CALIFORNIA COASTAL COMMISSION
NORTH COAST DISTRICT OFFICE
710 E STREET • SUITE 200
EUREKA, CA 95501-1865
VOICE (707) 445-7833
FACSIMILE (707) 445-7877

MAILING ADDRESS:
P. O. BOX 4908
EUREKA, CA 95502-4908

F 7a

Filed:	October 30, 2007
49th Day:	December 18, 2007
Staff:	Melissa B. Kraemer
Staff Report:	November 30, 2007
Hearing Date:	December 14, 2007

STAFF REPORT: APPEAL

SUBSTANTIAL ISSUE

APPEAL NO.:	**A-1-MEN-07-043**
APPLICANT:	**Gualala Community Services District**
LOCAL GOVERNMENT:	County of Mendocino
DECISION:	Approval with Conditions
PROJECT LOCATION:	Approximately one mile northeast of Gualala, along a right-of-way segment beneath Old Stage Road (CR #502), beginning approximately 0.9 miles north of State Highway 1 at the intersection of Bodhi Tree Lane, and extending to an access road to the proposed Arena Union Elementary School at 39290 Old Stage Road.
PROJECT DESCRIPTION:	Extension of a 6-inch diameter wastewater main approximately 1.25 miles (~6,500 feet) within the County road right-of-way from an existing Gualala Community Services District system to serve a proposed school in Gualala.
APPELLANT:	Commissioners Mary K. Shallenberger & Sara J. Wan
SUBSTANTIVE FILE DOCUMENTS:	1) Mendocino County CDU 9-2005 2) Mendocino County Local Coastal Program

SUMMARY OF STAFF RECOMMENDATION:

The staff recommends that the Commission, after public hearing, determine that a SUBSTANTIAL ISSUE exists with respect to the grounds on which the appeal has been filed and that the Commission hold a *de novo* hearing, because the appellants have raised a substantial issue with the local government's action and its consistency with the certified Local Coastal Program (LCP).

The development, as approved by the County, involves extension of a 6-inch diameter wastewater main approximately 1.25 miles (~6,500 feet) within the County road right-of-way from the existing Gualala Community Services District (GCSD) system to serve an approved school in Gualala. The elementary school was approved by the County at the same time under a separate coastal development permit which has also been appealed to the Commission (Appeal No. A-1-MEN-07-044). The applicant for that CDP, the Arena Union Elementary School District, has submitted a 49-day waiver of the deadline for the Commission to open the hearing on the appeal and has requested that the hearing not be opened at the December 14, 2007 Commission meeting when the hearing on the sewer line extension appeal is scheduled to be opened.

The project site is located approximately one mile northeast of Gualala, along a right-of-way segment beneath Old Stage Road (CR #502), beginning approximately 0.9 miles north of State Highway 1 at the intersection of Bodhi Tree Lane, and extending to an access road to the proposed Arena Union Elementary School at 39290 Old Stage Road. The sewer line extension and the approved school site are located within the GCSD boundary, but outside of the current service area of the District and on the rural side of the urban/rural boundary designated in the certified Land Use Plan (LUP). The service area boundary and urban/rural boundary are essentially coterminous.

The two contentions raised by the appeal allege the project is inconsistent with the policies of the certified Mendocino County LCP regarding (1) concentration of new development within the urban side of the urban-rural boundaries where it can be served by community water and sewer systems, and (2) protection of lower cost visitor-serving and recreational facilities.

The LCP requires that new development in the Gualala area be concentrated within the urban side of the urban-rural boundaries, where it can be served by community sewer systems. The Gualala Town Plan area currently has significant development constraints, in that sewer capacity is limited. According to the Gualala Town Plan, a portion of the Mendocino County certified LCP, the GCSD wastewater treatment system has a capacity of 625 Equivalent Single-Family Dwellings (ESDs), of which 460 were allocated as of October 1997. The remaining unused capacity as of 1997 was approximately 165 ESDs. The Gualala Town Plan points out that the remaining ESDs may not be sufficient to accommodate the demands for sewer connections for the 30-year planning horizon of the Town Plan. Using a 75/50 percent buildout scenario, buildout of residential uses under the existing LCP would require an additional 759 ESDs. Under this scenario, the remaining capacity of the GCSD treatment plant would be exceeded. When 500 ESDs are in use, the GCSD is required by the State Water Resources Control Board to initiate plans for wastewater treatment plant expansion. In its findings for approval of the subject

development, the County failed to address the remaining capacity of the GCSD wastewater treatment facility and what percentage of the remaining capacity would be devoted to the proposed school. As approved as a 6-inch diameter line, the sewer line extension project can accommodate more development outside of the urban/rural boundary than just the school itself, as the service extension is sized larger than necessary to serve the proposed school

Thus, the capacity of the approved sewer line will accommodate an unspecified amount of additional development in the rural area, outside of the service area of the district and beyond the designated urban/rural boundary. The County's conditions of approval do not preclude hookups to the sewer line by other development. Given the limited remaining capacity of the sewer system, hookups allowed outside of the service area and urban area may come at the expense of hookups for development within the urban area and within the service area of the District. Therefore, the project as approved raises a substantial issue as to whether development would be concentrated on the urban side of the urban/rural boundary consistent with LUP Policy G3.1.2, as the approved project would facilitate additional residential growth outside of the urban/rural boundary.

By facilitating development on the rural side of the urban/rural boundary, the project as approved also raises a substantial issue of conformance with LCP policies that state that lower cost visitor and recreational facilities shall be protected and encouraged, and development providing public recreational opportunities is preferred. The zoning districts that allow for lower cost visitor and recreation opportunities within the Gualala area are located on the urban side of the urban/rural boundary. Facilitating hookups for residential development outside of the urban/rural boundary would reduce the limited remaining sewer capacity available for priority visitor serving and recreational uses within the urban zoning districts. Therefore, a substantial issue is raised as to whether the approved development would protect and encourage the development of lower cost visitor and recreation facilities, inconsistent with LCP Policies.

Therefore, staff recommends that the Commission find that the contentions are valid grounds for an appeal, and that the contentions raise a substantial issue of conformity of the approved development with the certified LCP.

The motion to adopt the staff recommendation of Substantial Issue is found on Page No. 5.

STAFF NOTES:

1. Appeal Process

After certification of Local Coastal Programs (LCPs), the Coastal Act provides for limited appeals to the Coastal Commission of certain local government actions on coastal development permits (Coastal Act Section 30603).

Section 30603 states that an action taken by a local government on a coastal development permit application may be appealed to the Commission for certain kinds of developments, including developments located within certain geographic appeal areas, such as those located between the sea and the first public road paralleling the sea, or within three hundred feet of the inland extent of any beach, or of the mean high tide line of the sea where there is no beach, or within one hundred feet of any wetland or stream, or within three hundred feet of the top of the seaward face of any coastal bluff, or those located in a sensitive coastal resource area. Furthermore, developments approved by counties may be appealed if they are not designated the "principal permitted use" under the certified LCP. Finally, developments which constitute major public works or major energy facilities may be appealed, whether approved or denied by the city or county. The grounds for an appeal are limited to an allegation that the development does not conform to the standards set forth in the certified local coastal program and, if the development is located between the first public road and the sea, the public access policies set forth in the Coastal Act.

The subject development is appealable to the Commission pursuant to Section 30603 of the Coastal Act because (1) the approved development is not designated the "principal permitted use" under the certified LCP, and (2) the approved development constitutes a major public works project.

Section 30625(b) of the Coastal Act requires the Commission to hear an appeal unless the Commission determines that the appeal raises no substantial issue of conformity of the approved project with the certified LCP. Since the staff is recommending substantial issue, unless three Commissioners object, it is presumed that the appeal raises a substantial issue and the Commission may proceed to its *de novo* review.

If the Commission decides to hear arguments and vote on the substantial issue question, proponents and opponents will have three minutes per side to address whether the appeal raises a substantial issue. It takes a majority of Commissioners present to find that no substantial issue is raised. The only persons qualified to testify before the Commission on the substantial issue question are the applicants, the appellants and persons who made their views known to the local government (or their representatives). Testimony from other persons regarding substantial issue must be submitted in writing.

Unless it is determined that there is no substantial issue, the Commission will proceed to the *de novo* portion of the appeal hearing and review the merits of the proposed project. This *de novo* review may occur at the same or subsequent meeting. If the Commission were to conduct a *de novo* hearing on the appeal, the applicable test for the Commission to consider would be whether the development is in conformity with the certified Local Coastal Program.

2. Filing of Appeal

One appeal was filed from Commissioners Mary Shallenberger and Sara Wan on October 30, 2007 (Exhibit No. 6). The appeal was filed with the Commission in a timely manner, within 10 working days of receipt by the Commission of the County's Notice of Final Action on October 16, 2007 (Exhibit No. 5).

I. STAFF RECOMMENDATION, MOTION & RESOLUTION ON SUBSTANTIAL ISSUE

Pursuant to Section 30603(b) of the Coastal Act and as discussed below, the staff recommends that the Commission determine that a substantial issue exists with respect to the grounds on which the appeal has been filed. The proper motion is:

Motion:

I move that the Commission determine that Appeal No. A-1-MEN-07-043 raises No Substantial Issue with respect to the grounds on which the appeal has been filed under Section 30603 of the Coastal Act.

Staff Recommendation:

Staff recommends a **NO** vote. Failure of this motion will result in a *de novo* hearing on the application, and adoption of the following resolution and findings. Passage of this motion will result in a finding of No Substantial Issue and the local action will become final and effective. The motion passes only by an affirmative vote of the majority of the appointed Commissioners present.

Resolution to Find Substantial Issue:

The Commission hereby finds that Appeal No. A-1-MEN-07-043 presents a substantial issue with respect to the grounds on which the appeal has been filed under Section 30603 of the Coastal Act regarding consistency with the Certified Local Coastal Plan.

II. FINDINGS & DECLARATIONS

The Commission hereby finds and declares the following:

A. APPELLANT'S CONTENTIONS

The Commission received one appeal of the County of Mendocino's decision to conditionally approve the development from Commissioners Mary Shallenberger and Sara Wan. The County of Mendocino approved Coastal Development Use (CDU) Permit #9-2005 to extend a 6-inch diameter wastewater main approximately 1.25 miles (~6,500 feet) within the County road right-of-way from the existing Gualala Community Services District system to serve a proposed school in Gualala.

The approved development is located approximately one mile northeast of Gualala, along a right-of-way segment beneath Old Stage Road (CR #502), beginning approximately 0.9 miles north of

State Highway 1 at the intersection of Bodhi Tree Lane, and extending to an access road to the proposed Arena Union Elementary School at 39290 Old Stage Road (see Exhibit Nos. 1-3).

The appeal raises two main contentions alleging inconsistency of the approved project with the County's certified LCP. The appeal's contentions are summarized below, and the full text of the appeal is included as Exhibit No. 6.

1. **Concentrating New Development in Urban Areas**

The appeal contends that the approved development is inconsistent with the policies of the certified LCP regarding development within Gualala, which require that new development in the Gualala area shall be concentrated within the urban side of the urban-rural boundaries, where it can be served by community sewer systems. The appeal contends that approval of the subject development is inconsistent with these policies of the certified LCP, because (1) development would not be concentrated within the urban side of the urban-rural boundary, and (2) as approved, the project can accommodate more development outside of the urban/rural boundary than just the school itself, as the service extension is sized larger than necessary to serve the proposed school.

2. **Protection of Lower Cost Visitor-serving & Recreational Facilities**

The appeal contends that by facilitating development on the rural side of the urban/rural boundary, the approved development is inconsistent with LCP policies that state that lower cost visitor and recreational facilities shall be protected and encouraged, and development providing public recreational opportunities is preferred. The zoning districts that allow for lower cost visitor and recreation opportunities within the Gualala area are located on the urban side of the urban/rural boundary. Facilitating hookups for residential development outside of the urban/rural boundary would reduce the limited remaining sewer capacity available for priority visitor serving and recreational uses within the urban zoning districts. Therefore, the appeal contends that the approved development would not protect and encourage the development of lower cost visitor and recreation facilities, inconsistent with LCP policies.

B. LOCAL GOVERNMENT ACTION

On September 20, 2007, the Mendocino County Planning Commission conditionally approved Coastal Development Use (CDU) Permit #9-2005 for extension of a 6-inch diameter wastewater main approximately 1.25 miles (~6,500 feet) within the County road right-of-way from the existing Gualala Community Services District system to serve a proposed school in Gualala.

The approved permit imposed 16 special conditions, one of which pertains to the appeal's contentions. Special Condition No. B-10 requires that the service extension line be "limited to providing wastewater service to the proposed Gualala Elementary School. No residential connections to this extended line may be provided unless approved by the County of Mendocino, priority should be given to failed septic systems in the area."

The decision of the Planning Commission was not appealed at the local level to the County Board of Supervisors. The County then issued a Notice of Final Action, which was received by Commission staff on October 16, 2007 (Exhibit No. 5). Section 13573 of the Commission's regulations allows for appeals of local approvals to be made directly to the Commission without first having exhausted all local appeals when, as here, the local jurisdiction charges an appeal fee for the filing and processing of local appeals.

The County's approval of the project was appealed to the Coastal Commission in a timely manner on October 30, 2007, within 10-working days after receipt by the Commission of the Notice of Final Local Action on October 16, 2007.

C. PROJECT & SITE DESCRIPTIONS

The development as approved by the County involves extension of a 6-inch diameter wastewater main approximately 1.25 miles (~6,500 feet) within the County road right-of-way from the existing Gualala Community Services District (GCSD) system to serve a proposed school in Gualala. Due to seasonally high ground water levels and low permeable soils, it is not feasible for the Arena Union Elementary School District to develop an on-site sewage disposal system at the proposed school site.

The approved sewerline extention is located approximately one mile northeast of Gualala, along a right-of-way segment beneath Old Stage Road (CR #502), beginning approximately 0.9 miles north of State Highway 1 at the intersection of Bodhi Tree Lane, and extending to an access road to the proposed school at 39290 Old Stage Road (Exhibit No. 3). A service connection from the school to the main is proposed to be installed along the school entrance road as part of the school construction.

The GCSD was formed in 1986 to provide wastewater collection and treatment to the unicorporated Gualala area. The District service territory is divided into four zones: zones 1 and 2 represent the commercial and residential development closest to the coast, and zones 3 and 4 represent the rural residential development further up in the hills (see Exhibit No. 2). The inland boundary of zones 1 and 2 is roughly coincident with the urban/rural boundary as delineated in the certified Mendocino County LCP on Land Use Map 31 (see Exhibit No. 4). This boundary is also roughly coincident with the District's service area boundary. The approved sewer extension would extend sewer service from zone 1 to the proposed school, which is located in zone 4.

