyway Garage	119 Pearson	877-5152
Anthony's VW Repair	195 Elliott - A	872-3501
Auto Alley	1519 Henson	877-8311
Calcote Garage	1073 Elliott	877-6145
Cecil's Magalia	13733 Skyway	877-8965
Clarks	1326 Billie	872-3281
Daves	6421 "B" Hollywood	873-3863
Dean's Skyway	8336 Skyway	877-8961
Denny's Garage	6009 Skyway	872-5082
Don Kahrs	5498 Skyway	877-6552
Gold Nugget Auto	8710 Skyway	877-5662
Howard Martinson's Chevron	5971 Skyway	877-3375
Imported Car Service	5801 Foster	872-2503
In 'n Out Lube 'n Oil	5605 Almond	872-8583
Independent Automotive Svcs.	9287 Skyway	877-8888
John's Garage & Marine	119 Pearson	877-8633
K&K Automotive	5836 Clark	872-1222
Kahr's Service	6036-B Foster	877-6552
Ken Kennans	3288 Neal Rd.	877-2640
Larry's Exxon	6226 Skyway	877-5690
Lazlo & John's	795 Elliott Rd.	872-3381
Metric Motors	7357 Skyway	872-2550
Mike's Automotive	5649 Skyway	877-0658
Murray's Auto Service	758 Fir	877-3478
Montgomery Ward	795 Elliott	877-9378
Paradise Auto Electric	6194 Skyway	877-7783
Paradise Auto Repair	6220 Clark	872-1155
Paradise Imported Car	5801 Foster	872-2503
Paradise Motor Sales	475 Pearson	877-4837
Paradise Motor Sports	6166 Clark	872-1380
Paradise Transmission	5505 Skyway	872-2164
Rixx Auto Service	6036 Foster	
Skyway Towing & Auto	699 Pearson	
Stagg Shop	6220 Clark Rd.	
Tony's VW Repair	6661 Pentz Rd.	
Wayne's Auto	969 Billie	
Benson's Cleaners	6439 Skyway	

<u>Company</u>	<u>Address</u>	<u>Telephone</u>
Coit Drapery Cleaners	6406 Skyway	
Crystal Aire Dry Cleaners	6848-B Skyway	
Quality Cleaners	5933 Skyway	
D&D Engineering & Aero- space Machining	8901 Skyway	
Driveline Specialties	5864 Clark	
G&L Machine & Mfg.	1130 Wagstaff Rd.	
H&H Auto Parts	757 Fir	
J&A Machine Shop	797 Elliott	
Maverick Machining & Engineering Corp.	6517 Rocky Lane	
Terry's Transmission Specialties	5864 Clark	
Dollar Shaver	7620 Skyway	
Paradise Post	5399 Clark	
Al Custom Painters		877-8353
CAP Printing Co.	3594 Neal Rd.	
Cal Commercial Co.	1409 Amy Lane	
Christensen Painting Co.		877-8264
Greens Painting Service		872-1632
Jeremiah's Painting & Wallpapering	5660 Angel	
M&M Painting & Wallcovering		873-2073°
Powell Painting, Inc.	6090 Lucky John	
Butte Pest Control	5779 Fickett	
Clark Pest Control		872-2750
MidValley Termit Inspection		873-1888
North Ridge Pest Control	6393 Skyway	
Paradise Termite Control	5479 Harrison	
ProKill Pest Control		877-1076
Terminex International		877-6431
Dave's Camera	6020 Skyway	
Phil's Fast Photo	6014 Clark	
Photo Express	6626 Clark	
Photo Place	6840 Skyway	
Apple Photo	7400 Skyway	
McGill Photography	8366 Montana	
Photos by Alan Tomatis	6294 Skyway	
Craig's Radiator	5604 Jewell	
Dean's Skyway Rad. Serv.	8366 Skyway	
Imperial Radiator	6220 Clark	
Ridge Radiator	5674 Skyway	
All Roofing Co.	679 Bushamann	
Cobb Roofing	1602 Gate	
Crawford Roofing		877-2139
Dwight Roofing Co.	5500 Edgewood Ln.	
Meyers Roofing Svc.	860 Omstott Rd.	
Patrick J. Nelson	5722 Newman	
Sierra Mobile Svc.	8965 Skyway	
Beacon Service #455	6901 Skyway	
Bob's Union	6505 Skyway	
Paul's Texaco	5729 Skyway	



CompanyAddressTelephone

Sinclair Shell  
R.C. Anderson  
Bob Caldwell  
Dr. John's  
Bradley Weil

6415 Skyway  
1182 Billie  
6063 Myameer  
5953 Clark

873-1463

12. \*Acrylonitrile (T,F)
13. \*Adiponitrile (T)
14. Aldrin; 1,2,3,4,10-Hexachloro-1,4a,5,8,8a-hexahydro-1,4,5,8-endo-exodimethanonaphthalene (T)
15. \*Alkyl aluminum chloride (C,F,R)
16. \*Alkyl aluminum compounds (C,F,R)
17. Allyl alcohol, 2-Propen-1-ol (T,F)
18. Allyl bromide, 3-Bromopropene (T,F)
19. Allyl chloride, 3-Chloropropene (T,F)
20. Allyl chlorocarbonate, Allyl chloroformate (T,F)
21. \*Allyl trichlorosilane (T,C,F,R)
22. Aluminum (powder) (F)
- 23A. Aluminum chloride (T,C)
- 23B. \*Aluminum chloride (anhydrous) (T,C,R)
24. Aluminum fluoride (T,C)
25. Aluminum nitrate (T,F)
26. \*Aluminum phosphide, PHOSTOXIN (T,F,R)
27. \*4-Aminodiphenyl, 4-ADP (T)
28. \*2-Aminopyridine (T)
29. \*Ammonium arsenate (T)
30. \*Ammonium bifluoride (T,C)
31. \*Ammonium chromate (T,F)
32. \*Ammonium dichromate, Ammonium bichromate (T,C,F)
33. \*Ammonium fluoride (T,C)
34. \*Ammonium hydroxide (T,C)
35. \*Ammonium molybdate (T)
36. \*Ammonium nitrate (F,R)
37. \*Ammonium perchlorate (F,R)
38. \*Ammonium permanganate (T,F,R)
39. \*Ammonium persulfate (F,R)
40. \*Ammonium picrate (T,R)
41. \*Ammonium sulfide (T,C,F,R)
42. n-Amyl acetate, 1-Acetoxypentane (and isomers) (T,F)
43. n-Amylamine, 1-Aminopentane (and isomers) (T,F)
44. n-Amyl chloride, 1-Chloropentane (and isomers) (T,F)
45. n-Amylene, 1-Pentene (and isomers) (T,F)
46. n-Amyl mercaptan, 1-Pentanethiol (and isomers) (T,F)
47. n-Amyl nitrite, n-Pentyl nitrite (and isomers) (T,F)
48. \*Amyl trichlorosilane (and isomers) (T,C,R)
49. Aniline, Aminobenzene (T)
50. Anisoyl chloride (T,C)
51. Anthracene (T)
52. Antimony (T)
53. Antimony compounds (T)
54. \*Antimony pentachloride (T,C,R)
55. \*Antimony pentafluoride (T,C,R)
56. Antimony pentasulfide (T,F)
57. Antimony potassium tartrate (T)
58. Antimony sulfate, Antimony trisulfate (T,F)

59. Antimony trichloride, Antimony chloride (T,C)
60. Antimony trifluoride, Antimony fluoride (T,C)
61. Antimony trioxide, Antimony oxide (T)
62. Antimony trisulfide, Antimony sulfide (T,F,R)
63. \*Arsenic (T)
64. \*Arsenic acid and salts (T)
65. \*Arsenic compounds (T)
66. \*Arsenic pentaselenide (T)
67. \*Arsenic pentoxide, Arsenic oxide (T)
68. \*Arsenic sulfide, Arsenic disulfide (T)
69. \*Arsenic tribromide, Arsenic bromide (T)
70. \*Arsenic trichloride, Arsenic chloride (T)
71. \*Arsenic triiodide, Arsenic iodide (T)
72. \*Arsenic trioxide, Arsenious oxide (T)
73. \*Arsenious acid and salts (T)
74. \*Arsines (T)
75. Asbestos (including chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite) (T)
76. \*AZODRIN, 3-Hydroxy-N-cis-crotonamide (T)
77. Barium (T,F)
78. Barium azide (T,R)
79. Barium bromide (T)
80. Barium carbonate (T)
81. Barium chlorate (T,C,F,R)
82. Barium chloride (T)
83. Barium chromate (T)
84. Barium citrate (T)
85. Barium compounds (soluble) (T)
86. \*Barium cyanide (T)
87. Barium fluoride (T)
88. Barium fluosilicate (T)
89. Barium hydroxide (T)
90. Barium iodide (T)
91. Barium manganate (T)
92. Barium nitrate (T,F)
93. Barium oxide, Barium monoxide (T)
94. Barium perchlorate (T,F,R)
95. Barium permanganate (T,F,R)
96. Barium peroxide (T,F,R)
97. Barium phosphate (T)
98. Barium stearate (T)
99. Barium sulfide (T)
100. Barium sulfite (T)
101. Benzene (T,F)
102. \*Benzene hexachloride, BHC; 1,2,3,4,5,6-Hexachlorocyclohexane (T)
103. \*Benzenephosphorous dichloride (T,R)
104. Benzenesulfonic acid (T)
105. \*Benzidine and salts (T)
106. \*Benzotrifluoride, Trifluoromethylbenzene (T,F)