The applicant completed a sewer feasibility study (Winzler & Kelly Engineering Consultants 2003, included in Exhibit No. 7), which assessed the feasibility of extending sewer service to GCSD zones 3 and 4, including an investigation of the cost of expanding the present collection system and establishing the most logical layout for current and future needs. The study also evaluated the current wastewater treatment facility in order to determine if it has the capacity to handle the additional flows.

The approved project involves two alternative methods for installing the sewer extension: boring or trenching. Either method would take approximately four weeks to complete, and construction would be completed by October 1 of the year it is constructed to avoid the winter rainy season.

The primary construction technique for the installation of the PVC plastic pipe would be by directional bores drilled using a surface-operated drilling device angled into the ground and directed to its destination by remote control. Surface excavation would be required for the location of bore pits (for starting and ending bores and pipe tie-in points) and the placement of maintenance access holes. A 10-foot by 80-foot workspace would be located on the paved road and shoulder to stage drilling equipment and other construction materials. All construction activities would be limited to the paved travel lane and the disturbed/maintained road shoulder, with the majority of drilling equipment to be staged on the paved areas. Bores are generally drilled at the rate of 500 to 700 feet per day, and each bore would take one to two days to complete. Bentonite drilling fluid would be utilized to lubricate the drill bit, prevent the bore tunnel from collapsing, and carry drill cuttings to the surface. Cuttings would be hauled from the site and disposed of at a permitted facility. Once the borehole is drilled, the drill stem would be connected to a pulling head, which is then connected to the segment of pre-fabricated PVC pipe. The pipe segment is then pulled back through the hole by the drilling rig.

If directional boring is not feasible (which, per County Special Condition No. B-4, is to be determined by a Registered Geotechnical Engineer), then the open trench installation method would be used. The asphalt surface would be saw cut, and the 9-to-12-inch-wide trench would be excavated using a Ditchwitch 8020 Turbo trencher, or equivalent. Depth would be determined by the final design (which would maximize opportunities for gravity flow), but may be as deep as 6 feet. The pipe would be placed in the ditch on the same day the trench is excavated. Imported material consisting of Class 2 aggregate base compacted to 95 percent relative compaction or select structural fill below the roadway structural section would be used as backfill in lieu of trench spoils. Trench spoils and excavated asphalt would be recycled or disposed of at a permitted facility. The asphalt surface would be restored to an equal or better condition than previously existed and would be inspected and approved by the Mendocino County Transportation Department inspector. Construction work space would be a minimum of 10-feet-wide, typically occupying an entire travel land and the adjacent shoulder. Manholes for maintenance access would be installed at angle points in the line or at a maximum spacing of 1,000 feet. Manholes would measure 48 inches in diameter and have a depth of approximately 6 feet.

The applicant completed a Mitigation Monitoring and Reporting Plan as part of the Initial Study and Mitigated Negative Declaration for the project, which includes various mitigation measures to avoid or minimize the project's impacts on issues related to geology and soils, biological resources, hazards and hazardous materials, transportation and circulation, and cultural resources.

The majority of the project area includes paved road and road shoulders along the inland margin of the Coastal Zone. Most of the roadside is occupied by rural residential homes, landscaped yards, and surrounding timberlands. Vegetation within 50 feet of either side of the paved roadway consists of native trees such as redwood, pine, and Douglas-fir; nonnative trees, such as acacia and blue gum; various shrubs such as manzanita, toyon, evergreen huckleberry, broom, and blackberry; and various native and nonnative herbs, ferns, and grasses. No special-status sensitive animal or plant species are expected to occur in the project area, according to the Initial

Study and Mitigated Negative Declaration prepared for the project by the applicant. A botanical survey was conducted for the project by botanist Jane Valerius, and no sensitive plant species were found in the project area. Additionally, an archaeological survey also was conducted for the project by Sentinel Archaeological Research, LLC, and no sensitive archaeological resources were found nor are expected to occur in the project area.

D. SUBSTANTIAL ISSUE ANALYSIS

Section 30603(b)(1) of the Coastal Act states:

> *The grounds for an appeal pursuant to subdivision (a) shall be limited to an allegation that the development does not conform to the standards set forth in the certified local coastal program or the public access policies set forth in this division.*

Coastal Act Section 30625(b) states that the Commission shall hear an appeal unless it determines:

> *With respect to appeals to the commission after certification of a local coastal program, that no substantial issue exists with respect to the grounds on which an appeal has been filed pursuant to Section 30603.*

The term "substantial issue" is not defined in the Coastal Act or its implementing regulations. The Commission's regulations indicate simply that the Commission will hear an appeal unless it "finds that the appeal raises no significant question." [California Code of Regulations, Title 14, Section 13115(b)]. In previous decisions on appeals, the Commission has been guided by the following factors:

1. The degree of factual and legal support for the local government's decision that the development is consistent or inconsistent with the certified LCP and with the public access policies of the Coastal Act;
2. The extent and scope of the development as approved or denied by the local government;
3. The significance of the coastal resources affected by the decision;
4. The precedential value of the local government's decision for future interpretations of its LCP; and
5. Whether the appeal raises only local issues, or those of regional or statewide significance.

Even when the Commission chooses not to hear an appeal, appellants nevertheless may obtain judicial review of the local government's coastal permit decision by filing a petition for a writ of mandate pursuant to Code of Civil Procedure, Section 1094.5.

Both of the contentions raised by the appellants present potentially valid grounds for appeal in that they allege the project's inconsistency with policies of the certified LCP. The contentions allege that the approval of the project by the County is inconsistent with LCP provisions regarding (1) concentration of new development within the urban side of the urban-rural

boundaries where it can be served by community water and sewer systems, and (2) protection of lower cost visitor-serving and recreational facilities. In this case, for the reasons discussed further below, the Commission exercises its discretion and determines that with respect to the allegations, the appeal raises a substantial issue with regard to the approved project's conformance with the certified Mendocino County LCP.

1. Allegations Raising Substantial Issue:

a. Concentration of New Development Within Urban Areas

The appeal contends that the approval of the project is inconsistent with the policies and standards regarding concentration of new development within the urban side of the urban-rural boundaries where it can be served by community water and sewer systems

LCP Policies:

Land Use Plan (LUP) Policy G3.1-2 in the Gualala Town Plan states the following:

> *New development in the Gualala area shall be concentrated within the urban side of the urban-rural boundaries, where it can be served by community water and sewer systems and will minimize additional traffic impacts on Highway 1.*

LUP Policy G3.1-1 in the Gualala Town Plan states the following:

> *The urban-rural boundary for the town of Gualala shall be coincident with the boundary lines delineated on Land Use Map 31.*

Discussion:

The Gualala Community Services District (GCSD) wastewater treatment system was completed in 1993. According to the Sewer Service/Septic Availability discussion in the Gualala Town Plan segment of the LUP, the GCSD area encompasses approximately 1,430 acres, 550 acres of which area included in the initial Sewer Assessment District boundary. The Service/Assessment Area is roughly coincident with the urban/rural boundary designated in the LCP. LUP Policy G3.1-1 states that the urban-rural boundary for the town of Gualala shall be coincident with the boundary lines delineated on Land Use Map 31 (see Exhibit No. 4). As discussed above in Section II-C, the GCSD is divided into four zones, with zone 1 and 2 being the commercial and residential development closest to the coast (within the initial Sewer Assessment District boundary, which more or less corresponds with the urban/rural boundary), and zones 3 and 4 being those more easterly areas lying up the hill and along Old Stage Road, mostly outside of the urban/rural boundary (see Exhibit Nos. 2 and 4). The subject project area is located within zone 4, in the rural area outside the urban/rural boundary.

The appeal contends that the approved development is inconsistent with the policies and standards of the certified LCP regarding development within Gualala including, but not limited to, LUP Policy G3.1-2 in the Gualala Town Plan. This policy states in part, that new

development in the Gualala area shall be concentrated within the urban side of the urban-rural boundaries, where it can be served by community sewer systems. The approved development is located outside of the urban-rural boundary, as seen on Exhibit No. 4. According to LUP Policy G3.1-1, the urban-rural boundary is coincident with the boundary lines drawn on Land Use Map 31. The Gualala Town Plan (Figure 1.1, reproduced in Exhibit No. 4) erroneously depicts the urban/rural boundary as being coincident with the Gualala Town Plan area boundary, which extends much further inland than the actual boundary. [Prior to the filing of this appeal, Commission staff was not aware of the map error in the Gualala Town Plan.] This error presumably resulted from the County's proposal, in 1998 under LCP major amendment number 2-98, to expand the urban/rural boundary to encompass the entire Gualala Town Plan area. However, because of concerns regarding the limited capacity of the sewer system, the Commission approved the LCP amendment with several Suggested Modifications, two of which (Suggested Modification Nos. 15 and 16) required the urban/rural boundary to remain coincident with the previously designated boundary lines delineated on Land Use Map 31 rather than moved to the County's proposed expanded boundary shown on Figure 1.1 of the Gualala Town Plan (see Exhibit No. 4). Thus, the approved development would expand the community sewer system outside of the urban-rural boundary, which would allow for development in rural areas inconsistent with LUP Policy G3.1-2.

The Gualala Town Plan area currently has significant development constraints, in that sewer capacity is limited. According to the Gualala Town Plan document itself, the GCSD wastewater treatment system has a capacity of 625 Equivalent Single-Family Dwellings (ESDs), of which 460 were allocated as of October 1997. The remaining unused capacity as of 1997 was approximately 165 ESDs. The Gualala Town Plan points out that the remaining ESDs may not be sufficient to accommodate the demands for sewer connections for the 30-year planning horizon of the Town Plan. Using a 75/50 percent buildout scenario, buildout of residential uses under the existing LCP would require an additional 759 ESDs. Under this scenario, the remaining capacity of the GCSD treatment plant would be exceeded. When 500 ESDs are in use, the GCSD is required by the State Water Resources Control Board to initiate plans for wastewater treatment plant expansion. The County, in its findings of approval of the project, failed to address the remaining capacity of the GCSD wastewater treatment facility and what percentage of the remaining capacity would be devoted to the proposed school.

The applicant submitted to Commission staff after this appeal was filed a copy of a sewer feasibility study prepared by Winzler & Kelly Consulting Engineers in 2003 (see Exhibit No. 7). [This study was not included in the local record that Commission staff received from the County.] The stated purpose of the study is "to prepare an engineering feasibility study for sewering GCSD zones 3 and 4 and the Ocean Ridge Drive area including an investigation of the cost of expanding the present collection system, and establishing the most logical layout for current and future needs. Moreover, the current wastewater treatment facility [WWTF] will be evaluated in order to determine if it has the capacity to handle the additional flows." (Winzler & Kelly 2003, p. 1-1). The report found that as of 2003, the GCSD WWTF was receiving 66 gallons per person per day during the winter period, when larger flows generally occur. The report concludes that "The existing wastewater treatment plant was designed for an average daily flow of 131,000 gallons per day (gpd) [and] recent flows were varied from a low of 42,500 gpd to a high of 101,200 gpd. While current flows are below the design value, the remaining

capacity should be reserved for future growth in zones 1 and 2." (emphasis added) (Winzler & Kelly 2003, p. 7-1).

As approved as a 6-inch diameter line, the sewer line extension project can accommodate more development outside of the urban/rural boundary than just the school itself. The County-approved service extension is sized larger than necessary to serve the proposed school, as evidenced in the January 2005 Initial Study and Mitigated Negative Declaration prepared for the project by GCSD's consultant, Matrix Environmental Planning. The Initial Study states the following:

> "Even though the 6-inch diameter pipe is sized to meet future expansion of the wastewater collection system into the adjacent unserved District service territory, GCSD feels it is fiscally and environmentally prudent to avoid installation of a second pipeline if and when service is extended into the adjacent unserved territory…." (Page 1-1)

Thus, the capacity of the approved sewer line will accommodate an unspecified amount of additional development in zones 4 and 3 within the rural area, outside of the service area of the district. The County's conditions of approval do not preclude hookups to the sewer line by other development. To the contrary, Special Condition No. B-10 provides a mechanism for residential connections to be made to the new sewer line. Special Condition No. B-10 states as follows:

> "The proposed wastewater pipeline is specifically limited to providing wastewater service to the proposed Gualala Elementary School. No residential connections to this extended line may be provided unless approved by the County of Mendocino, priority should be given to failed septic systems in the area."

This condition is principally aimed at prohibiting growth inducement, and a lengthy discussion of the project's growth inducement potential is included in the County staff report. However, the condition still allows for future residential hook-ups to the service extension, subject to County approval. Given the limited remaining capacity of the existing sewer system, hookups allowed outside of the service area and urban area may come at the expense of hookups for development within the urban area and within the service area of the District. Therefore, as the approved project facilitates additional residential growth outside of the urban/rural boundary, a substantial issue is raised as to whether the approved project concentrates development on the urban side of the urban rural boundary as required by LUP Policy G3.1-2.

The Winzler & Kelly report (Exhibit No. 7) points out, on page 9-1, that "A previously completed Environmental Impact Report (EIR) covered only the existing GCSD sewer zones 1 & 2. This document did not cover zones 3 or 4, or Ocean Ridge Drive." The County's approval of the project allows for future residential hook-ups to the service extension, subject to County approval and in the absence of having completed a CEQA document for service extending into zones 3 and 4. In addition, no LCP amendment has been submitted by the County to the Commission for certification that would extend the services area boundary of the district to the area that would be served by the new sewer line extension. Therefore, the growth-inducing and other environmental effects of extension of sewer service into the rural area has not been fully evaluated, and the degree of factual and legal support for the County's decision is low.

Therefore, for all of the above reasons, the Commission finds that the project, as approved by the County, raises a substantial issue of conformance with the provisions of LUP Policy G3.1-2, as development would not be concentrated within the urban side of the urban-rural boundary.

b. Protection of Lower Cost Visitor-Serving & Recreational Facilities

The appeal contends that by facilitating development on the rural side of the urban/rural boundary, the project, as approved, is inconsistent with LUP Policies 3.7-5 and G3.7-8. These policies state that lower cost visitor and recreational facilities shall be protected and encouraged, and development providing public recreational opportunities is preferred.

LCP Policies:

LUP Policy G3.7-8 in the Gualala Town Plan states the following:

> *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.*

LUP Policy 3.7-5 states the following:

> *The locations designated and types of use permitted are intended to result in accommodations of all price ranges, including lower cost ones such as campgrounds and hostels. Lower cost visitor and recreational facilities for persons and families of low and moderate income shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.*

Discussion:

The zoning districts that allow for lower cost visitor-serving and recreational opportunities within the Gualala area are mostly located on the urban side of the urban/rural boundary. As discussed above, facilitating hookups for residential development outside of the urban/rural boundary would reduce the limited remaining sewer capacity available for priority visitor-serving and recreational uses within the urban zoning districts. In its findings of approval for the project, the County included no special conditions related to the protection of lower cost visitor-serving and recreational facilities. Visitor-serving uses are considered a priority use under Chapter 3 of the Coastal Act, and providing visitor-serving facilities to enable the people of California to visit and enjoy the coast is a matter of statewide concern and significance. Therefore, the Commission finds that the project, as approved by the County, raises a substantial issue of conformance with the provisions of LUP Policies 3.7-5 and G3.7-8, as the approved project does not protect, encourage, or provide for lower cost visitor-serving and recreational facilities.

Conclusion:

The foregoing contentions raised by the appellants have been evaluated against the claim that the contentions raise a substantial issue of conformance of the local approval with the certified LCP. The Commission finds that the project, as approved by the County, raises a substantial issue of conformance of the approved project with the provisions of the certified LCP regarding (1) the concentration of new development in urban areas where it can be served by community water and sewer systems, including LUP Policy G3.1-2, and (2) the protection of lower cost visitor and recreational facilities, including LUP Policies 3.7-5 and G3.7-8. The Commission finds that for the reasons stated above, the project, as approved by the County, raises a substantial issue of conformance of the approved development with the provisions of the certified LCP.

E. INFORMATION NEEDED FOR *DE NOVO* REVIEW OF APPLICATION

As stated above, Section 30625(b) of the Coastal Act requires the Commission to hear an appeal unless the Commission determines that no substantial issue exists with respect to the grounds on which an appeal has been filed. Section 30621 of the Coastal Act instructs the Commission to provide for a *de novo* hearing on all appeals where it has determined that a substantial issue exists with respect to the grounds on which an appeal has been filed. If the Commission finds substantial issue as recommended above, staff also recommends that the Commission continue the *de novo* portion of the appeal hearing to a subsequent date. The *de novo* portion of the appeal hearing must be continued because the Commission does not have sufficient information to determine how development can be approved consistent with the certified LCP.

Given that the project the Commission will be considering *de novo* has come to the Commission after an appeal of a local government action, the Commission has not previously been in the position to request information from the applicant needed to determine if the project can be found to be consistent with the certified LCP. Following is a discussion of the information needed to evaluate the development.

1. Assessment of Wastewater Treatment System Capacity

As discussed above in Section II-D-1-a, the remaining unused capacity of the GCSD wastewater treatment system as of 1997 was approximately 165 Equivalent Single-Family Dwellings (ESDs). According to the Gualala Town Plan, the remaining ESDs may not be sufficient to accommodate the demands for sewer connections for the 30-year planning horizon of the Town Plan. The County's approval failed to address the remaining capacity of the GCSD wastewater treatment facility and what percentage of the remaining capacity would be devoted to the proposed school. Therefore, the Commission needs to receive an assessment of the GCSD wastewater treatment system capacity that addresses the following:

- How many of the 165 ESDs estimated to be remaining in 1997 are currently remaining in the GCSD wastewater treatment system? Furthermore, how sufficient is the current remaining capacity to accommodate the demands for sewer connections for the 30-year planning horizon of the Town Plan?

- How many ESDs would be needed to serve the proposed school? Furthermore, how would connecting the school to the system affect the system's ability to accommodate the demands for sewer connections for the 30-year planning horizon of the Town Plan?
- How many ESDs would be needed to serve failing rural on-site septic systems along the proposed extension line? Furthermore, how would connecting these failed on-site systems to the GCSD wastewater treatment system affect its ability to accommodate the demands for sewer connections for the 30-year planning horizon of the Town Plan?
- How would connections to the school and failing rural on-site septic systems along the proposed extension line affect the ability of the GCSD wastewater treatment system to accommodate visitor-serving and recreational uses within the urban zoning districts?
- How can the proposed project be found consistent with the recommendation in the Winzler & Kelly report (2003) that the remaining capacity of the wastewater treatment system be reserved for future growth in zones 1 and 2?

2. Additional Geotechnical Information and HDD Drilling Fluids Release Contingency Plan

Horizontal directional drilling (HDD) activities associated with the installation of the sewer line extension could result in the release of drilling fluids (bentonite) into the environment and eventually into stream drainages and other wetlands. Most likely is the release of bentonite as a result of a "frac-out," the propagation of fractures from the drilling bore to the surface of the ground. Frac-out results from drilling through brittle, fractured, and/or poorly consolidated rocks or sediments, the maintenance of too-high fluid pressures in the bore during drilling, and drilling at too shallow a depth below the ground. The certified LCP contains various policies requiring the protection and enhancement of water quality. To ensure consistency with these water quality policies, the risk of accidental release of drilling fluids must be addressed.

The most effective way to guard against the release of drilling fluid into the environment through frac-out is to drill in geologic strata that are least susceptible to frac-out. A site specific geotechnical analyses of the geology at the bore site is the most effective way of determining how deep the boring must be made to avoid boring through geologic strata that is susceptible to frac-out.

Although a geotechnical investigation has been performed for the project, the investigation did not include a geotechnical analysis of the proposed Horizontal Directional Drilling (HDD) bore with respect to determining the appropriate bore depth to avoid a frac-out (see Exhibit No. 7). Such an analysis needs to be performed and recommendations need to be developed for drilling depths for the directional bore and other recommendations for the directional boring contractors to follow to perform the boring in an environmentally safe manner. The analysis developed should also contain a plan showing the HDD bore and demonstrating that the bore will be conducted as much as possible at or below the recommended boring depth.

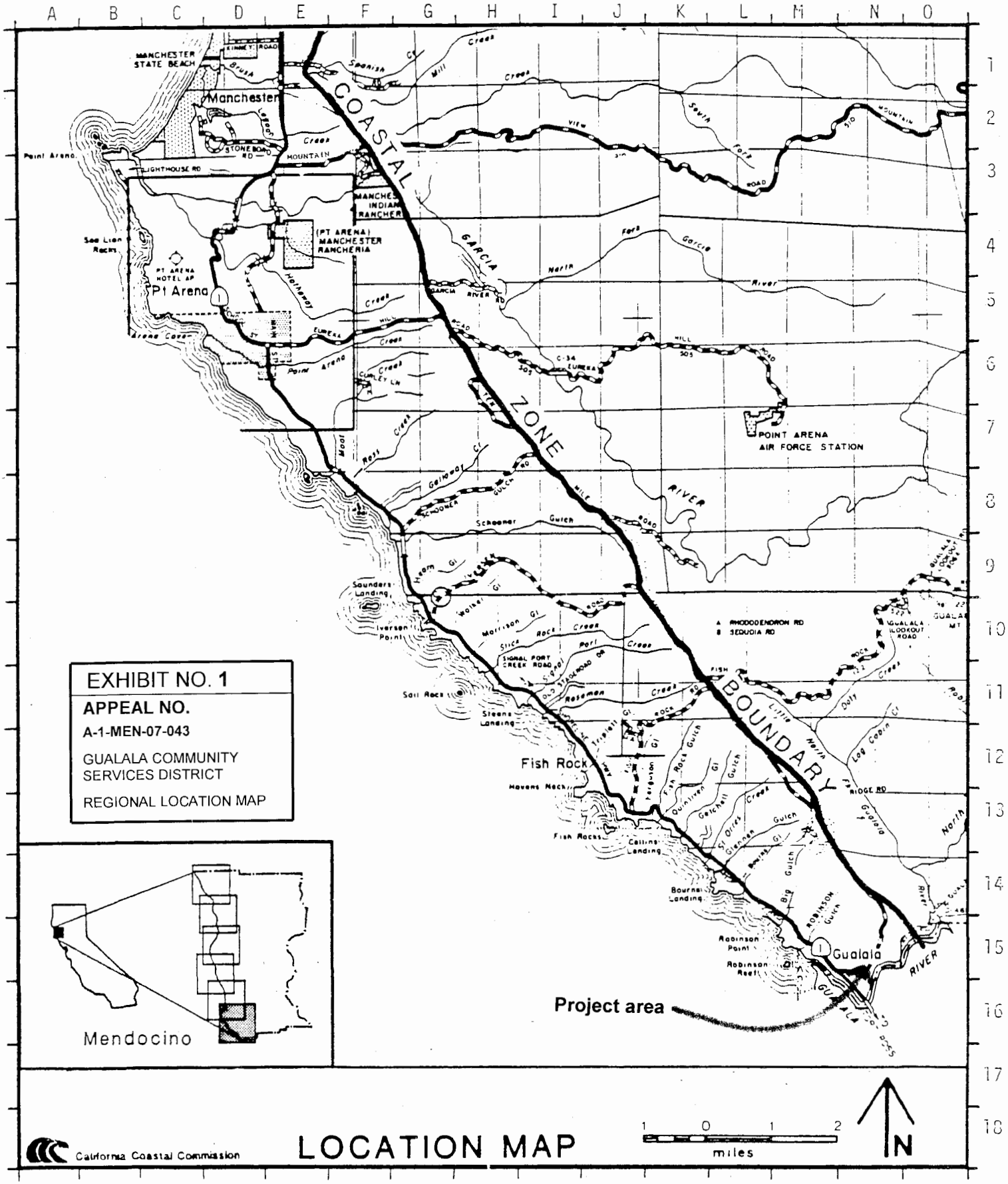
The requested geotechnical investigation and resulting incorporation of the recommendations into the project would greatly reduce the chances that a damaging frac-out would result from the

proposed directional drilling activity. However, because of the uncertainties about the exact soil conditions existing at each drilling location and the potential for human error in the directional drilling process, it cannot be guaranteed that no damaging frac-out would ever occur. Therefore, a contingency plan detailing precautions and cleanup methods that would be employed in the event of release of drilling fluids into the environment should also be developed and provided.

Without the above information, the Commission cannot reach a final determination concerning the project's consistency with the policies of the certified LCP. Therefore, before the Commission can act on the proposed project de novo, the applicant must submit all of the above-identified information.

III. EXHIBITS

1. Regional Location Map
2. Vicinity Map & GCSD Zones
3. Approved Project Area
4. Urban/Rural Boundary map
5. Notice of Final Local Action & County Staff Report
6. Appeal
7. Applicant's Correspondence



County of Mendocino

Sheet 6 of 6

EXHIBIT NO. 2

APPEAL NO.