107. \*Benzoyl chloride (T,C,R)
108. Benzoyl peroxide, Dibenzoyl peroxide (T,F,R)
109. Benzyl bromide, alpha-Bromotoluene (T,C)
110. Benzyl chloride, alpha-Chlorotoluene (T)
111. \*Benzyl chlorocarbonate, Benzyl chloroformate (T,C,R)
112. \*Beryllium (T,F)
113. \*Beryllium chloride (T)
114. \*Beryllium compounds (T)
115. \*Beryllium copper (T)
116. \*Beryllium fluoride (T)
117. \*Beryllium hydride (T,C,F,R)
118. \*Beryllium hydroxide (T)
119. \*Beryllium oxide (T)
120. \*BIDRIN, Dicrotophos, 3-(Dimethylamino)-1-methyl-3-oxo-1-propenyl dimethyl phosphate (T)
121. \*bis (Chloromethyl) ether, Dichloromethylether, BCME (T)
122. Bismuth (T,F)
123. \*bis (Methylmercuric) sulfate, CEREWET, Ceresan liquid (T)
124. Bismuth chromate (T)
125. BOMYL, Dimethyl 3-hydroxyglutaconate dimethyl phosphate (T)
126. \*Boranes (T,F,R)
127. \*Bordeaux arsenites (T)
128. \*Boron trichloride, Trichloroborane (T,C,R)
129. \*Boron trifluoride (T,C,R)
130. Boronic acid (T)
131. \*Bromine (T,C,F)
132. \*Bromine pentafluoride (T,C,F,R)
133. \*Bromine trifluoride (T,C,F,R)
134. \*Brucine, Dimethoxystrychnine (T)
135. 1,2,4-Butanetriol trinitrate (R)
136. n-Butyl acetate, 1-Acetoxybutane (and isomers) (T)
137. n-Butyl alcohol, 1-Butanol (and isomers) (T)
138. n-Butyl amine, 1-Aminobutane (and isomers) (T)
139. n-Butyl formate (and isomers) (T)
140. tert-Butyl hydroperoxide (and isomers) (T,F)
141. \*n-Butyllithium (and isomers) (T,C,F,R)
142. n-Butyl mercaptan, 1-Butanethiol (and isomers) (T,F)
143. tert-Butyl peroxyacetate, tert-Butyl peracetate (F,R)
144. tert-Butyl peroxybenzoate, tert-Butyl perbenzoate (F,R)
145. tert-Butyl peroxyvalerate (F,R)
146. \*n-Butyltrichlorosilane (C,F,R)
147. para-tert-Butyl toluene (T)
148. n-Butyraldehyde, n-Butanal (and isomers) (T,F)
149. \*Cacodylic acid, Dimethylarsinic acid (T)
150. \*Cadmium (powder) (T,F)
151. Cadmium chloride (T)
152. \*Cadmium compounds (T)
153. \*Cadmium cyanide (T)
154. Cadmium fluoride (T)

155. Cadmium nitrate (T,F,R)
156. Cadmium oxide (T)
157. Cadmium phosphate (T)
158. Cadmium sulfate (T)
159. \*Calcium (F,R)
160. \*Calcium arsenate, PENSAL (T)
161. \*Calcium arsenite (T)
162. \*Calcium carbide (C,F,R)
163. Calcium chlorate (F,R)
164. Calcium chloride (F)
165. Calcium fluoride (T)
166. \*Calcium hydride (C,F,R)
167. Calcium hydroxide, Hydrated lime (C)
168. \*Calcium hypochlorite, Calcium oxychloride (dry) (T,C,F,R)
169. Calcium molybdate (T)
170. Calcium nitrate, Lime nitrate, Nitrocalcite (F,R)
171. Calcium oxide, Lime (C)
172. Calcium permanganate (T,F)
173. Calcium peroxide, Calcium dioxide (C,F)
174. \*Calcium phosphide (T,F,R)
175. Calcium resinate (F)
176. Caprylyl peroxide, Octyl peroxide (F)
177. \*Carbanolate, BANOL, 2-Chloro-4,5-dimethylphenyl methylcarbamate (T)
178. Carbon disulfide, Carbon bisulfide (T,F)
179. Carbon tetrachloride, Tetrachloromethane (T)
180. \*Carbophenothion, TRITHION, S[(4-Chlorophenyl) thio]methyl] O, O-diethyl phosphorodithioate (T)
181. Chloral hydrate, Trichloroacetaldehyde (hydrated) (T)
182. \*Chlordan; 1,2,4,5,6,7,8-Octachloro-4,7-methano-3a,4,7,7a-tetrahydroindane (T)
183. \*Chlorfenvinphos, Compound 4072, 2-Chloro-1-(2,4-dichlorophenyl) vinyl diethyl phosphate (T)
184. \*Chlorine (T,C,F,R)
185. \*Chlorine dioxide (T,C,F,R)
186. \*Chlorine pentafluoride (T,C,F,R)
187. \*Chlorine trifluoride (T,C,F,R)
188. \*Chloroacetaldehyde (T,C)
189. \*alpha-Chloroacetophenone, Phenyl chloromethyl ketone (T)
190. \*Chloroacetyl chloride (T,C,R)
191. Chlorobenzene (T,F)
192. para-Chlorobenzoyl peroxide (F,R)
193. \*ortho-Chlorobenzylidene malonitrile, OCMB (T)
194. Chloroform, Trichloromethane (T)
195. \*Chloropicrin, Chloropicrin, Trichloronitromethane (T)
196. \*Chlorosulfonic acid (T,C,F,R)
197. Chloro-ortho-toluidine, 2-Amino-4-chlorotoluene (T)
198. Chromic acid, Chromium trioxide, Chromic anhydride (T,C,F)
199. Chromic chloride, Chromium trichloride (T)

200. Chromic fluoride, Chromium trifluoride (T)
201. Chromic hydroxide, Chromium hydroxide (T)
202. Chromic oxide, Chromium oxide (T)
203. Chromic sulfate, Chromium sulfate (T)
204. Chromium compounds (T,C,F)
205. \*Chromyl chloride, Chlorochromic anhydride (T,C,F,R)
206. Cobalt (powder) (T,F)
207. Cobalt compounds (T)
208. Cobaltous bromide, Cobalt bromide (T)
209. Cobaltous chloride, Cobalt chloride (T)
210. Cobaltous nitrate, Cobalt nitrate (T,F)
211. Cobaltous resinate, Cobalt resinate (T,F)
212. Cobaltous sulfate, Cobalt sulfate (T)
213. Cocculus, Fishberry, Picric acid (T)
215. \*Copper acetoarsenite, Paris green (T)
216. Copper acetylides (T,R)
217. \*Copper arsenate, Cupric arsenate (T)
218. \*Copper arsenite, Cupric arsenite (T)
219. Copper chloride, Cupric chloride (T)
220. Copper chlorotetrazole (T,R)
221. Copper compounds (T)
222. \*Copper cyanide, Cupric cyanide (T)
223. Copper nitrate, Cupric nitrate (T,F,R)
224. Copper sulfate, Cupric sulfate, Blue vitriol (T)
225. \*Coroxon; ortho,ortho-Diethyl-ortho-(3-chloro-4-methylcoumarin-7-yl) phosphate (T)
226. \*Counafuryl, FUMARIN, 3-[1-(2-Furanyl)-3-oxobutyl]-4-hydroxy-2H-1-benzopyran-2-one (T)
227. \*Counatralyl, BAYER 25634, RACUMIN 57, 4-Hydroxy-3-(1,2,3,4-tetrahydro-1-naphthalenyl)-2H-1-benzopyran-2-one (T)
228. \*Crimidine, CASTRIX, 2-Chloro-4-dimethylamino-6-methylpyrimidine (T)
229. \*Crotonaldehyde, 2-Butenal (T)
230. Cumene, Isopropyl benzene (T,F)
231. Cumene hydroperoxide; alpha,alpha-Dimethylbenzyl hydroperoxide (T,F)
232. Cupriethylene diamine (T)
233. \*Cyanide salts (T)
234. Cyanoacetic acid, Malonic nitrile (T)
235. \*Cyanogen (T,F,R)
236. Cyanogen bromide, Bromine cyanide (T)
237. Cyanuric triazide (T,R)
238. Cycloheptane (T,F)
239. Cyclohexane (T,F)
240. Cyclohexanone peroxide (F)
241. \*Cyclohexenyltrichlorosilane (T,C,R)
242. \*Cycloheximide, ACTIDIONE (T)
243. \*Cyclohexyltrichlorosilane (T,C,R)
244. Cyclopentane (T,F)