A-1-MEN-07-043

GUALALA COMMUNITY SERVICES DISTRICT

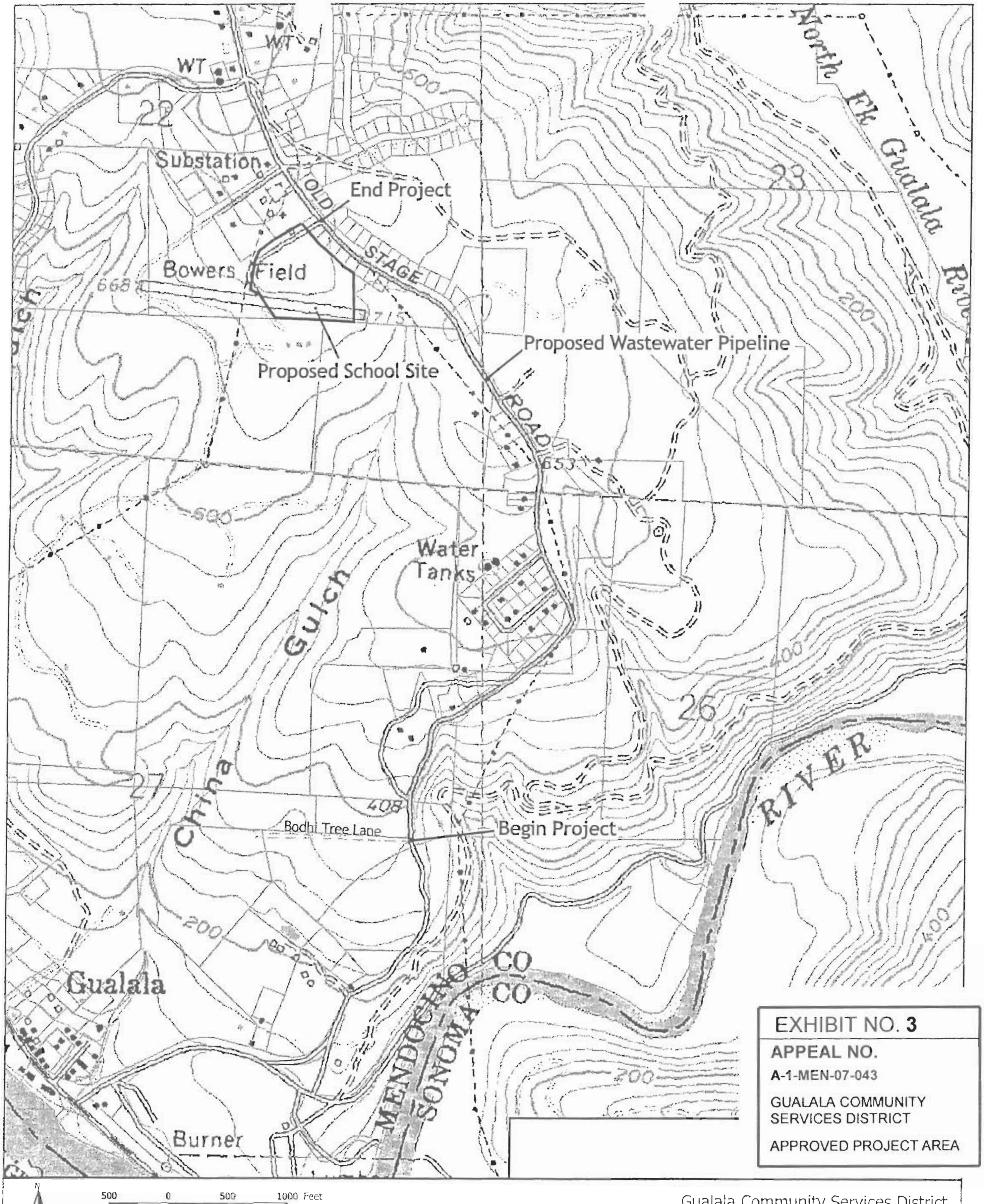
VICINITY MAP & GCSD ZONE

Figure 4-1

Gualala Town Plan Boundary

Gualala Community Services District
Wastewater Pipeline Extension Project

Matrix Environmental Planning January 2005



Matrix Environmental Planning

January 2005

Gualala Community Services District
Wastewater Pipeline Extension Project

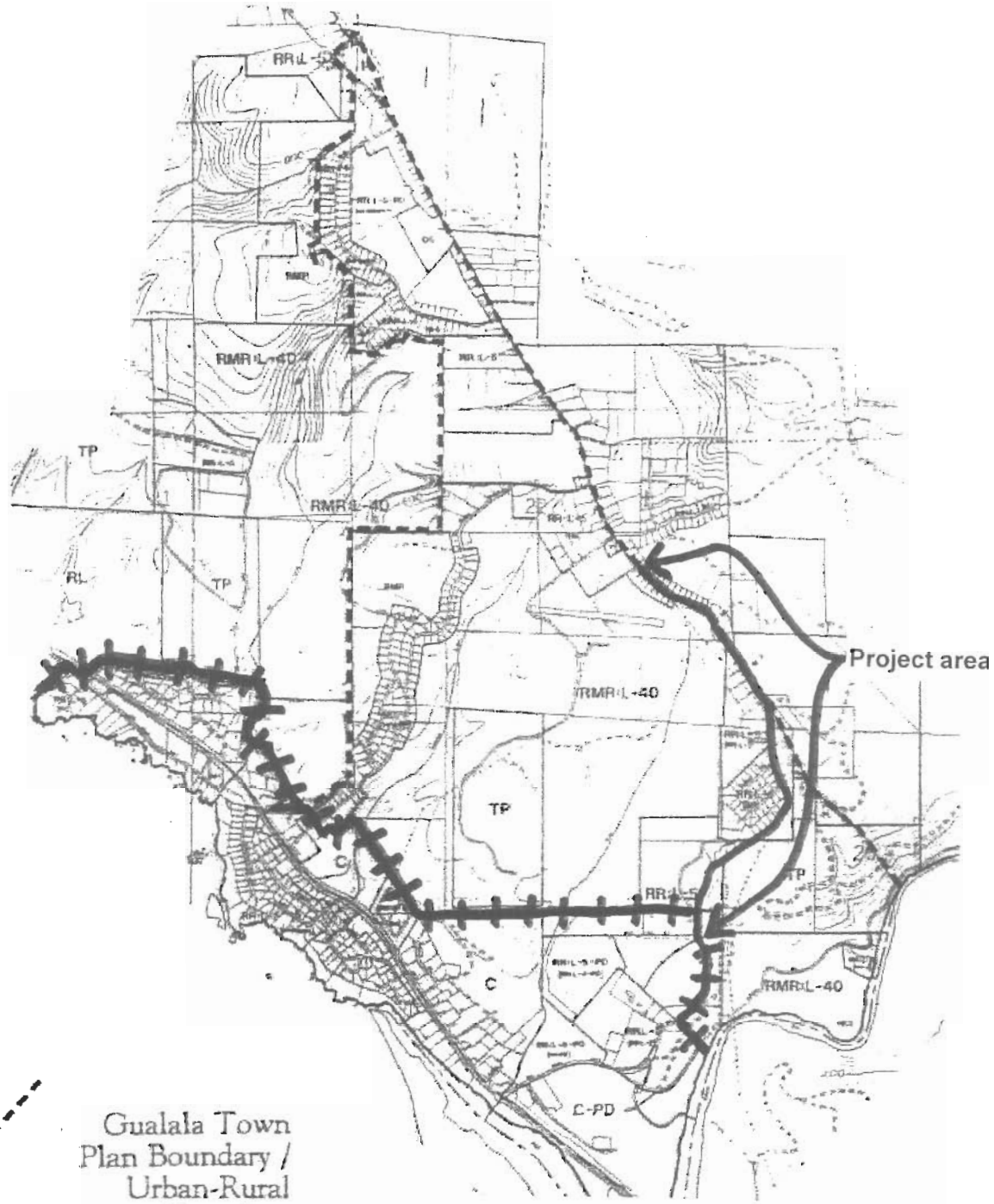


EXHIBIT NO. **4**

APPEAL NO.

A-1-MEN-07-043

GUALALA COMMUNITY SERVICES DISTRICT

URBAN/RURAL BOUNDARY MAP

COUNTY OF MENDOCINO
DEPARTMENT OF PLANNING AND BUILDING SERVICES
501 LOW GAP ROAD · ROOM 1440 · UKIAH · CALIFORNIA · 95482

RAYMOND HALL, DIRECTOR
Telephone 707-463-4281
FAX 707-463-5709
pbs@co.mendocino.ca.us
www.co.mendocino.ca.us/planning

RECEIVED
OCT 16 2007
CALIFORNIA
COASTAL COMMISSION

October 2, 2007

NOTICE OF FINAL ACTION

Action has been completed by the County of Mendocino on the below described project located within the Coastal Zone.

CASE#: CDU 9-2005
DATE FILED: 3/25/2005
OWNER: MENDOCINO COUNTY DEPARTMENT OF TRANSPORTATION
APPLICANT: GUALALA COMMUNITY SERVICES DISTRICT
AGENT: MATRIX ENVIRONMENTAL PLANNING
REQUEST: Coastal Development Use Permit to extend a 6-inch diameter wastewater main from an existing Gualala Community Services District system to serve a proposed school in Gualala. The addition to the main would extend approximately 1.25 miles and would be located entirely within a County road right-of-way. Actual service connection to the school would be installed as part of the school construction. The scope of the project is to serve only the proposed school and no other connections will be provided.
LOCATION: Partially within the Coastal Zone, approximately 1 mile northeast of the Town of Gualala. The project follows a right-of-way segment beneath Old Stage Road (CR# 502), beginning approximately 0.9 mile north of Highway 1, at intersection of Bodhi Tree Lane (Private) and extending to access road to proposed Gualala school site (formally Bowers Field landing strip), located along Old Stage Road.
PROJECT COORDINATOR: IGNACIO GONZALEZ

ACTION TAKEN:

The Planning Commission, on September 20, 2007, approved the above described project. See attached documents for the findings and conditions in support of this decision.

The above project was not appealed at the local level.

This project is appealable to the Coastal Commission pursuant to Public Resources Code, Section 30603. An aggrieved person may appeal this decision to the Coastal Commission within 10 working days following Coastal Commission receipt of this notice. Appeals must be in writing to the appropriate Coastal Commission district office.

Attachments

cc: Coastal Commission
Assessor

EXHIBIT NO. 5
APPEAL NO.
A-1-MEN-07-043 - GUALALA COMMUNITY SERVICES DIST.
NOTICE OF FINAL LOCAL ACTION & COUNTY STAFF REPORT (1 OF 23)

COUNTY OF MENDOCINO
DEPARTMENT OF PLANNING AND BUILDING SERVICES
501 LOW GAP ROAD · ROOM 1440 · UKIAH · CALIFORNIA · 95482

RAYMOND HALL, DIRECTOR
Telephone 707-463-4281
FAX 707-463-5709
pbs@co.mendocino.ca.us
www.co.mendocino.ca.us/planning

OCTOBER 2, 2007

FINAL FINDINGS AND CONDITIONS OF APPROVAL
CASE# CDU 9-2005 – MENDOCINO COUNTY DEPARTMENT OF TRANSPORTATION
SEPTEMBER 20, 2007

The Planning Commission approves Coastal Development Use Permit # CDU 9-2005 subject to the conditions of approval recommended by staff further finding:

1. That adequate utilities, access roads, drainage and other necessary facilities have been or are being provided. The proposal will result in the construction and installation off a 6-inch diameter PVC plastic wastewater line in the public right-of-way of Old Stage Road, approximately 6,500 feet in length, which is to be installed prior to use and occupancy of the proposed Gualala Elementary School.

2. That the proposed use will not constitute a nuisance or be detrimental to the health, safety, peace, morals, comfort or general welfare of persons residing or working in or passing through the neighborhood of such proposed use, or be detrimental or injurious to property and improvements in the neighborhood or to the general welfare of the County. The proposed project will provide a public benefit by providing the necessary infrastructure necessary for the wastewater removal for the proposed Gualala Elementary School, thereby minimizing any potential health and safety impacts that could be created without such infrastructure.

3. That such use preserves the integrity of the zoning district. Pursuant to the County Zoning Ordinance, school facilities are permitted subject to securing a Use Permit.

RECOMMENDED CONDITIONS:

A. Conditions, which must be complied with for the duration of this permit:

1. This permit shall become effective after all applicable appeal periods have been expired or appeal processes exhausted. Failure of the permittee to make use of this permit within two years or failure to comply with payment of any fees within specified time periods shall result in the automatic expiration of this permit.

2. The use and occupancy of the premises shall be established and maintained in conformance with the provisions of Title 20 of the Mendocino County Code unless modified by conditions of the use permit.

3. The application along with supplemental exhibits and related material shall be considered elements of this entitlement and that compliance therewith be mandatory, unless a modification has been approved by the Planning Commission.

4. This permit shall be subject to revocation or modification by the Planning Commission upon a finding of any one (1) or more of the following grounds:

   a. That such permit was obtained or extended by fraud.

b. That one or more of the conditions upon which such permit was granted have been violated.

c. That the use for which the permit was granted is so conducted as to be detrimental to the public health, welfare or safety, or as to be a nuisance.

Any such revocation shall proceed as specified in Title 20 of the Mendocino County Code.

5. This permit is issued without a legal determination having been made upon the number, size or shape of parcels encompassed within the permit described boundaries. Should, at any time, a legal determination be made that the number, size or shape of parcels within the permit described boundaries are different than that which is legally required by this permit, this permit shall become null and void.

6. This permit is subject to the securing of all necessary permits for the proposed development and eventual use from County, State and Federal agencies having jurisdiction. Any requirements imposed by an agency having jurisdiction shall be considered a condition of this permit.

7. It shall be the responsibility of the applicant to ensure that contractors engaged to perform work on the site are aware of the conditions of this permit and that all work performed is in compliance with applicable conditions.

B. Conditions, which must be met prior to the use and/or occupancy and for the duration of the permit:

1. Adequate drainage controls shall be constructed and maintained in such a manner as to prevent contamination of surface and/or ground water, and to prevent erosion.

2. Adequate construction and post-construction best management practices shall be implemented to prevent contamination of surface and/or ground water, and to prevent erosion. During construction activities, temporary erosion control measures shall be in places at the end of each day's work, and shall be maintained until permanent protection is established. All earth moving activities shall be conducted between May 15th and October 15th of any given calendar year unless the County of Mendocino or other agency having jurisdiction approves wet weather construction protocols to be implemented and maintained during the course of construction.

3. The applicant shall endeavor to protect as much native, non-invasive vegetation on the site as possible, removing only as much required to construct residential and accessory structures, including driveways and landscaping.

4. The proposed sanitary sewer shall be constructed within Old Stage Road (CR 502) pursuant to encroachment procedures administered by the Mendocino County Department of Transportation, and in accordance with improvement plans prepared by a Civil Engineer and approved by the Mendocino County Department of Transportation. The sanitary sewer shall be installed by the directional bore method, to the extent feasible, to minimize impacts to the existing County road pavement. The improvement plans shall be accompanied by a Geotechnical Report, prepared by a Registered Geotechnical Engineer, which evaluates the feasibility of the proposed directional bore, examines unstable areas of the roadway, and provides recommendations for the design and construction of the sanitary sewer. Appropriate measures shall be implemented to minimize the impact of the proposed facility on any unstable areas and incorporate design features, such as pipeline location and materials, which minimize the risk of pipeline rupture should the road fail.

5. During construction of the project, the Gualala Community Services District (GCSD) and its contractors shall comply with all Mendocino County Air Quality Management District regulations. Reasonable precautions shall be employed during construction operations to prevent release of fugitive dust. Precautions as follows:

a. Any stationary onsite internal combustion engines over 50 horsepower (i.e. large power generator or pumps) may require a permit from the District, depending on fuel source and level of operation.

b. All grading activities must comply with District regulation Rule 430 regarding fugitive dust emissions.

6. The proposed wastewater pipeline extension shall be established in conformance with all mitigation measures as contained in the Initial Study and Mitigated Negative Declaration, dated January 2005, prepared by Matrix Environmental Planning on behalf of the Gualala Community Services District, including the Biological/Botanical report prepared by Jane Valerius, Environmental Consulting, dated December 14, 2004.

7. Exclusion fencing shall be installed prior to construction activities occurring and said fencing shall be maintained for the duration of the construction along the east side of Old Stage Road where it is adjacent to the wetland areas to contain the construction activity within the work area and preclude inadvertent encroachment on the sensitive habitat.

8. To prevent the take of individuals, a nesting bird survey shall be conducted one week prior to ground breaking if construction is to occur between the months of February 15 and August 31. If nesting birds are found, the California Department of Fish and game shall be consulted as to the appropriate action and protocol.

9. Construction hours shall be limited to the hours of 8:00 a.m. to 6:00 p.m. on non-holiday weekdays, with no construction occurring on holidays. All stationary equipment (e.g., generators, compressors, etc.,) shall be shielded from all adjacent residences; all equipment shall be properly maintained and muffled; and construction traffic shall not be permitted before 7:30 a.m.

10. The proposed wastewater pipeline is specifically limited to providing wastewater service to the proposed Gualala Elementary School. No residential connections to this extended line may be provided unless approved by the County of Mendocino, priority should be given to failed septic systems in the area.

11. The construction contractor shall ensure that provisions will be available at all times to accommodate emergency vehicles at locations where access to adjacent properties may be blocked. Such measures may include the use of steel plates over excavations, short detours, and/or alternative routes

12. Written verification shall be submitted from the Department of Forestry and the South Coast Fire District to the Department of Planning and Building Services that adequate fire safe measures have been met to the satisfaction of the Department of Forestry and the fire district.

13. Relative to repairs of inevitable future problems that may occur to the proposed waste water line, such as line breaks, and leaks, and to minimize problems and tearing up the roadway, the contractor shall install a copper locator wire with all segments of the pipe to be demonstrated that the connections are correct and a continuous circuit exists.

14. All equipment fueling and servicing shall occur at a designated location (i.e. staging area on the site or a local service station; additionally, any spills resulting from fueling or hydraulic line breaks/leakage shall be contained and cleaned up immediately; Fluids drained from construction equipment and machinery shall be collected in a leak proof container(s) and disposed of at an appropriate disposal facility; no refueling or servicing shall be conducted without absorbent materials (i.e. absorbent pads, mats, granules, etc.).