245. Cyclopentanol (F)
246. Cyclopentene (T,F)
247. DDT; 1,1,1-Trichloro-2,2-bis(chlorophenyl) ethane (T)
248. \*DDVP, Dichlorvos, VAPONA, Dimethyl dichlorovinyl phosphate (T)
249. \*Decaborane (T,F,R)
250. DECALIN, Decahydronaphthalene (T)
251. \*Demeton, SYSTOX (T)
252. \*Demeton-S-methyl sulfone, METASISTOX-SULFON, S-[2-(ethylsulfonyl) ethyl] O,O-dimethyl phosphorothioate (T)
253. Diazodinitrophenol, DDNP, 2-Diazo-4,6-dinitrobenzene-1-oxide (T,R)
254. \*Diborane, Diboron hexahydride (T,R)
255. \*1,2-Dibromo-3-chloropropane, DBCP, FUMAZONE, NEMAGON (T)
256. n-Dibutyl ether, Butyl ether (and isomers) (T,F)
257. Dichlorobenzene (ortho, meta, para) (T)
258. \*3,3-Dichlorobenzidine and salts, DCB (T)
259. 1,2-Dichloroethylene; 1,2-Dichloroethene (T,F)
260. Dichloroethyl ether, Dichloroether (T,F)
261. Dichloroisocyanuric acid, Dichloro-S-triazine-2,4,6-trione (T,F)
262. Dichloromethane, Methylene chloride (T)
263. \*2,4-Dichlorophenoxyacetic acid; 2,4-D (T)
264. 1,2-Dichloropropane, Propylene dichloride (T,F)
265. 1,3-Dichloropropylene; 1,3-Dichloropropene (T,F)
266. Dicumyl peroxide (F,T)
267. \*Diieldrin; 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo, exo-5,8-dimethanonaphthalene (T)
268. \*Diethylaluminum chloride, Aluminum diethyl monochloride, DEAC (F,R)
269. Diethylamine (T,F)
270. \*Diethyl chlorovinyl phosphate, Compound 1836 (T)
271. \*Diethylchlorosilane (T,C,F,R)
272. Diethylene glycol dinitrate (T,R)
273. Diethylene triamine (T)
274. \*O,O-Diethyl-S-(isopropylthiomethyl) phosphorodithioate (T)
275. \*Diethylzinc, Zinc ethyl (C,F,R)
276. \*Difluorophosphoric acid (T,C,R)
277. \*Diglycidyl ether, bis (2,3-Epoxypropyl) ether (T)
278. Diisopropylbenzene hydroperoxide (T,F)
279. Diisopropyl peroxydicarbonate, Isopropyl percarbonate (T,C,F,R)
280. \*Dimetox, HANANE, PEXTOX 14, Tetramethylphosphorodiamidic fluoride (T)
281. Dimethylamine, DMA (T,F)
282. \*Dimethylaminobenzene, Methyl yellow (T)
283. \*Dimethyldichlorosilane, Dichlorodimethylsilane (T,C,F,R)
284. 2,5-Dimethylhexane-2,5-Dihydroperoxide (F)
285. \*1,1-Dimethylhydrazine, UDMH (T,F)
286. \*Dimethyl sulfate, Methyl sulfate (T)
287. \*Dimethyl sulfide, Methyl sulfide (T,F,R)
288. 2,4-Dinitroaniline (T)
289. \*Dinitrobenzene (ortho, meta, para) (T,R)

290. Dinitrochlorobenzene, 1-Chloro-2,4-dinitrobenzene (T,R)
291. \*4,6-Dinitro-ortho-cresol, DNPC, SINOX, EGOTOL 30 (T)
292. \*Dinitrophenol (2,3,2,4,2,6-isomers) (T,R)
293. \*2,4-Dinitrophenylhydrazine (T,F,R)
294. Dinitrotoluene (2,4,3,4,3,5-isomers) (T,F,R)
295. \*DINOSEB; 2,4-Dinitro-6-sec-butylphenol (T)
296. 1,4-Dioxane; 1,4-Diethylene dioxide (T,F,R)
297. \*Dioxathion, DELNAV; S,S-1,4-dioxane-2,3-diyl bis (O,O-diethyl phosphorodithioate) (T)
298. Dipentaerythritol hexanitrate (R)
299. \*Diphenyl, Biphenyl, Phenylbenzene (T)
300. Diphenylamine, DPA, N-Phenylaniline (T)
301. \*Diphenylamine chloroarsine, Phenarsazine chloride (T)
302. \*Diphenyldichlorosilane (T,C,R)
303. Dipicrylamine, Hexanitrodiphenyl amine (T,R)
304. Dipropyl ether (T,F)
305. \*Disulfoton, DI-SYSTON; O,O-Diethyl S-[2-(ethylthio) ethyl] phosphorodithioate (T)
306. \*Dodecyltrichlorosilane (T,C,R)
307. \*DOWCO-139; ZECTRAN, Mexacarbate, 4-(Dimethylamino)-3,5-dimethylphenyl methylcarbamate (T)
309. \*DYFONATE, Fonobis, O-Ethyl-S-phenylethyl phosphonodithioate (T)
310. \*Endosulfan, THIODAN; 6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepin-3-oxide (T)
311. \*Endothal, 7-Oxabicyclo [2,2,1] heptane-2,3-dicarboxylic acid (T)
312. \*Endothion, EXOTHION, S-[1,6-Methoxy-4-oxo-4H-pyran-2-yl]-methyl] O,O-dimethyl phosphorothioate (T)
313. \*Endrin; 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo-endo-5,8-dimethanonaphthalene (T)
314. Epichlorohydrin, Chloropropylene oxide (T,F)
315. \*EPN; O-Ethyl O-pars-nitrophenyl phenylphosphonothioate (T)
316. \*Ethin, NIALATE; O,O',O',O'-Tetraethyl-S,S-methylenediphosphorodithioate (T)
317. Ethyl acetate (T,F)
318. Ethyl alcohol, Ethanol (T,F)
319. Ethylamine, Aminoethane (T,F)
320. Ethylbenzene, Phenylethane (T,F)
321. Ethyl butyrate, Ethyl butanoate (F)
322. Ethyl chloride, Chloroethane (T,F)
323. \*Ethyl chloroformate, Ethyl chlorocarbonate (T,C,F,R)
324. \*Ethylchloroarsine, Dichloroethylarsine (T,R)
325. \*Ethyldichlorosilane (T,C,F,R)
326. \*Ethylene cyanohydrin, beta-Hydroxypropionitrile (T,R)
327. Ethylene diamine (T)
328. Ethylene dibromide; 1,2-Dibromoethane (T)
329. Ethylene dichloride; 1,2-Dichloroethane (T,F)
330. \*Ethyleneimine, Aziridine, EI (T,F,R)
331. Ethylene oxide, Epoxymethane (T,F,R)
332. Ethyl ether, Diethyl ether (F,R)

3. Ethyl formate (T,F)
4. \*Ethyl mercaptan, Ethanethiol (T,F,R)
5. Ethyl nitrate (F,R)
6. Ethyl nitrite (F,R)
7. \*Ethylphenyldichlorosilane (T,C,R)
8. Ethyl propionate (F)
9. \*Ethyltrichlorosilane (T,R)
10. \*Fensulfothion, BAYER 25141, DASANIT, O,O-Diethyl-O-[4-(methylsulfinyl)phenyl] phosphorothioate (T)
11. \*Ferric arsenate (T)
12. Ferric chloride, Iron (III) chloride (T,C)
13. \*Ferrous arsenate, Iron arsenate (T)
14. \*Fluoboric acid, Fluoroboric acid (T,C)
15. Fluoride salts (T)
16. \*Fluorine (T,C,R)
17. \*Fluoroacetanilide, AFL 1082 (T)
18. \*Fluoroacetic acid and salts, Compound 1080 (T)
19. \*Fluosulfonic acid, Fluosulfonic acid (T,C,R)
20. Formaldehyde, Methanal (T,F)
21. Formic acid, Methanoic acid (T,C)
22. Fulminate of mercury, Mercuric cyanate (T,R)
23. \*FURADAN, NIA 10,242, Carbofuran; 2,3-Dihydro-2,2-dimethyl-7-benzozofuranylmethylcarbamate (T)
24. Furan, Furfuran (T,F,R)
25. Gasoline (F)
26. \*GB, O-Isopropyl methyl phosphoryl fluoride (T)
27. Glutaraldehyde (T)
28. Glycerolmonolactate trinitrate (R)
29. Glycol dinitrate, Ethylene glycol dinitrate (R)
30. Gold fulminate, Gold cyanate (R)
31. Guanidine nitrate (F,R)
32. Guanyl nitrosaminoguanilydene hydrazine (R)
33. \*Guthion; O O-Dimethyl-S-4-oxo-1,2,3-benzotriazin-3 (4H)-ylmethyl phosphorodithioate (T)
34. Hafnium (F,T,R)
35. \*Heptachlor; 1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene (T)
36. n-Heptane (and isomers) (T,F)
37. 1-Heptene (and isomers) (T,F)
38. \*Hexadecyltrichlorosilane (T,C,R)
39. Hexaethyl tetraphosphate, HETP (T)
40. Hexafluorophosphoric acid (T,C)
41. Hexamethylenediamine; 1,6-Diaminohexane (T)
42. n-Hexane (and isomers) (T,F)
43. 1-Hexene (and isomers) (T,F)
44. n-Hexylamine, 1-Aminohexane (and isomers) (T,F)
45. \*Hexyltrichlorosilane (T,C,R)
46. \*Hydrazine, Diamine (T,F)
47. Hydrazine azide (T,R)



378. Hydrazoic acid, Hydrogen azide (T,R)  
379. \*Hydrotic acid, Hydrogen iodide (T,C,R)  
380. \*Hydrobromic acid, Hydrogen bromide (T,C,R)  
381. \*Hydrochloric acid, Hydrogen chloride, Muriatic Acid (T,C,R)  
382. \*Hydrocyanic acid, Hydrogen cyanide (T,F,R)  
383. \*Hydrofluoric acid, Hydrogen fluoride (T,C,R)  
384. Hydrofluosilicic acid, Fluosilicic acid (T,C)  
385. Hydrogen peroxide (T,C,F,R)  
386. \*Hydrogen selenide (T,F)  
387. \*Hydrogen sulfide (T,F)  
388. \*Hypochlorite compounds (T,C,F,R)  
389. Indium (T)  
390. Indium compounds (T)  
391. Iodine monochloride (T,C,R)  
392. Isooctane; 2,2,4-Trimethylpentane (T,F)  
393. Isocetene (mixture of isomers) (F)  
394. Isopentane, 2-Methylbutane (F)  
395. Isoprene, 2-Methyl-1,3-butadiene (T,F,R)  
396. Isopropanol, Isopropyl alcohol, 2-Propanol (T,F)  
397. Isopropyl acetate (T,F)  
399. Isopropylamine, 2-Aminopropane (T,F)  
400. Isopropyl chloride, 2-Chloropropane (F)  
401. Isopropyl ether, Diisopropyl ether (F,R)  
402. Isopropyl mercaptan, 2-Propanethiol (T,F)  
404. \*meta-Isopropylphenyl-N-methylcarbamate, Ac 5,727 (T)  
405A. \*Kepone: 1,1a,3,3a,4,5,5a,5b,6-Decachlorocyclooctahydro-1,2,4-metheno-2H-cyclobuta (cd) pentalen-2-one, Chloresone (T)  
405B. Lauroyl peroxide, Di-n-dodecyl peroxide (T,C,F,R)  
406. Lead compounds (T)  
407. Lead acetate (T)  
408. \*Lead arsenate, Lead orthoarsenate (T)  
409. \*Lead arsenite (T)  
410. Lead azide (T,R)  
411. Lead carbonate (T)  
412. Lead chloride (T,R)  
413. \*Lead cyanide (T)  
414. Lead 2,4-dinitroresorcinate (T,R)  
415. Lead mononitroresorcinate (T,R)  
416. Lead nitrate (T,F)  
417. Lead oxide (T)  
418. Lead stypnate, Lead trinitroresorcinate (T,R)  
419. \*Lewisite, beta-Chlorovinylchloroarsine (T)  
420. \*Lithium (C,F,R)  
421. \*Lithium aluminum hydride, LAH (C,F,R)  
422. \*Lithium amide (C,F,R)  
423. \*Lithium ferrosilicon (F,R)  
424. \*Lithium hydride (C,F,R)  
425. \*Lithium hypochlorite (T,C,F,R)  
426. Lithium peroxide (C,F,R)

427. Lithium silicon (F,R)  
428. \*London purple, Mixture of arsenic trioxide, aniline, lime, and ferrous oxide (T)  
429. \*Magnesium (F,R)  
430. \*Magnesium arsenate (T)  
431. \*Magnesium arsenite (T)  
432. Magnesium chlorate (F,R)  
433. Magnesium nitrate (F,R)  
434. Magnesium perchlorate (T,F,R)  
435. Magnesium peroxide, Magnesium dioxide (F)  
436. \*Maleic anhydride (T)  
437. Manganese (powder) (F)  
438. Manganese acetate (T)  
439. \*Manganese arsenate, Manganous arsenate (T)  
440. Manganese bromide, Manganous bromide (T)  
441. Manganese chloride, Manganous chloride (T)  
442. Manganese methylcyclopentadienyl tricarbonyl (T)  
443. Manganese nitrate, Manganous nitrate (T,F)  
444. Mannitol hexantrate, Nitromannite (R)  
445. \*MECARBAM, O,O-Diethyl S-(N-ethoxycarbonyl N-methylcarbamoyl-methyl) phosphorodithioate (T)  
446. \*Medinoterb acetate, 2-tert-Butyl-5-methyl-4,6-dinitrophenyl acetate (T)  
447. para-Menthane hydroperoxide, Paramenthane hydroperoxide (F)  
448. Mercuric acetate, Mercury acetate (T)  
449. Mercuric ammonium chloride, Mercury ammonium chloride (T)  
450. Mercuric benzoate, Mercury benzoate (T)  
451. Mercuric bromide, Mercury bromide (T)  
452. \*Mercuric chloride, Mercury chloride (T)  
453. \*Mercuric cyanide, Mercury cyanide (T)  
454. Mercuric iodide, Mercury iodide (T)  
455. Mercuric nitrate, Mercury nitrate (T,F)  
456. Mercuric oleate, Mercury oleate (T)  
457. Mercuric oxide (red and yellow) (T,F)  
458. Mercuric oxycyanide (T,R)  
459. Mercuric potassium iodide, Mayer's reagent (T)  
460. Mercuric salicylate, Salicylated mercury (T)  
461. Mercuric subsulfate, Mercuric dioxysulfate (T)  
462. Mercuric sulfate, Mercury sulfate (T)  
463. Mercuric thiocyanide, Mercury thiocyanate (T)  
464. Mercurool, Mercury nucleate (T)  
465. Mercurous bromide (T)  
466. Mercurous gluconate (T)  
467. Mercurous iodide (T)  
468. Mercurous nitrate (T,R)  
469. Mercurous oxide (T)  
470. Mercurous sulfate, Mercury bisulfate (T)  
472. \*Mercury (T)  
473. \*Mercury compounds (T)