15. If contaminated soils are encountered during construction, proper storage and/or disposal of any

soils that meet the definition of a hazardous waste shall be provided. Such soils will be removed for off-site treatment or disposal at an appropriate landfill.

16. In the event that archaeological resources are encountered during construction on the property, work in the immediate vicinity of the find shall be halted until all requirements of Chapter 22.12 of the Mendocino County Code relating to archaeological discoveries have been satisfied.

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RAYMOND HALL, DIRECTOR
Telephone 707-463-4281
FAX 707-463-5709
pbs@co.mendocino.ca.us
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August 24, 2007

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN THAT the Mendocino County Planning Commission at its regular meeting on Thursday, September 20, 2007, at 9:00 a.m., to be held in the Board of Supervisors Chambers, 501 Low Gap Road, Ukiah, California, will conduct a public hearing on the following project at the time listed or as soon thereafter as the item may be heard.

CASE#: CDU 9-2005
DATE FILED: 3/25/2005
OWNER: MENDOCINO COUNTY DEPARTMENT OF TRANSPORTATION
APPLICANT: GUALALA COMMUNITY SERVICES DISTRICT
AGENT: MATRIX ENVIRONMENTAL PLANNING
REQUEST: Coastal Development Use Permit to extend a 6-inch diameter wastewater main from an existing Gualala Community Services District system to serve a proposed school in Gualala. The addition to the main would extend approximately 1.25 miles and would be located entirely within a County road right-of-way. Actual service connection to the school would be installed as part of the school construction. The scope of the project is to serve only the proposed school and no other connections will be provided.
LOCATION: Partially within the Coastal Zone, approximately 1 mile northeast of the Town of Gualala. The project follows a right-of-way segment beneath Old Stage Road (CR# 502), beginning approximately 0.9 mile north of Highway 1, at intersection of Bodhi Tree Lane (Private) and extending to access road to proposed Gualala school site (formally Bowers Field landing strip), located along Old Stage Road.
PROJECT COORDINATOR: IGNACIO GONZALEZ
ENVIRONMENTAL DETERMINATION: The Gualala Community Service District is the lead agency responsible for project compliance with the California Environmental Quality Act. A Negative Declaration has been prepared for the above project by the Gualala Community Service District. Mendocino County, as a responsible agency, must consider the Negative Declaration adopted by the Gualala Community Service District, but is not responsible for making the environmental determination for the project. The staff report and notice are available for public review at 501 Low Gap Road, Room 1440, Ukiah, California and at 790 South Franklin Street, Fort Bragg, California. The staff report and notice will be available on the Department of Planning and Building Services website at www.co.mendocino.ca.us/planning.

Your comments regarding the above project are invited. Written comments should be submitted to the Department of Planning and Building Services, at 501 Low Gap Road, Room 1440, Ukiah, California 95482, no later than September 19, 2007. Oral comments may be presented to the Planning Commission during the public hearing.

The Planning Commission's action regarding the item(s) shall constitute final action by the County unless appealed to the Board of Supervisors. If appealed, the Board of Supervisors action shall be final except that an approved coastal development project may be appealed to the Coastal Commission in writing within 10 working days following Coastal Commission receipt of a Notice of Final Action on the project. To file an appeal of the Planning Commission's decision, a written statement must be filed with the Clerk of the Board with a filing fee within 10 calendar days of the Planning Commission's decision. If you challenge the project in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the Department of Planning and Building Services or the Planning Commission at, or prior to, the public hearing. All persons are invited to appear and present testimony in this matter.

Additional information regarding the above noted item may be obtained by calling the Department of Planning and Building Services at 463-4281, Monday through Friday, 8:00 a.m. through 5:00 p.m. Should you desire notification of the Planning Commission's decision you may do so by requesting notification in writing and providing a self-addressed stamped envelope to the Department of Planning and Building Services.

RAYMOND HALL, Secretary to the Planning Commission

OWNER:

MENDOCINO COUNTY DEPT. OF TRANSPORTATION
340 LAKE MENDOCINO DRIVE
UKIAH, CA 95482

APPLICANT:

GUALALA COMMUNITY SERVICES DISTRICT
P.O. BOX 124
GUALALA, CA 95445

AGENT:

ERNIE RALSTON
MATRIX ENVIRONMENTAL PLANNING
301-C EAST STREET
HEALDSBURG, CA 95448

REQUEST:

Coastal Development Use Permit to extend a 6-inch waster water main from an existing Gualala Community Services District system to serve a proposed school in Gualala. The addition to the main would extend approximately 1.25 miles and would be located entirely within a county road right-of-way. Actual service connection to the school would be installed as part of the school construction. The scope of the project is to serve only the proposed school and no other connections will be provided.

LOCATION:

Partially within the Coastal Zone, approximately 1 mi NE of the Town of Gualala. The project follows the right-of-way segment beneath Old Stage Road (CR# 502), beginning approximately 0.9 mi north of Highway 1 at the intersection of Bodhi Tree Lane (private lane) and extending to access road to the proposed Gualala School site (formerly Bowers Field landing strip), located along Old Stage Road.

TOTAL ACREAGE:

N/A

ZONING:

Remote Residential (RMR)/Rural Residential (RR1/RR5)/ General Industrial (I-2) /Timberland (TP-160)

ADJACENT ZONING:

North:	Rural Residential (RR-1)
East:	Rural Residential/ Timber Production Zone/ Limited Industrial (RR-1/RR-5/TP-160/I-1)
South:	Rural Residential/ Remote Residential (RR-5/RMR-40)
West:	Rural Residential/ Remote Residential (RR-5/RMR-40)

GENERAL PLAN:

North:	Remote Residential (RMR-40)
East:	Rural Residential/ Remote Residential/ Forest Lands (RR-5/RMR-40/FL-160)
South:	Rural Residential/ Remote Residential (RR-5/RMR-40)
West:	Rural Residential/ Remote Residential (RR-5/RMR-40)

EXISTING USES:

County Road

SURROUNDING LAND USES:

North:	Residential
East:	Residential/Industrial/Timberlands
South:	Residential/Timberlands

	West:	Residential/Timberlands
SURROUNDING LOT SIZES:	North:	0.22+/- to 10.5+/- acres
	East:	0.33+/- to 24+/- acres
	South:	1.6+/- to 40+/- acres
	West:	0.34+/- to 120+/- acres

SUPERVISORIAL DISTRICT: 5

OTHER RELATED APPLICATIONS ON SITE OR SURROUNDING AREA: Coastal Development Use Permit for the construction of a new K-5 elementary school to be phased as follows: Phase 1 to include a 3,118 sq. ft. library/administration building, four (4) 2,215 sq. ft. classroom buildings, parking lot and playground; Phase 2 to include four (4) 2,215 sq. ft. classroom buildings and a playground; Phase 3 to include an 8,607 sq. ft. multi-purpose building and parking lot. The project also includes associated major vegetation removal (5+/- acres), grading (5,400 cy cut and 3,800 cy fill), road improvements, lighting and sign, for a total of 29,447 sq. ft. of gross building area, 105,453 sq. ft. of paved area and 50,100 sq. ft. of landscaped area on a 10.5+/- acre parcel. Coastal Development Variance to the 28-foot height limit for the construction of a 39'-6" high multipurpose building and a 32'-9" high library/administration building. The proposed school is located within the Coastal Zone, 1.25+/- miles NE of downtown Gualala, on the E side of Old Stage Road (CR 502), 0.2+/- miles S of its intersection with Pacific Woods Drive (CR 524), formerly Bower's Field landing strip. CDU 10-2004/CDV 10-2004 is to be processed concurrently with the request for the proposed Gualala Community Services District Waste Water extension proposal.

PROJECT DESCRIPTION: The applicant, the Gualala Community Services District (GCSD), is requesting approval of a Coastal Development Use Permit to extend a 6-inch diameter wastewater collection main along Old Stage Road from Zone 2 to Zone 4 to serve the proposed Gualala Elementary School. The Arena Union Elementary School District is proposing the new school at the site of the former Bowers Field landing strip. The main extension will begin at the termination point of the existing system approximately 0.9 mile north of Highway 1, at the junction of Bodhi Tree Lane (private road) and Old Stage Road, and end at the access road to the proposed Gualala School site. The length of the proposed main extension is approximately 6,500 feet and will be located completely within the County right-of-way, typically in the center of one of the travel lanes. The service connection from the school to the main will be installed along the school entrance road as part of the school construction. The scope of the project is to serve only the school, with no residential and commercial service connections to be provided as part of this project.

The primary construction technique for the installation of the PVC plastic pipe will be achieved by directional bores, drilled using a surface-operated drilling device angled into the ground and directed to its destination by remote control. Surface excavation would be required for the location of bore pits (for starting and ending bores and pipe tie-in points), and the placement of maintenance access holes. A nominal 10-ft. x 80-ft. workspace would be required for the drilling operations, occupying the paved travel lane and the disturbed/maintained road shoulder. All construction activities are to be limited to the paved travel lane and adjacent disturbed/maintained road shoulder. The majority of the drilling equipment would be staged on the paved area. The bore crew would consist of 6 to 8 people. Bores are generally drilled at a rate of 500 to 700 feet per day. Each bore would take approximately one to two days to complete. Bentonite slurry drilling fluid is to be utilized to help lubricate the drill bit, prevent the bore tunnel from collapsing, and carry drill cuttings to the surface.

ENVIRONMENTAL REVIEW: The Gualala Community Services District (GCSD) is the lead agency responsible for compliance with the California Environmental Quality Act (CEQA). The GCSD has prepared a Mitigated Negative Declaration along with mitigation measures to minimize impacts associated with the proposal, and was circulated through the State Clearinghouse (SCH 2005022008). Pursuant to CEQA Guidelines Section 15050(b) "... the decision making body of each responsible agency shall consider the lead agency's EIR or Negative Declaration prior to acting upon or approving the project. Each responsible agency shall certify that its decision-making body reviews and considers the information contained in the EIR or Negative Declaration on the project." Mendocino County has jurisdiction pursuant to its coastal permit authority and is a responsible agency as defined within Section 15051 of the CEQA Guidelines. A copy of the GCSD's Initial Study and Mitigated Negative Declaration is being provided to the Commission members for their ease of review and clarification of issues.

The following is a discussion of environmental impacts and mitigation measures identified in the Mitigated Negative Declaration. The construction of the waste water line is to be limited to the paved travel way and disturbed/maintained shoulders, thus the GCSD will avoid wetlands, watercourses, and sensitive habitats during construction. The use of directional boring as the primary construction technique will also contribute to the minimization of potential impacts.

Earth Movement (Items 1a,1b,1c, 1g) According to the Gualala Community Services District's environmental documentation (Initial Study & Negative Declaration), the proposed waste water line will be located in the Alquist-Priolo Special Studies Zone associated with the San Andreas Fault. The District's Initial Study noted that while the proposed wastewater line may be exposed to seismic related effects, plastic material is sufficiently flexible to withstand such effects and this impact is considered to be less than significant.

The pipeline will be installed in the paved road area so topsoil will not be affected. Expansive soils will not affect the underground pipeline and the project represents an alternate wastewater disposal system due to low permeability soils. Old Stage Road has historically been a stable road and has not experienced landslides, except for a 100-foot segment at approximate milepost 0.65. The outside lane of this segment failed many years back and still requires periodic reinforcement by County road maintenance to keep the slope in check. The asphalt pavement surface in the outside lane at this point is presently wrinkled, indicating subsurface settlement. Should outside lane of this road segment fail, the proposed wastewater pipeline may rupture and result in the discharge of untreated wastewater, representing a *potentially significant impact.*

The Mendocino County Department of Transportation Encroachment Permit Procedures require that plans for any sanitary sewage facilities to be constructed within the County Road right-of-way shall be prepared by a properly Registered Civil Engineer. The Civil Engineer preparing the plans will review the facility route and have any potentially unstable areas reviewed by a qualified Registered Geotechnical Engineer, at his/her discretion. The Civil Engineer preparing the plans may incorporate design features, such as subtle manipulation of pipeline location and materials, which minimize the risk of pipeline rupture should the road fail. Implementation of this mitigation measure would reduce this potentially significant impact to a less than significant level (See Condition Number B-4). Conditions B-1, B-2, and B-3 are also recommended to address earthmoving activities, including erosion and water quality impacts resulting from earth disturbances.

Air Quality (Item 2a): According to the environmental document, it states that Mendocino County is in "attainment" for all state standards except PM-10 (respirable particulates 10 microns or smaller).

Relative to potential impacts, the only emissions associated with the project will be from the operation of construction equipment for the four week construction period and will not violate any air quality standard or air quality plan, and will produce no odors. However, to minimize local air quality effects on residents along Old Stage Road from the emissions associated with concentrated construction activity, the contractor will be instructed in the contract documents to minimize the idling time of diesel powered equipment. As such, the project should have *no impact* or a *less than significant impact* on air quality. Although, staff does not question or dispute this mitigation, staff will recommend that in addition all required permits and clearances from the Mendocino County Air Quality Management District be secured prior to commencement of any construction of the wastewater line occurs. Compliance with Condition Number B-5 will address potential air quality impacts that may result from the short-term construction activities associated with the installation of the waste water pipeline.

Water (Item 3b, 3c, 3d,3e,3h, and 3i) As Identified on the FEMA Flood Insurance Rate Map for the area in question, the project is not within a 100-year flood zone. The primary hydrologic feature in the area is the Gualala River, which flows to the ocean just south of the project. The North Gualala Water District whose existing pipelines also occupy the County roads in the project area supplies local domestic water in the area. The segment of Old Stage Road used for the proposed project climbs a south-facing side hill rising up to the top of the ridge where it terminates at the service connection to the proposed school. Surface runoff is diverted into natural drainages via road-side ditches and culverts as there is no formal storm water collection system in the project area. The project will not utilize ground water for construction or operations, adversely affect water quality or affect any waterway or stream. As such, there will be *no impact* to Hydrology and Water Quality.

Plant/Animal Life (Items 4a,4b,4c,5a,5b) According to the initial study prepared for the waste waster line project, there is limited vegetation within the road shoulder of Old Stage Road. Most of the roadside is occupied by rural residential homes and landscaped yards. Native vegetation within 50 feet of the paved roadway consists of forested vegetation dominated by native trees such as coast redwood, pine, and Douglas fir and patches of non-native trees such as blackwood acacia, and blue gum eucalyptus. Additionally, there is a thick understory of shrubs, including manzanita, toyon, and evergreen huckleberry, bracken fern, fescue grass, and various other grasses. Much of the roadside vegetation consists of patches of weeds including French Scotch broom, Jubata grass and Himalayan blackberry. There were also several disturbed areas that were identified as potential staging areas. These disturbed areas also included an old lumber area and a ball field. The report also noted that the headwaters for China Gulch occur near Old Stage Road in the northern portion of the project area. However, it does not appear that the roadway crosses the headwaters.