474. Metal carbonyls (T)  
 475. \*Metal hydrides (F,R)  
 476. Metal powders (T,F)  
 477A. \*Methomyl, LANNATE, S-Methyl-N- (methyl-carbamoyl) oxy) thioacetimidate (T)  
 477B. \*Methoxychlor; 1,1,1-Trichloro-2, 2-bis (p-methoxyphenyl) ethane, CHEMFLOM, MARLATE (T)  
 478. \*Methoxyethylmercuric chloride, AGALLOL, ARETAN (T)  
 479. Methyl acetate (T,F)  
 480. Methyl acetone (Mixture of acetone, methyl acetate, and methyl alcohol) (T,F)  
 481. Methyl alcohol, Methanol (T,F)  
 482. \*Methylaluminum sesquibromide (F,R)  
 483. \*Methylaluminum sesquichloride (F,R)  
 484. Methylamine, Aminomethane (T,F)  
 485. N-Methylaniline (T)  
 486. \*Methyl bromide, Bromomethane (T)  
 487. 2-Methyl-1-butene (F)  
 488. 3-Methyl-1-butene (F)  
 489. Methyl butyl ether (and isomers) (T,F)  
 490. Methyl butyrate (and isomers) (T,F)  
 491. Methyl chloride, Chloromethane (T,F)  
 492. \*Methyl chloroformate, Methyl chlorocarbonate (T,F,R)  
 493. \*Methyl chloromethyl ether, CMME (T,F)  
 494. Methylcyclohexane (T,F)  
 495. \*Methyldichlorarsine (T)  
 496. \*Methyldichlorosilane (T,F,R)  
 497. \*4,4-Methylene bis(2-chloroaniline), MOCA (T)  
 498. Methyl ethyl ether (T,F)  
 499. Methyl ethyl ketone, 2-Butanone (T,F)  
 500. Methyl ethyl ketone peroxide (T,F)  
 501. Methyl formate (T,F)  
 502. \*Methyl hydrazine, Monomethyl hydrazine, MMH (T,F)  
 503. \*Methyl isocyanate (T,F)  
 504. Methyl isopropenyl ketone, 3-Methyl-3-butene-2-one (T,F)  
 505. \*Methylmagnesium bromide (C,F,R)  
 506. \*Methylmagnesium chloride (C,F,R)  
 507. \*Methylmagnesium iodide (C,F,R)  
 508. Methyl mercaptan, Methanethiol (T,F)  
 509. Methyl methacrylate (monomer) (T,F)  
 510. \*Methyl parathion; O,O-Dimethyl-O-para-nitrophenylphosphorothioate (T)  
 511. Methyl propionate (F)  
 512. \*Methyltrichlorosilane (T,C,F,R)  
 513. Methyl valerate, Methyl pentanoate (and isomers) (F)  
 514. Methyl vinyl ketone, 3-Butene-2-one (T,F)  
 515A. \*Mevinphos, PHOSDRIN, 2-Carbomethoxy-1-methylvinyl dimethyl phosphate (T)  
 515B. \*Mirex; 1,1a,2,2,3,3a,4,5,5a,5b,6-Dodecachlorooctahydro-1, 3, 4-metheno-1H-cyclobuta (cd) pentalene, Dechlorane (T)

516. \*MOCAP, O-Ethyl-S,S-dipropyl phosphorodithioate (T)  
 517. Molybdenum (powder) (F)  
 518. Molybdenum trioxide, Molybdenum anhydride (T)  
 519. Molybdic acid and salts (T)  
 520. Monochloroacetic acid, Chloracetic acid, MCA (T,C)  
 521. Monochloroacetone, Chloroacetone, 1-Chloro-2-propanone (T)  
 522. Monofluorophosphoric acid (T,C)  
 523. Naphtha (of petroleum or coal tar origin), Petroleum ether, Petroleum naphtha (T,F)  
 524. Naphthalene (T,S)  
 525. \*alpha-Naphthylamine, 1-NA (T)  
 526. \*beta-Naphthylamine, 2-NA (T)  
 527. Neohexane; 2,2-Dimethylbutane (T,F)  
 528. Nickel (powder) (T,F)  
 529. Nickel acetate (T)  
 530. Nickel antimonide (T)  
 531. \*Nickel arsenate, Nickalous arsenate (T)  
 532. \*Nickel carbonyl, Nickel tetracarbonyl (T)  
 533. Nickel chloride, Nickalous chloride (T)  
 534. \*Nickel cyanide (T)  
 535. Nickel nitrate, Nickalous nitrate (T,F,R)  
 536. Nickel selenide (T)  
 537. Nickel sulfate (T)  
 538. Nicotine, beta-pyridyl-alpha-N-methyl pyrrolidine (T)  
 539. Nicotine salts (T)  
 540. Nitric acid (T,C,F)  
 541. Nitroaniline, Nitraniline (ortho, meta, para) (T,R)  
 542. \*Nitrobenzol, Nitrobenzene (T)  
 543. \*4-Nitrobiphenyl, 4-NBP (T)  
 544. Nitro carbo nitrate (F,R)  
 545. Nitrocellulose, Cellulose nitrate, Guncotton, Pyroxylin, Collodion, Pyroxylin (nitrocellulose) in ether and alcohol (F,R)  
 546. Nitrochlorobenzene, Chloronitrobenzene (ortho,meta,para) (T)  
 547. Nitrogen mustard (T,C)  
 548. Nitrogen tetroxide, Nitrogen dioxide (T,F)  
 549. Nitroglycerin, Trinitroglycerin (T,F,R)  
 550. Nitrohydrochloric acid, Aqua regia (T,C,F)  
 551. \*Nitrophenol (ortho, meta, para) (T)  
 552. \*N-Nitrosodimethylamine, Dimethyl nitrosoamine (T)  
 553. Nitrosoguanidine (R)  
 554. Nitrostarch, Starch nitrate (F,R)  
 555. Nitroxytol, Nitroxyene, Dimethylnitrobenzene (2,4-;3,4-;2,5-isomers) (T)  
 556. 1-Nonene, 1-Nonylene (and isomers) (T,F)  
 557. \*Nonyltrichlorosilane (T,R)  
 558. \*Octadecyltrichlorosilane (T,R)  
 559. n-Octane (and isomers) (T,F)  
 560. 1-Octene, 1-Caprylene (T,F)

561. \*Octyltrichlorosilane (T,R)  
563. \*Oleum, Fuming sulfuric acid (T,C,R)  
565. Osmium compounds (T)  
566. Oxalic acid (T)  
567. \*Oxygen difluoride (T,C,R)  
568. \*Para-oxon, MINTACOL; O,O-Diethyl-O-para-nitrophenyl phosphate (T)  
569. \*Parathion; O,O-Diethyl-O-para-nitrophenyl phosphorothioate (T)  
570A. \*Pentaborane (T,F,R)  
570B. Pentachlorophenol, PCP, DOWICIDE 7 (T)  
571. Pentaerythrite tetranitrate, Pentaerythritol tetranitrate (R)  
572. n-Pentane (and isomers) (T,F)  
573. 2-Pentanone, Methyl propyl ketone (and isomers) (T,F)  
574. Peracetic acid, Peroxyacetic acid (T,C,F,R)  
575. Perchloric acid (T,C,F,R)  
576. Perchloroethylene, Tetrachloroethylene (T)  
577. \*Perchloromethyl mercaptan, Trichloromethylsulfenyl chloride (T)  
578. Perchloryl fluoride (T,C,F)  
580. Phenol, Carbolic acid (T,C)  
581. Phenylchloroarsine (T,I)  
582. Phenylenediamine, Diaminobenzene (ortho,meta,para) (T)  
583. Phenylhydrazine hydrochloride (T)  
584. \*Phenylphenol, Orthozenol, DOWICIDE I (T)  
585. \*Phenyltrichlorosilane (T,R)  
586. \*Phorate, THIMET; O,O-Diethyl-S-[(Ethylthio) methyl] phosphorodithioate (T)  
587. \*Phosfolan, CYOLAN, 2-(Diethoxyphosphinylimino)-1,3-dithiolane (T)  
588. \*Phosgene, Carbonyl chloride (T,R)  
589. \*Phosphamidon, DIMECRON, 2-Chloro-2-diethylcarbamoyl-1-methylvinyl dimethyl phosphate (T)  
590. \*Phosphine, Hydrogen phosphide (T,F)  
591. \*Phosphoric acid (C)  
592. \*Phosphoric anhydride, Phosphorus pentoxide (C,F)  
593. \*Phosphorus (amorphous, red) (T,F,R)  
594. \*Phosphorus (white or yellow) (T,F,R)  
595. \*Phosphorus oxybromide, Phosphoryl bromide (T,C,R)  
596. \*Phosphorus oxychloride, Phosphoryl chloride (T,C,R)  
597. \*Phosphorus pentachloride, Phosphoric chloride (T,C,F,R)  
598. \*Phosphorus pentasulfide, Phosphoric sulfide (T,C,F,R)  
599. \*Phosphorus sesquisulfide, Tetraphosphorus trisulfide (T,C,F,R)  
600. \*Phosphorus tribromide (T,C,R)  
601. \*Phosphorus trichloride (T,C,R)  
602. Picramide, Trinitroaniline (T,R)  
603. Picric acid, Trinitrophenol (T,R)  
604. Picryl chloride, 2-Chloro-1,3,5-trinitrobenzene (T,R)  
605. \*Platinum compounds (T)  
606. \*Polychlorinated biphenyls, PCB, Askarel, AROCLOR, CHLOREX-TOL, INERTEN, PYRANOL (T)

607. Polyvinyl nitrate (F,R)  
608. POTASAN; O,O-Diethyl-O-(4-methylumbelliferone) phosphorothioate (T)  
609. \*Potassium (C,F,R)  
610. \*Potassium arsenate (T)  
611. \*Potassium arsenite (T)  
612. \*Potassium bifluoride, Potassium acid fluoride (T,C)  
613. Potassium binoxalate, Potassium acid oxalate (T)  
614. Potassium bromate (T,F)  
615. \*Potassium cyanide (T)  
616. Potassium dichloroisocyanurate (T,F)  
617. Potassium dichromate, Potassium bichromate (T,C,F)  
619. Potassium fluoride (T)  
620. \*Potassium hydride (C,F,R)  
621. Potassium hydroxide, Caustic potash (T,C)  
622. Potassium nitrate, Saltpeter (F,R)  
623. Potassium nitrite (F,R)  
624. Potassium oxalate (T)  
625. Potassium perchlorate (T,F,R)  
626. Potassium permanganate (T,C,F)  
627. Potassium peroxide (C,F,R)  
628. Potassium sulfide (T,F)  
629. \*Propargyl bromide, 3-Bromo-1-propyne (T,F)  
630. \*beta-Propiolactone, BPL (T)  
631. Propionaldehyde, Propanal (T,F)  
632. Propionic acid, Propanoic acid (T,C,F)  
633. n-Propyl acetate (T,F)  
634. n-Propyl alcohol, 1-Propanol (T,F)  
635. n-Propylamine (and isomers) (T,F)  
636. Propyleneimine, 2-Methylaziridine (T,F)  
637. Propylene oxide (T,F)  
638. n-Propyl formate (T,F)  
639. n-Propyl mercaptan, 1-Propanethiol (T,F)  
640. \*n-Propyltrichlorosilane (T,C,F,R)  
641. \*Prothoate, FOSTION, FAC; O,O-Diethyl-S-carboethoxyethyl phosphorodithioate (T)  
642. Pyridine (T,F)  
643. \*Pyrosulfuryl chloride, Disulfuryl chloride (T,C,R)  
644. \*Quinone; 1,4-Benzoquinone (T)  
645. Raney nickel (F)  
646. \*Schradian, Octamethyl pyrophosphoramide, OMPA (T)  
647A. \*Selenium (T)  
647B. \*Selenium compounds (T)  
648. \*Selenium fluoride (T)  
649. \*Selenous acid, Selenious acid and salts (T)  
650. \*Silicon tetrachloride, Silicon chloride (T,C,R)  
651. \*Silver acetylide (T,R)  
652. Silver azide (T,R)  
653. Silver compounds (T)



- 654. Silver nitrate (T)
- 655. Silver stypmate, Silver trinitroresorcinate (T,R)
- 656. Silver tetrazene (T,R)
- 657. Sodium (C,F,R)
- 658. Sodium aluminate (C)
- 659. Sodium aluminum hydride (C,F,R)
- 660. Sodium amide, Sodamide (C,F,R)
- 661. Sodium arsenate (T)
- 662. Sodium arsenite (T)
- 663. Sodium azide (T,R)
- 664. Sodium bifluoride, Sodium acid fluoride (T,C)
- 665. Sodium bromate (T,F)
- 666. Sodium cacodylate, Sodium dimethylarsenate (T)
- 667. Sodium carbonate peroxide (F)
- 668. Sodium chlorate (T,F)
- 669. Sodium chlorite (T,F)
- 670. Sodium chromate (T,C)
- 671. Sodium cyanide (T)
- 672. Sodium dichloroisocyanurate (F)
- 673. Sodium dichromate, Sodium bichromate (T,C,F)
- 674. Sodium fluoride (T)
- 675. Sodium hydride (T,C,F,R)
- 676. Sodium hydroxide, Sodium hyposulfite (F)
- 677. Sodium hypochlorite (T,F,R)
- 678. Sodium hydroxide, Caustic soda, Lye (T,C)
- 679. Sodium hypochlorite (T,F,R)
- 680. Sodium methoxide, Sodium methoxide (C,F,R)
- 681. Sodium molybdate (T)
- 682. Sodium nitrate, Soda niter (T,F,R)
- 683. Sodium nitrite (T,F,R)
- 684. Sodium oxide, Sodium monoxide (T,C)
- 685. Sodium perchlorate (T,F,R)
- 686. Sodium permanganate (T,F)
- 687. Sodium peroxide (T,F,R)
- 688. Sodium picramate (T,F,R)
- 689. Sodium potassium alloy, NaK\_Nack (C,F,R)
- 690. Sodium selenate (T)
- 691. Sodium sulfide, Sodium hydrosulfide (T,F)
- 692. Sodium thiocyanate, Sodium sulfocyanate (T)
- 693. Stannic chloride, Tin tetrachloride (T,C)
- 694. Strontium arsenate (T)
- 695. Strontium nitrate (T,F,R)
- 696. Strontium peroxide, Strontium dioxide (F,R)
- 697. Strychnine and salts (T)
- 698. Styrene, Vinylbenzene (T,F)
- 699. Succinic acid peroxide (T,F)
- 700. Sulfide salts (soluble) (T)
- 701. Sulfotep, DITHIONE, BLADAFUM, Tetraethyl dithiopyrophosphate, TEDP (T)
- 702. Sulfur chloride, Sulfur monochloride (T,C,R)

- 703. Sulfur mustard (T,C,R)
- 704. Sulfur pentafluoride (T,C)
- 705. Sulfur trioxide, Sulfuric anhydride (T,C,F)
- 706. Sulfuric acid, Oil of vitriol, Battery acid (T,C)
- 707. Sulfurous acid (T,C)
- 708. Sulfuryl chloride, Sulfonyl chloride (T,C,R)
- 709. Sulfuryl fluoride, Sulfonyl fluoride (T,C,R)
- 710. SUPRACIDE, ULTRACIDE, S-(5-Methoxy-2-oxo-1,3,4-thiadiazol-3(2H)-yl) methyl-O,O-dimethyl phosphorodithioate (T)
- 711. SURECIDE, Cyanophenphos, O-para-Cyanophenyl-O-ethyl phenyl phosphonothioate (T)
- 712. Tellurium hexafluoride (T,C)
- 713. TELODRIN, Isobenzan; 1,3,4,5,6,7,8,8-Octachloro-1,3,3a,4,7,7a-hexahydro-4,7-methanoisobenzofuran (T)
- 714. TEMIK, Aldicarb, 2-Methyl-2(methylthio) propionaldehyde-O-(methylcarbamoyl) oxime (T)
- 715. 2,3,7,8-Tetrachlorodibenzo-para-dioxin, TCDD, Dioxin (T)
- 716. sym-Tetrachloroethane (T)
- 717. Tetraethyl lead, TEL (and other organic lead) (T,F)
- 718. Tetraethyl pyrophosphate, TEPP (T)
- 719A. Tetrahydrofuran, THF (T,F)
- 719B. Tetrahydrophthalic anhydride, Menthyltetrahydrophthalic anhydride (T)
- 720. TETRALIN, Tetrahydronaphthalene (T)
- 721. Tetramethyl lead, TML (T,F)
- 722. Tetramethyl succinonitrile (T)
- 723. Tetranitromethane (T,F,R)
- 724. Tetrasul, ANIMERT V-101, S-para-Chlorophenyl-2,4,5-trichlorophenyl sulfide (T)
- 725. Tetrazene, 4-Amidino-1-(nitrosamino-amidino)-1-tetrazene (T,R)
- 726. Thallium (T)
- 727. Thallium compounds (T)
- 728. Thallous sulfate, Thallium sulfate, RATOX (T)
- 729. Thiocarbonylchloride, Thiophosgene (T,C,R)
- 730. Thionazin, ZINOPHOS; O,O-Tetramethylthiuram monosulfide (T)
- 731. Thionyl chloride, Sulfur oxychloride (T,C,R)
- 732. Thiophosphoryl chloride (T,C,R)
- 733. Thorium (powder) (F)
- 734. Tin compounds (organic) (T)
- 735. Titanium (powder) (F)
- 736. Titanium sulfate (T)
- 737. Titanium tetrachloride, Titanic chloride (T,C,R)
- 738. Toluene, Methylbenzene (T,F)
- 739. Toluene-2,4-diisocyanate, TDI (T,R)
- 740A. Toluidine, Aminotoluene (ortho,meta,para) (T)
- 740B. Toxaphene, Polychlorocamphene (T)
- 741. TRANID, exo-3-Chloro-endo-6-cyano-2-norbornanone-O-(methylcarbamoyl) oxime (T)
- 743. 1,1,2-Trichloroethane (T)