Relative to wildlife habitats, many of the trees adjacent to the roadway are small in diameter and do not provide the same habitat for nesting passerines (perching birds) or roosting bats as larger trees. It is also noted that the existing roadway is located in a rural residential development and provides a movement corridor along the shoulders of the roadway. However, the proposed project will not impede wildlife movement or remove the corridor.

The GCSD's Initial Study & Mitigated Negative Declaration also addressed special status plants and animals, and noted the following:

Six special status plant species could potentially occur within the habitat types found within the project area. These are: Humboldt milk-vetch; Bolander's reed grass; swamp harebell, coast lily; running pine or club moss; and maple leaved checkerbloom. A field survey was completed which did not find any of the special status species and further concluded that because of disturbed nature of the road, road shoulders, and the presence of disturbed or altered areas such as residential development, old lumber sites, and ball fields, it that it was unlikely that any special status plants would occur within the area proposed for the trenching or staging of equipment.

Relative to special status animal species, the Gualala Community Services District's environmental document noted that based on a literature review of the California natural Diversity Data Base; the Special Animals list, the following eight special status wildlife species could potentially occur within the habitat types found within the general project area:

- Mammals: red tree vole & Pale big-eared bat;
- Birds: Rhinocerous auklet & tufted puffin
- Amphibians: Northern red-legged frog;
- Fish: Gualala Roach
- Invertebrates: Monarch butterfly & Behren's silverspot butterfly

The GCSD's Initial Study/Mitigated Negative Declaration further indicated that based on a field survey conducted of the project area, none of the species noted above have a potential for occurrence at the project site.

The environmental document prepared by the GCSD concluded that the installation of the pipeline within the paved travel lanes and disturbed/maintained shoulders represents the least environmentally damaging alternative for installation of the pipeline between the new Gualala Elementary School and the terminus of the District's existing system. It is further noted that there will be no impact to any special status plants. Additionally, the Negative Declaration for the project further states that the project as proposed will not interfere substantially with any migrating movements of wildlife species and will not conflict with any local policies or ordinances.

So as to insure that the potential for impacts is reduced to less than significant, Conditions Numbers B-6, B-7, and B-8 are recommended.

Noise (Items 6a and 6b): The Initial Study/Negative Declaration prepared for the project indicates that there are approximately 36 residences that front Old Stage Road on the pipeline segment. Noise associated with the proposed project will be limited to the construction phase of the pipeline project. Construction equipment will consist of water trucks, an HDD drilling machine, rubber tired backhoe, trencher and dump truck. Typically, the

maximum noise generated by these types of construction equipment ranges from 75 to 95 dBA at 50-feet. The Negative Declaration finds that residences fronting on Old Stage Road and some residences on Gualala Court will experience construction noise levels greater than ambient noise levels, with sensitive receptors only being exposed to a few days of noise along the pipeline. So as to mitigate project impact noise, staff recommends the following mitigations be incorporated into the entitlement:

Construction hours shall be limited to the hours of 8:00 a.m. to 5:00 p.m. Monday through Friday, with no construction activities occurring on holidays; all stationary equipment (e.g., generators, compressors, etc.) shall be shielded from residences along Old Stage Road; all equipment shall be properly maintained and muffled; and construction traffic shall not be permitted before 7:30 a.m. Provided that these recommended mitigation measures are implemented, staff believes that the short term construction noise impacts will be minimal (see Condition Number B-9).

Land Use (Item 8a): The purpose of the new wastewater line is to serve the proposed school only, with no residential connections proposed as part of the wastewater extension. The Gualala Town Plan states that future residential development/growth should be concentrated with the Town Plan area, thereby relieving development pressures on resource lands in the outlying areas. The Gualala Town Plan also notes that new development within the GCSD assessment/service area cannot proceed unless connection to the wastewater treatment system has been authorized by the GCSD.

Although, the proposal for the wastewater system extension is only to serve the proposed school, concern remains about the growth inducing potential of the extension of service to the area. The GCSD is divided into four zones, with Zone 1 and 2 being the commercial and residential development closest to the coast, and Zones 3 and 4 being those more easterly areas lying up the hill and along Old Stage Road. The school site is located within Zone 4. Within the traffic study prepared by W-Trans, they site a Winzler and Kelly Consulting Engineers study prepared in 2003 that concluded if no changes were made to existing zoning, 181 single family residential units could be developed in Zones 3 and 4 as a result of the sewer service expansion. This figure is based on the number of existing undeveloped parcels and the number of parcels that could potentially be subdivided, again based on existing zoning. Rau and Associates prepared a cumulative impact analysis for the GCSD sewer line extension relative to the proposed school. The impact analysis, dated January 12, 2006, prepared by Rau and Associates has provided estimated build out figures addressing the potential for growth inducement resulting from expanded sewer services. Relative to the sewer line extension, the report noted as following:

1. Detailed residential buildout projections and analyses are included in the Gualala Town Plan, as are goals and policies to address projected population growth. The figures we calculated may be used to supplement the information provided in the Town Plan.

2. At this time the sewerline extension is intended to serve the elementary school ONLY. Soil testing has demonstrated that the soils on the school property will not support an onsite septic system; therefore the only means for developing the property as a school would be if sewer services were made available. The property was donated to the School District, and as such is the only economically feasible location to develop a school.

3. Construction of an elementary school in Gualala is the result of a significant need as identified in Section 2.8 of the Gualala Town Plan:

   "The substantial additional residential development proposed within the Town Plan area could result in a significant increase in the population of school-age children. The existing elementary school and high school serving the Gualala area are in Point Arena. School officials indicate that as of 1997 the elementary school is approaching maximum capacity. The Gualala area already has the largest population of school-aged children attending these schools. Most children take the bus to and from school - a significant expense to the school district. Construction of a local school could enable many children to walk to school. The school district presently owns a 10 acre site adjoining, but outside of, the Town Plan area. It is possible that another site within the Town Plan area may be acquired at a future date.
   Goal G2.8-1 To provide for development of needed educational facilities for the anticipated growth in the student population."

According to the Town Plan, the school is being proposed ***in response to*** *an increasing population in order to serve the needs of the community. Extension of the sewer line is necessary if the school is to be built.*

According to Rau and Associates, the following table identifies a number of different scenarios based on whether potential growth resulting from the sewer line expansion would occur (a) only as far as the school property or (b) within the entirety of GCSD Zones 3 & 4. Again, the school site is located within Zone 4. Under each of these scenarios the number of residential parcels that could be created based on *existing* General Plan classification and zoning was determined, as well as the number of parcels that could be created subject to General Plan amendments and rezoning. Within the latter category, the number of parcels created is based on lot sizes of 5 acres, 1 acre, and 6,000 square feet. Lot sizes of 6,000 square feet have been considered since the identified areas are served by a local water district (where public sewer and water service is available the minimum lot size is 6,000 square feet). Calculations reflect an 80 percent build out scenario.

Table 1. Buildout Projections: Includes the Area in Zone 4 from the Beginning of the Sewerline Extension to the Proposed School Site

General Plan Classification	Number of parcels that could be created based on existing GP classification	Number of parcels that could be created if the GP and zoning were changed to allow for increased density		
		LOT SIZE		
		5 acres	1 acre	6,000 square feet
FL160	0	9	54	404
RMR40	3	36	216	1615
RR5	2	N/A	22	187
RR5(RR2)	3	N/A	5	76
RR5(SR)	58	N/A	N/A	N/A
RR1	16	N/A	N/A	123
TOTAL	**82**	**45**	**297**	**2,405**

Table 2. Buildout Projections: Includes all of Zones 3 and 4

General Plan Classification	Number of parcels that could be created based on existing GP classification	Number of parcels that could be created if the GP and zoning were changed to allow for increased density		
		LOT SIZE		
		5 acres	1 acre	6,000 square feet
FL160	0	9	54	404
RMR40	2	46	300	2276
RMR20	0	5	37	295
RR5	2	N/A	22	187

RR5(RR2)	3	N/A	5	76
RR5(RR1)	8	N/A	N/A	156
RR5(SR)	58	N/A	N/A	N/A
RR1	30	N/A	N/A	314
TOTAL	**101**	**60**	**418**	**3,708**

The following rational has been provided by Rau and Associates in their analysis of potential growth inducement impacts that could be attributed to the proposed project.

1. The above figures are significantly inflated inasmuch as they were calculated based on existing acreage and General Plan classifications only, and do not take into account any development constraints such as topography or timber conversion, or the feasibility of such increased density. Therefore, projected subdivision under the existing General Plan and zoning is inflated.

2. Any General Plan amendment, rezoning or subdivision would require CEQA review, including an analysis of all potential General Plan policy and environmental impacts resulting from proposed projects. Any residential development proposed within the Coastal Zone, including construction of a single-family residence, would require a Coastal Development Permit, also a discretionary process. For this reason, the analysis should be restricted to an analysis of impacts under the existing General Plan classifications. When the GCSD decides to expand into Zones 3 and 4, a complete environmental assessment, and likely an EIR, will be required at that time.

3. The proposed project does not request a General Plan or zoning density increase, but is merely requesting that services be provided to a proposed public use. The environmental document and any impacts that remain of concern to the lead agency, notwithstanding the arguments herein to the contrary, can be fully mitigated by adopting a mitigation that restricts services to the proposed use until further environmental review is performed in connection with any future discretionary project.

4. Gualala Town Plan policies and the Housing Element favor higher density, concentrated development within the central town area. These policies would tend to discourage density increases in this area that will rely upon limited water and sewer capacity.

The Gualala Town Plan provides the planning goals and policies establishing a scenario for growth over a 30 year planning horizon. The plan stipulates that no additional development may occur in the GCSD zones 1 and 2 unless a wastewater connection with GCSD has been authorized. The proposed wastewater pipeline extension is proposed to extend into zone 4, which is presently not served. While the analysis provided does illustrate the potential for growth inducement, the proposed extension of the waste water pipeline is specifically limited to providing waste water service to the proposed school and no residential connections are to be provided (Condition Number B-10).

Natural Resources (Item 9a): The project site is located partially within the Coastal Zone and has neighboring land use designations of RMR 40; FL 160; I; RR1; and RR5. The immediate surrounding area is primarily characterized by rural residential development with a mixed conifer and deciduous coastal mixed conifer hardwood woodlands. As previously noted, the pipeline corridor (Old Stage Road) has been developed with approximately 36 residences, situated on both sides of the roadway. The proposed wastewater line is to be installed within the public right-of-way of Old Stage Road and will not encroach upon resources lands. No areas of Williamson Act or Timber Production zoning will be impacted by the project as it is all within the roadway area. One area of the project will be on lands adjoining lands zoned TP, but no impacts to timber resources is anticipated. The proposal will not involve the removal of timber for the proposed wastewater line, thus no impacts are anticipated upon timber resources as a result of the proposal.

Based on the discussion above, it is not anticipated that the proposal will result in conflicts with the Coastal Element policies noted or other aspects of the Coastal Element relative to resources.

Transportation/Circulation (Items 12a, 12b, 12c and 12f): Pursuant to the environmental document prepared by the GCSD, Old Stage road is one of two primary access routes to the residential development on the ridge east of State Highway One that forms the eastern side of Gualala. The other access is via Pacific Woods Road. Both of these roads are county maintained paved roads, approximately 20-feet in width, and are operating at Level of Service A (free flow conditions). Old Stage Road and Pacific Woods Road are classified as minor collectors roads.

The sewer line extension project will not, of itself generate any new traffic, however, the W-Trans study for the proposed Gualala Elementary School concludes that 323 new daily trip ends, including 105 trips during the a.m. peak hour and 70 trips during the school departure period would result from that project. The addition of these trips to existing base volumes at the three study intersections would have less than significant impacts on the level of service. Relative to construction activities, Condition Number B-11 has been provided to ensure that provisions will be available at all times to accommodate emergency vehicles at locations where access to adjacent properties may be blocked.

Public Service (Item 13a): The project was referred to both the California Department of Forestry and also to the South Coast Fire District. As of the writing of this staff report, no comments have been received by either agency. Staff would however, require that Condition Number B-12 be required to mitigate any impacts the construction activities may have upon existing fire services.

Utilities (Item 15A). The subject property is within the North Gualala Water Company's (NGWC) service area for domestic water. Wastewater disposal is provided by the GCSD in zones 1and 2 of it's service area and by individual septic systems elsewhere in the project area. Storm water runoff is collected in roadside ditches and diverted into natural drainages. Condition B-13 has been recommended in order to address maintenance and repair of the proposed wastewater line.

Human Health/Hazards (Items 16a, 16b and 16c): The Negative Declaration for the proposed project states that the primary issue of concern relative to hazardous materials handling and contamination are worker health and safety and public exposure to hazardous materials during construction and waste handling. Hazards could potentially result from construction related fuel spills and the unlikely excavation of previously known contaminated materials from trenching along Old Stage Road.

It is not anticipated that the proposed project would require long-term storage, treatment, disposal, or transportation of significant quantities of hazardous materials. It is anticipated that during construction activities small quantities of hydrocarbons (i.e. gasoline, diesel fuels, lubricants, solvents, etc.) required for operations and maintenance of construction equipment will be stored and utilized on-site. However, these generally tend to be small quantities, however, if not adequately addressed, a potential environmental impact could result from potential spills. In addition, bentonite will be used in a closed loop system for boring lubricant and will be properly disposed of following the construction/installation of the pipeline. Staff will recommend that all equipment fueling and servicing shall occur at a designated location (i.e. staging area on the site or a local service station; additionally, any spills resulting from fueling or hydraulic line breaks/leakage shall be contained and cleaned up immediately; Fluids drained from construction equipment and machinery shall be collected in a leak proof container(s) and disposed of at an appropriate disposal facility; no refueling or servicing shall be conducted without absorbent materials (i.e. absorbent pads, mats, granules, etc.). Compliance with *Conditions Numbers B-14 and B-15* will address potential impacts associated with hazardous materials as noted above.