744. Trichloroethylene; Trichlorethene (T)  
 745. Trichloroacetic acid (T,F)  
 746. 2,4,5-Trichlorophenoxyacetic acid; 2,4,5-T (T)  
 747. Trichloroethane, Silicochloroform (T,C,F,R)  
 748. Trimethylamine, TMA (T,F)  
 749. Trinitroanisole; 2,4,6-Trinitrophenyl methyl ether (T,R)  
 750. 1,3,5-Trinitrobenzene, TNB (T,R)  
 751. 2,4,6-Trinitrobenzoic acid (T,R)  
 752. Trinitrobenzophenone, Naphthalene (T,R)  
 753. 2,4,6-Trinitrophenol, Syphonic acid (T,R)  
 754. 2,4,6-Trinitrotoluene, TNT (T,F,R)  
 755. tria(1-Azidanyl) phosphine oxide, Triethylenephosphoramide, TEPA (T)  
 756. Tungstic acid and salts (T)  
 757. Turpentine (T,F)  
 758. Uranyl nitrate, Uranium nitrate (T,F,R)  
 759. Urea nitrate (T,F,R)  
 760. n-Valeraldehyde, n-Pentanal (and isomers) (T,F)  
 761. Vanadic acid salts (T)  
 762. Vanadium oxytrichloride (T,C)  
 763. Vanadium pentoxide, Vanadic acid anhydride (T)  
 764. Vanadium tetrachloride (T,C)  
 765. Vanadium tetroxide (T)  
 766. Vanadium trioxide, Vanadium sesquioxide (T)  
 767. Vanadyl sulfate, Vanadium sulfate (T)  
 768. Vinyl acetate (F,T)  
 769. Vinyl chloride (T,F)  
 770. Vinyl ethyl ether (F)  
 771. Vinylidene chloride, VC (T,F)  
 772. Vinyl isopropyl ether (F)  
 773. Vinyltrichloroethane (T,C,F,R)  
 774. VX, O-Ethyl methyl phosphonyl N,N-diisopropyl thiocarbonyl (T)  
 775. WEPSYN 155, WP 155, Triamphos, para-(p-Amino-3-phenyl-1H-1,2,4-triazol-1-yl)-N,N,N',N'-tetramethyl phosphonic diamide (T)  
 776. Xylene, Dimethylbenzene (ortho,meta,para) (T,F)  
 777. Zinc (powder) (F)  
 778. Zinc ammonium nitrate (T,F)  
 779. Zinc arsenate (T)  
 780. Zinc arsenite (T)  
 781. Zinc chloride (T,C)  
 782. Zinc compounds (T)  
 783. Zinc cyanide (T)  
 784. Zinc nitrate (T,F,R)  
 785. Zinc permanganate (T,F)  
 786. Zinc peroxide, Zinc dioxide (T,F,R)  
 787. Zinc phosphide (T,F,R)  
 788. Zinc sulfate (T)  
 789. Zirconium (powder) (F)  
 790. Zirconium chloride, Zirconium tetrachloride (T,C,R)  
 791. Zirconium picramate (F)

(e) List of Common Names. In this subsection a dagger denotes the common name of a waste which comes under the provisions of this chapter if it contains a hazardous material.

- Acetylene sludge (C)  
 Acid and water (C)  
 Acid sludge (C)  
 AFU Flocc (T)  
 Alkaline caustic liquids (C)  
 Alkaline cleaner (C)  
 Alkaline corrosive battery fluid (C)  
 Alkaline corrosive liquids (C)  
 Asbestos waste (T)  
 Ashes (T,C)  
 Bag house wastest  
 Battery acid (C)  
 Beryllium waste (T)  
 Bilge water (T)  
 Boiler cleaning waste (T,C)  
 Bunker Oil (T,F)  
 Catalyst†  
 Caustic sludge (C)  
 Caustic wastewater (C)  
 Chemical cleaners†  
 Chemical toilet wastest  
 Cleaning solvents (F)  
 Corrosion inhibitor (T,C)  
 Data processing fluid (F)  
 Drilling fluid†  
 Drilling mud†  
 Dyes†  
 Etching acid liquid or solvent (C,F)  
 Fly ash (T,C)  
 Fuel waste (T,F)  
 Insecticides (T)  
 Laboratory wastest  
 Lime and sulfur sludge (C)  
 Lime and water (C)  
 Lime sludge (C)  
 Lime wastewater (C)  
 Liquid cement†  
 Liquid cleaning compounds†  
 Mine tailings†  
 Obsolete explosives (R)  
 Oil and water (T)  
 Oil Ash (T,C)  
 Paint (or varnish) remover or stripper (F)  
 Paint thinner (T,F)  
 Paint waste (or slops) (T,F)



Pickling liquor (C)  
Pigments†  
Plating waste (T,C)  
Printing Ink†  
Retrograde explosives (R)  
Sludge acid (C)  
Soda ash (C)  
Solvents (F)  
Spent acid (C)  
Spent caustic (C)  
Spent (or waste) cyanide solutions (T,C)  
Spent mixed acid (C)  
Spent plating solution (T,C)  
Spent sulfuric acid (C)  
Stripping solution (T,F)  
Sulfonation oil (F)  
Tank bottom sediment†  
Tank cleaning sludges†  
Tanning sludges (T)  
Toxic chemical toilet wastes (T)  
Unrinsed pesticide containers (T)  
Unwanted or waste pesticides—an unusable portion of active ingredient or undiluted formulation (T)  
Waste chemicals†  
Waste exoprides†  
Waste (or slop) oil (T)  
Weed Killer (T)

NOTE: Authority cited: Sections 208, 25141 and 25150, Health and Safety Code. Reference: Sections 25140 and 25141, Health and Safety Code.

**HISTORY:**

1. Amendment filed 9-27-84; effective thirtieth day thereafter (Register 84, No. 41).
2. Editorial correction of subsection (d) and NOTE filed 10-5-84; designated effective 10-27-84 (Register 84, No. 41)

**Article 10. Extremely Hazardous Wastes and Extremely Hazardous Materials**

**66685. List of Extremely Hazardous Wastes.**

NOTE: Authority cited: Sections 208, 25141 and 25150, Health and Safety Code. Reference: Section 25141, Health and Safety Code.

**HISTORY:**

1. Repealer of Article 10 (Section 66685) filed 9-27-84; effective thirtieth day thereafter (Register 84, No. 41).



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—  
CENTRAL VALLEY REGION

3201 S STREET  
SACRAMENTO, CALIFORNIA 95816-7090  
PHONE: (916) 445-0270



15 August 1985

Mr. Jon Lander, P.E.  
Town Engineer  
Town of Paradise  
5555 Skyway  
Paradise, CA 95969

PARADISE WASTEWATER MANAGEMENT PLAN

We have reviewed the Phase II Draft of the Paradise Wastewater Management Plan. The draft is very good. However, we wish to emphasize two points which are made in the report. They are:

1. There is no documented serious health hazard in Paradise. This fact precludes Paradise from obtaining a construction grant from EPA or the State Water Resources Control Board. See page VI-26.
2. The Neal Road septage ponds do not meet the requirements of Subchapter 15 covering the discharge of waste to land. Butte County has been asked to file an application for reclassification of the Neal Road site. The County may upgrade its ponds to meet Subchapter 15 regulations or stop accepting septage at Neal Road. Any decision by the County will affect the alternatives discussed in Chapter VII.

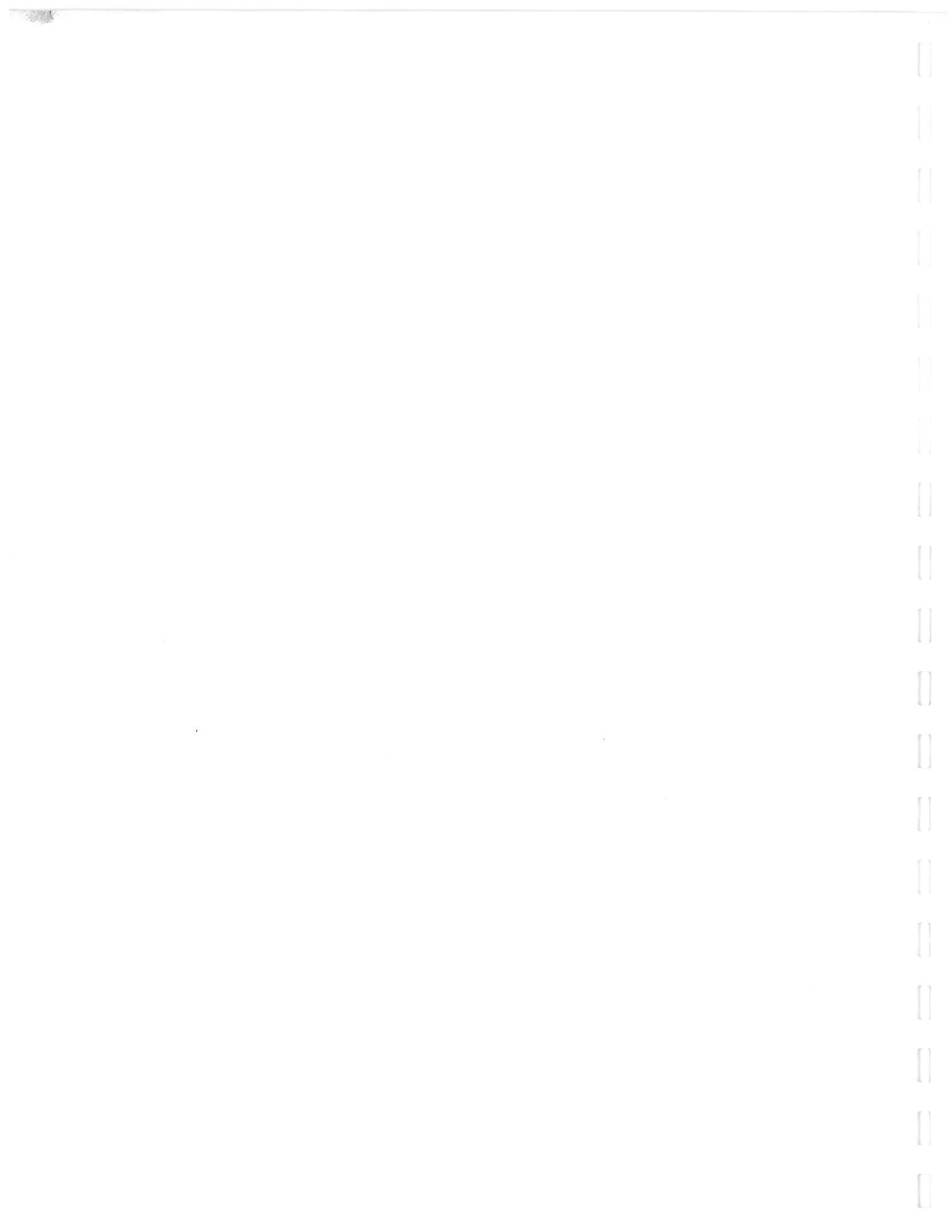
If you have any questions, please call Joseph Henao at (916) 322-1592.