Aesthetics (Item 17a): Although the project is located partially within the Coastal Zone, it is not located on the west side of Highway 1 or within a Highly Scenic Area as designated by the Coastal Element, as it is located along the public right-of-way of Old Stage Road. The proposed wastewater line that will serve the proposed Gualala elementary school is to be installed within the existing County road right-of-way, which will not require the removal of or disturbance of nearby vegetation, and will be installed utilizing trenches and boring under the roadway. Additionally, no additional driveways or roadways will be created as result of the proposal.

Cultural Resources (Items 19a, 19b): As part of the determination made pursuant to Government Code Section 21080.1, the lead agency shall determine whether the project may have a significant effect on archaeological resources. Specifically, Mendocino County Coastal Element Policy 3.5-10 states as follows:

> *"The County shall review all development permits to ensure that proposed projects will not adversely affect existing archaeological and paleontological resources. Prior to approval of any proposed development within an area of known or probable archaeological or paleontological significance, a limited field survey by a qualified professional shall be required at the applicant's expense to determine the extent of the resource. Results of the field survey shall be transmitted to the State Historical Preservation Officer and Cultural Resources Facility at Sonoma State University for comment. The County shall review all coastal development permits to ensure that proposed projects incorporate reasonable mitigation measures so the development will not adversely affect existing archaeological/paleontological resources. Development in these areas are subject to any additional requirements of the Mendocino County Archaeological Ordinance.*

As noted above, Coastal Plan Policy 3.5-10 (Mendocino County Code Section 22.12.090) calls for the protection of archaeological resources, and requires that any finds during construction be evaluated by a professional archaeologist. According to the Negative declaration prepared by the lead agency (Gualala Community Services District), a records search of the project area was conducted by Alex DeGeorgey of Sentinel Archaeological research at the Northwest Information Center (NWIFC) at Sonoma State University.

The NWIFC files revealed one historical site and nine cultural resource surveys recorded within one half mile of the project area. One of the sites noted was located outside of the Area of Potential Effect (APE), while the other eight surveys reported negative results. It is also noted that none of the GCSD project area has been previously surveyed for archaeological resources and no known Native American or historic-period archaeological resources are recorded within the project APE.

Based upon the review by the Northwest Information Center at Sonoma State University and the findings noted within the Negative Declaration prepared for the proposed project, no significant impacts upon archaeological/paleontological resources are anticipated as a result of the proposed project. However, should archaeological discoveries occur during any disturbance of the site, including development, compliance with requirements established by the Mendocino County Archaeological Resources Discovery Clause, Mendocino County Code Section 22.12.090 Discoveries, would adequately address any future cultural concerns. (See Condition Number B-17).

STAFF RECOMMENDATION: Staff believes that the proposed project will aid in providing a public benefit to the local community by providing the necessary infrastructure for the construction of the Gualala Elementary School. Staff recommends that the project be approved with the understanding that all mitigation measures incorporated into the Gualala Community Services District's environmental document, as well as the additional mitigation measures/conditions of approval, including the provision that no residential connections be permitted in association with this entitlement, and that the proposed wastewater line extension is only established for the proposed Gualala Elementary School.

GENERAL PLAN CONSISTENCY RECOMMENDATION: The proposed project is consistent with applicable goals and policies of the General Plan.

RECOMMENDED MOTION:

> **Environmental Findings:** The Planning Commission acknowledges that the Gualala Community Services District (GCSD) has assumed the role of lead agency under the California Environmental Quality Act, and that the Department has found that the Negative Declaration prepared by the lead agency is acceptable, and therefore, the commission need make no environmental determination. Further, the Commission has found that the Negative Declaration prepared by the lead agency is acceptable and approves Coastal Development Use Permit Number #CDU 9-2005.

General Plan Consistency Finding: As discussed under pertinent sections of this report, the proposed project is consistent with applicable goals and policies of the General Plan, Coastal Element, and the Gualala Town Plan as subject to the conditions being recommended by staff.

Coastal Development Permit Findings: The Planning Commission finds that the application and supporting documents and exhibits contain information and conditions sufficient to establish, as required by Section 20.532.095 of the Coastal Zoning Code, that:

1. The proposed development is in conformity with the certified Local Coastal Program; and

2. The proposed development will be provided with adequate utilities, access roads, drainage and other necessary facilities; and

3. The proposed development is consistent with the purpose and intent of the zoning district applicable to the property, as well as the provisions of the Coastal Zoning Code, and preserves the integrity of the zoning district; and

4. The proposed development will not have any significant adverse impacts on the environment within the meaning of the California Environmental Quality Act.

5. The proposed development will not have any adverse impacts on any known archaeological or paleontological resource.

6. Other public services, including but not limited to, solid waste and public roadway capacity have been considered and are adequate to serve the proposed development.

Project Findings: The Planning Commission approves #CDU 9-2005 subject to the conditions of approval recommended by staff further finding:

1. That adequate utilities, access roads, drainage and other necessary facilities have been or are being provided. The proposal will result in the construction and installation off a 6-inch diameter PVC plastic wastewater line in the public right-of-way of Old Stage Road, approximately 6,500 feet in length, which is to be installed prior to use and occupancy of the proposed Gualala Elementary School.

2. That the proposed use will not constitute a nuisance or be detrimental to the health, safety, peace, morals, comfort or general welfare of persons residing or working in or passing through the neighborhood of such proposed use, or be detrimental or injurious to property and improvements in the neighborhood or to the general welfare of the County. The proposed project will provide a public benefit by providing the necessary infrastructure necessary for the wastewater removal for the proposed Gualala Elementary School, thereby minimizing any potential health and safety impacts that could be created without such infrastructure.

3. That such use preserves the integrity of the zoning district. Pursuant to the County Zoning Ordinance, school facilities are permitted subject to securing a Use Permit.

RECOMMENDED CONDITIONS:

A. Conditions, which must be complied with for the duration of this permit:

1. This permit shall become effective after all applicable appeal periods have been expired or appeal processes exhausted. Failure of the permittee to make use of this permit within two years or failure to comply with payment of any fees within specified time periods shall result in the automatic expiration of this permit.

2. The use and occupancy of the premises shall be established and maintained in conformance with the provisions of Title 20 of the Mendocino County Code unless modified by conditions of the use permit.

3. The application along with supplemental exhibits and related material shall be considered elements of this entitlement and that compliance therewith be mandatory, unless a modification has been approved by the Planning Commission.

4. This permit shall be subject to revocation or modification by the Planning Commission upon a finding of any one (1) or more of the following grounds:

   a. That such permit was obtained or extended by fraud.

   b. That one or more of the conditions upon which such permit was granted have been violated.

   c. That the use for which the permit was granted is so conducted as to be detrimental to the public health, welfare or safety, or as to be a nuisance.

   Any such revocation shall proceed as specified in Title 20 of the Mendocino County Code.

5. This permit is issued without a legal determination having been made upon the number, size or shape of parcels encompassed within the permit described boundaries. Should, at any time, a legal determination be made that the number, size or shape of parcels within the permit described boundaries are different than that which is legally required by this permit, this permit shall become null and void.

6. This permit is subject to the securing of all necessary permits for the proposed development and eventual use from County, State and Federal agencies having jurisdiction. Any requirements imposed by an agency having jurisdiction shall be considered a condition of this permit.

7. It shall be the responsibility of the applicant to ensure that contractors engaged to perform work on the site are aware of the conditions of this permit and that all work performed is in compliance with applicable conditions.

B. Conditions, which must be met prior to the use and/or occupancy and for the duration of the permit:

1. Adequate drainage controls shall be constructed and maintained in such a manner as to prevent contamination of surface and/or ground water, and to prevent erosion.

2. Adequate construction and post-construction best management practices shall be implemented to prevent contamination of surface and/or ground water, and to prevent erosion. During construction activities, temporary erosion control measures shall be in places at the end of each day's work, and shall be maintained until permanent protection is established. All earth moving activities shall be conducted between May 15th and October 15th of any given calendar year unless the County of Mendocino or other agency having jurisdiction approves wet weather construction protocols to be implemented and maintained during the course of construction.

3. The applicant shall endeavor to protect as much vegetation on the site as possible, removing only as much required to construct residential and accessory structures, including driveways and landscaping.

4. The proposed sanitary sewer shall be constructed within Old Stage Road (CR 502) pursuant to encroachment procedures administered by the Mendocino County Department of Transportation, and in accordance with improvement plans prepared by a Civil Engineer and approved by the Mendocino County Department of Transportation. The sanitary sewer shall be installed by the directional bore method, to the extent feasible, to minimize impacts to the existing County road pavement. The improvement plans shall be accompanied by a Geotechnical Report, prepared by a

Registered Geotechnical Engineer, which evaluates the feasibility of the proposed directional bore, examines unstable areas of the roadway, and provides recommendations for the design and construction of the sanitary sewer. Appropriate measures shall be implemented to minimize the impact of the proposed facility on any unstable areas and incorporate design features, such as pipeline location and materials, which minimize the risk of pipeline rupture should the road fail.

5. During construction of the project, the Gualala Community Services District (GCSD) and its contractors shall comply with all Mendocino County Air Quality Management District regulations. Reasonable precautions shall be employed during construction operations to prevent release of fugitive dust. Precautions as follows:

   a. Any stationary onsite internal combustion engines over 50 horsepower (i.e. large power generator or pumps) may require a permit from the District, depending on fuel source and level of operation.

   b. All grading activities must comply with District regulation Rule 430 regarding fugitive dust emissions.

6. The proposed wastewater pipeline extension shall be established in conformance with all mitigation measures as contained in the Initial Study and Mitigated Negative Declaration, dated January 2005, prepared by Matrix Environmental Planning on behalf of the Gualala Community Services District, including the Biological/Botanical report prepared by Jane Valerius, Environmental Consulting, dated December 14, 2004.

7. Exclusion fencing shall be installed prior to construction activities occurring and said fencing shall be maintained for the duration of the construction along the east side of Old Stage Road where it is adjacent to the wetland areas to contain the construction activity within the work area and preclude inadvertent encroachment on the sensitive habitat.

8. To prevent the take of individuals, a nesting bird survey shall be conducted one week prior to ground breaking if construction is to occur between the months of February 15 and August 31. If nesting birds are found, the California Department of Fish and game shall be consulted as to the appropriate action and protocol.

9. Construction hours shall be limited to the hours of 8:00 a.m. to 6:00 p.m. on non-holiday weekdays, with no construction occurring on holidays. All stationary equipment (e.g., generators, compressors, etc.,) shall be shielded from all adjacent residences; all equipment shall be properly maintained and muffled; and construction traffic shall not be permitted before 7:30 a.m.

10. The proposed wastewater pipeline is specifically limited to providing wastewater service to the proposed Gualala Elementary School. No residential connection to this extended line may be provided unless approved by the County of Mendocino.

11. The construction contractor shall ensure that provisions will be available at all times to accommodate emergency vehicles at locations where access to adjacent properties may be blocked. Such measures may include the use of steel plates over excavations, short detours, and/or alternative routes

12. Written verification shall be submitted from the Department of Forestry and the South Coast Fire District to the Department of Planning and Building Services that adequate fire safe measures have been met to the satisfaction of the Department of Forestry and the fire district.

13. Relative to repairs of inevitable future problems that may occur to the proposed waste water line, such as line breaks, and leaks, and to minimize problems and tearing up the roadway, the contractor shall install a copper locator wire with all segments of the pipe to be demonstrated that the connections are correct and a continuous circuit exists.

14. All equipment fueling and servicing shall occur at a designated location (i.e. staging area on the site or a local service station; additionally, any spills resulting from fueling or hydraulic line breaks/leakage shall be contained and cleaned up immediately; Fluids drained from construction equipment and machinery shall be collected in a leak proof container(s) and disposed of at an appropriate disposal facility; no refueling or servicing shall be conducted without absorbent materials (i.e. absorbent pads, mats, granules, etc.).

15. If contaminated soils are encountered during construction, proper storage and/or disposal of any soils that meet the definition of a hazardous waste shall be provided. Such soils will be removed for off-site treatment or disposal at an appropriate landfill.

16. In the event that archaeological resources are encountered during construction on the property, work in the immediate vicinity of the find shall be halted until all requirements of Chapter 22.12 of the Mendocino County Code relating to archaeological discoveries have been satisfied.

8/23/07
DATE

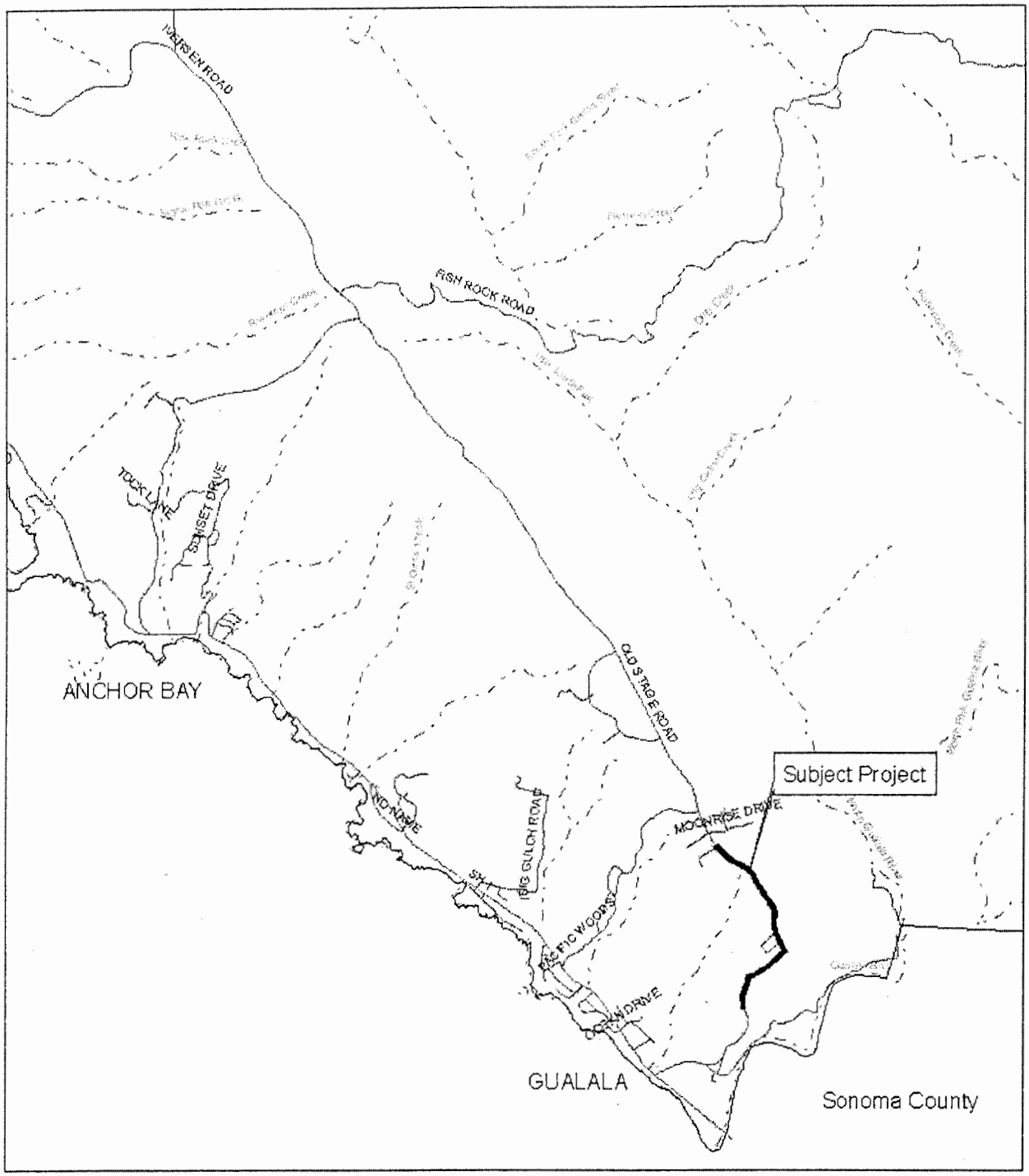
IGNACIO GONZALEZ
CONTRACT PLANNER

IG/at
August 10, 2007

Negative Declaration
Appeal Fee - $1,237.00
Appeal Period - 10 days

** Indicates conditions relating to Environmental Considerations - deletion of these conditions may affect the adoption of a Negative Declaration.