*William J. Marshall*  
WILLIAM J. MARSHALL  
Senior Engineer

WJM:gs

cc: Mr. Lynn Vanhart, Butte County Health Dept., Oroville  
Mr. Robert A. Ryder, R. A. Ryder & Assoc., Lakeport ✓

AUG 15 1985



Dear Son,

15 <sup>8</sup>/<sub>25</sub>

I have reviewed <sup>the</sup> Phase II Draft report prepared by Ryder & Associates and was quite pleased with the outcome. There are, however, a few areas where I feel specific comments are in order. They are as follows:

1. The costs for OSNME are too low! Based on the Stinson Beach experience it will take about  $\frac{1}{2}$  a day for each first inspection including follow up time. Thus, based on 10,000 residences, it will take about 20.8 person years for the first inspection.

2. The inspection frequency should be more frequent. A 3, 2, and 1 year frequency is, in my judgement, more appropriate.



3 I am not in total agreement with some of the code changes and or additions. I have noted my objections in the draft report (enclosed)

4. With respect to treatment, I feel that a sequencing batch reactor activated sludge system should be considered for treatment of both the wastewater from the ~~Skyway~~<sup>sewered</sup> area and the septage collected from the individual residences. These systems have been used successfully in the outback in Australia with little or no maintenance (simple time clock) for some time.

5 Some of the <sup>unit</sup> costs for installing the collection system seem low

given the construction conditions that will be encountered in the Town of Paradise. Local quotes should <sup>(be used)</sup>.

6. With respect to the proposed hazardous waste management program it may not be possible to permit some of the proposed features (eg transfer facility) of the program.

Apart from the aforementioned comments - I am in general agreement with the proposed features of the program - it should serve the Town of Paradise well. I have also noted additional comments in the draft report.

I will call <sup>in about ten days</sup> (after I return from a trip. Good luck in your deliberations. Best regards



Priscilla L. Hanford  
1773 Honeysuckle Lane  
Paradise, CA 95969

AUG 16 1985  
TOWN OF PARADISE

August 16, 1985

To: George Irving

From: Priscilla Hanford *PLH*

Re: Paradise Wastewater Management Plan

Since I cannot attend the August 19 Task Force meeting, I am submitting my recommendations herewith regarding the Phase II Report.

I recommend acceptance of the Report. I feel the consultants have done an excellent job. The findings are thorough; alternatives have been well-analyzed; and the recommendations are reasonable and well-supported.

I suggest that the summary "Apparent Best Plans" on pp. 3-4 of the consultant's August 6 submittal be incorporated at the end of each appropriate section in Chapter II of the Report, thereby setting forth clearly the preferred alternative for Onsite Wastewater Management, Central Wastewater Collection and Disposal, etc. I agree with the Apparent Best Plans in each substantive category, but have one small suggestion regarding #2. While we should rely primarily on formation of a special assessment district to finance the Central collection/disposal system, the Town should actively pursue all available avenues of grant and/or loan sources from governmental agencies. This is of course "understood", and is well set forth in the full Chapter VI, but perhaps should be mentioned in the summary paragraph. Clean Water funds are unlikely unless a water quality problem can be convincingly shown -- but it is possible that the extensive monitoring program proposed may reveal new data making it feasible to apply for a Clean Water grant in the future. Application should not be ruled out, and certainly some of the other sources identified (EDA etc.) may be immediately feasible to pursue. Needless to say, every avenue to possibly reduce the special assessment burden needs thorough exploration and should be a top priority task of the financial consultant recommended to be engaged (Recommendation #5). I think we need to be very clear in the Report, particularly its summary sections which will be widely read, that it will be the Town's intention to investigate every possibility of funding which will ease the burden on individual owners within the assessment district.

I have one pretty important correction on p. I-1, first paragraph: The Clean Water Grant Program is not supported by the State Department of Water Resources! It is the State Water Resources Control Board. Their Clean Water Grant Division folks who have to approve this contracted study might not look kindly on this error!

I'm sorry to miss the meeting, and look forward to hearing

Priscilla L. Hanford

1773 Honeysuckle Lane

Paradise, CA 95969

about the results after I return on August 26.

One "final" comment: it is critically important that the two centerpiece sections of the report, Onsite Wastewater Management and Central Wastewater Treatment/Collection, be considered inseparable; that is, neither one can stand on its own as the solution to Paradise's present or potential wastewater problems. To have either one without the other would result in a seriously flawed "Plan"; both are crucial components.



**Alma Theis**  
 6432 Theis Ln.  
 Paradise, CA 95969

July 29, 1985

George Irwin, Town Manager  
 Jon Lander, City Engineer

If the Waste Water Task Force has been of any value I feel our recommendations should be put before the Town Council. If put out to the public as a concerted study by a group of citizens and not by any one department of the town it gives less opportunity for the general public to condemn the personnel. Therefore my recommendations are as follows.

I Present to the Town Council the proposal to sewer Skyway from Rocky Lane south to terminus point. Clark from above the Paradise Bowling Alley south to Pearson. Pearson from Clark to Skyway. Details for finance to be studied.

II Present to Town Council the proposal to put into effect a monitoring system for all residential septic systems. As most homeowners approve of a pay as you go system start a pre-paid method from each household, including duplex, apartments, rest homes, care homes, day care

centers etc. Each to be charged a proportionate fee according to use of syptic system.

In my opinion the Montgomery Byrd; Ichobanoglous Byrd and Hasserman Study now the Byrd report all say one thing it is now necessary to have a sewer system for a portion of Paradise and the part chosen has the most density which is our business area.

Sincerely  
Alma

**R.A. RYDER & ASSOCIATES**  
**CONSULTING ENGINEERS**  
**ENVIRONMENTAL • ENERGY • CORROSION**

August 6, 1985

Town of Paradise  
5555 Skyway  
Paradise, CA 95969

Attn: Mr. Jon Lander, Town Engineer

Subject: Paradise Wastewater Management Plan (4029)

Gentlemen:

The Facilities Planning for Wastewater Management for the Town of Paradise has been conducted over the past few years with Clean Water Grant assistance from the State of California and the Federal EPA. The planning has been completed with submission of the Phase II Report last month.

The planning reports presented information on geography, climate, topography, geology, land use, population, wastewater disposal practices and ordinances, water quality testing and evaluation of the numerous streams in Paradise. The findings included:

Findings

- a. The use of on-site disposal systems in Paradise is, for the most part, satisfactory due to generally favorable soil conditions for leaching fields, a relatively low population density, and a good program of conservative design criteria and installation inspection.
- b. The maximum rate of wastewater disposal by subsurface leaching based upon soil and climate considerations is 900 gallons per acre per day, equivalent to three dwelling units per acre, for long term satisfactory function.
- c. Conventional septic tank and leach field disposal systems were developed as a method of disposal for an approximate twenty-year life to be replaced by either another leach field or wastewater collection.
- d. Leaching field clogging of the soils that result in insufficient drainage with resultant surfacing or waste back up, will occur within time in most on-site disposal systems.