REFERRAL AGENCIES	REFERRAL NOT RETURNED	REFERRAL RECEIVED "NO COMMENT"	COMMENTS RECEIVED
Planning - FB		XX	
Department of Transportation			XX
Environmental Health - FB		XX	
Building Inspection - FB		XX	
Emergency Services	XX		
Air Quality Management			XX
County Water Agency	XX		
California Department of Forestry	XX		
Dept. of Fish and Game	XX		
Coastal Commission	XX		
RWQCB	XX		
U.S. Fish and Wildlife Services	XX		
LAFCO	XX		
GMAC			XX
Mendocino Transit Authority	XX		
P G & E	XX		
SBC	XX		
Arena union Elementary School Dist.	XX		

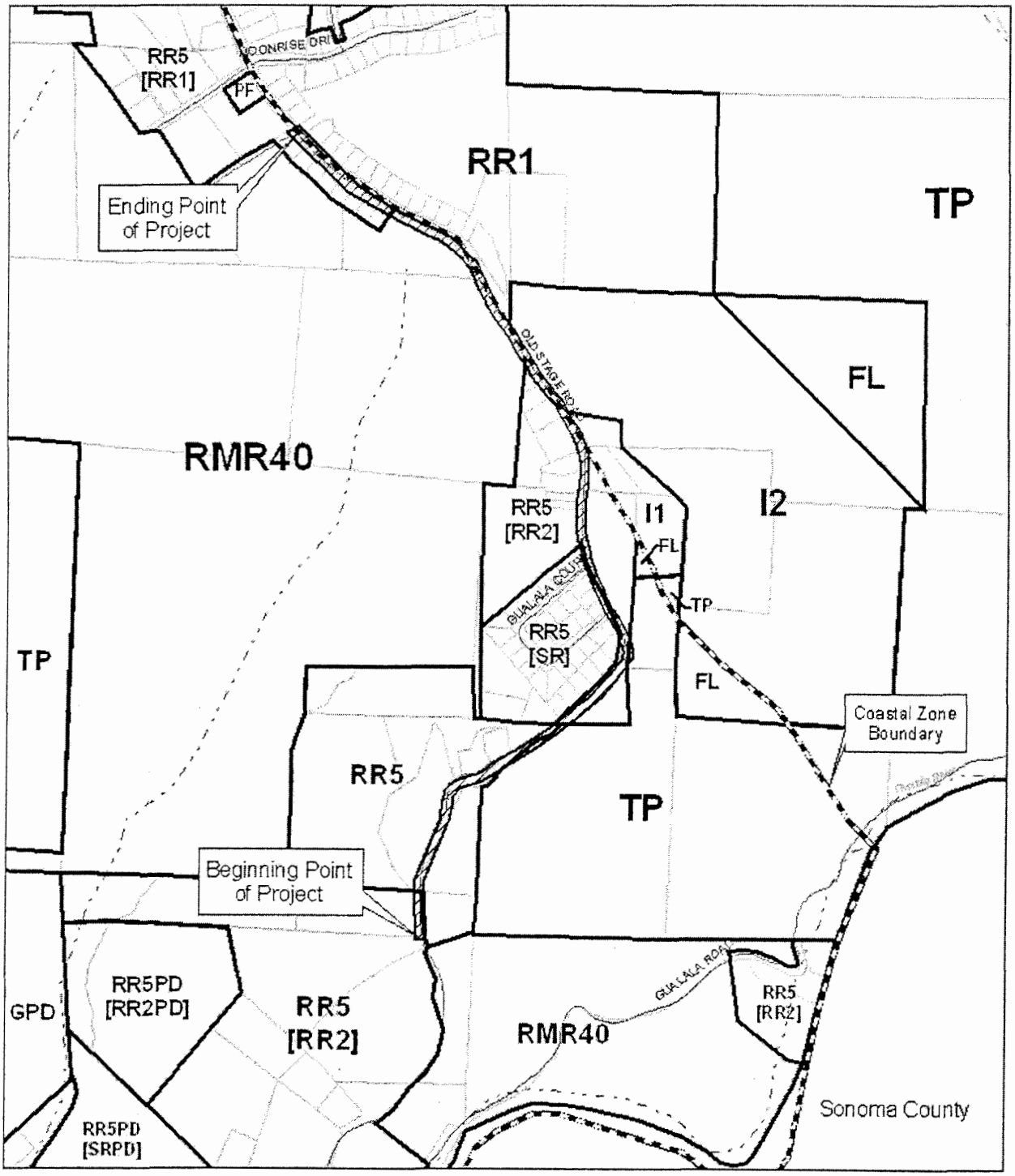


LOCATION MAP

OWNER: MENDOCINO COUNTY DEPARTMENT OF TRANSPORTATION
APPLICANT: GAULALA COMMUNITY SERVICES DISTRICT
AGENT: RALSTON, Ernie
CASE #: CDU 9-2005

3,500 1,750 0 3,500 Feet

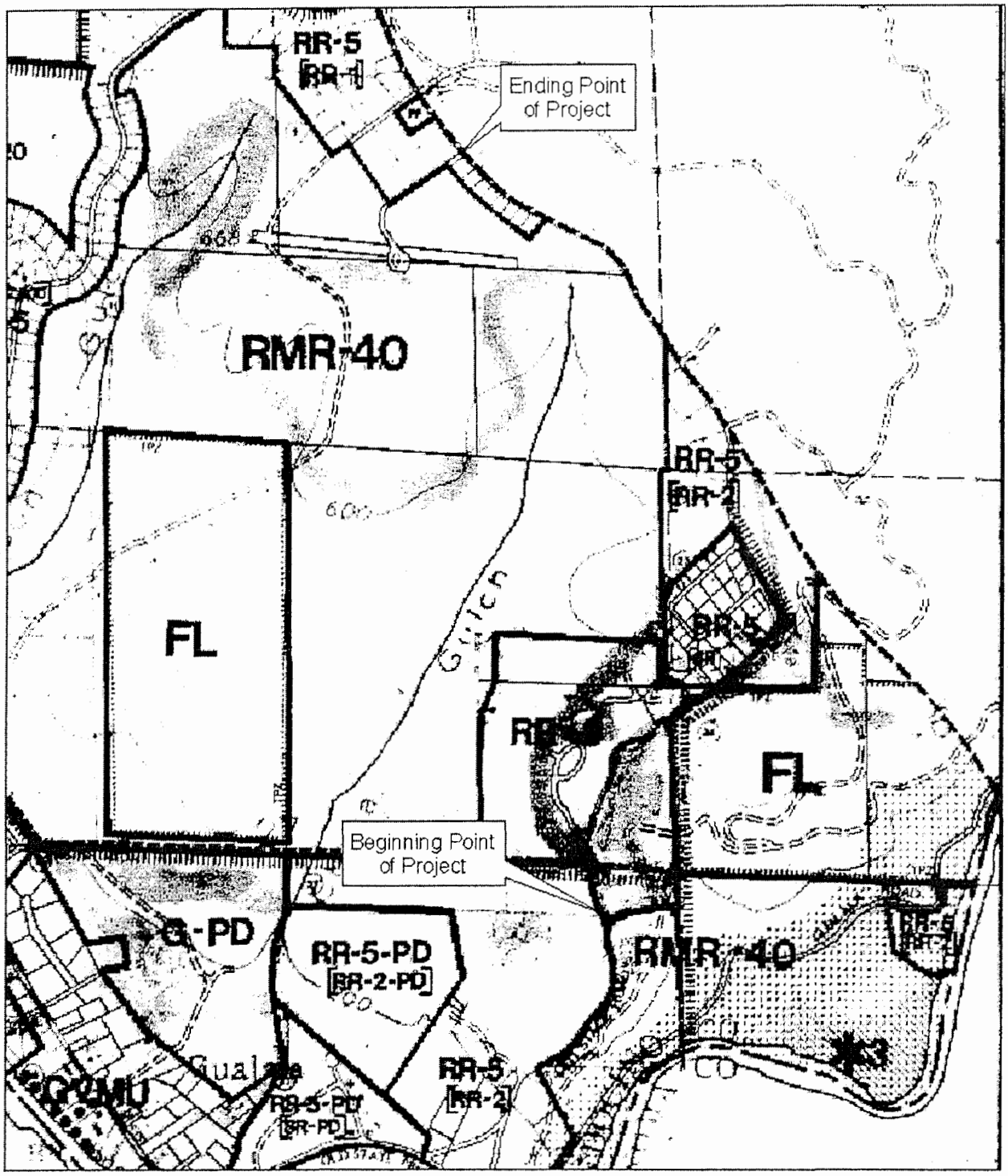
N



ZONING DISPLAY MAP

OWNER: MENDOCINO COUNTY DEPARTMENT OF TRANSPORTATION
APPLICANT: GAULALA COMMUNITY SERVICES DISTRICT
AGENT: RALSTON, Ernie
CASE #: CDU 9-2005

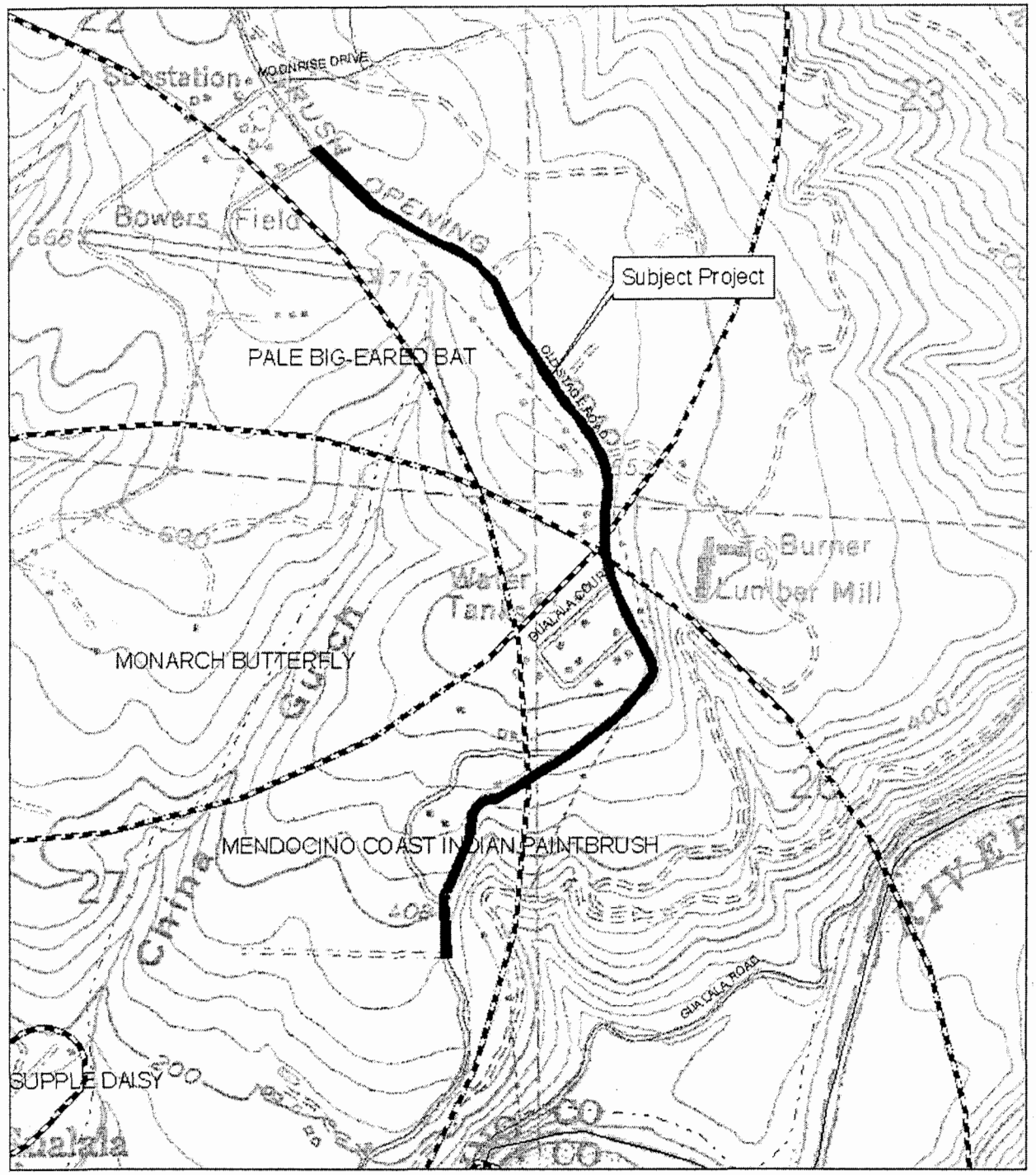
960 480 0 960 Feet



COASTAL ZONE LAND USE MAP

OWNER: MENDOCINO COUNTY DEPARTMENT OF TRANSPORTATION
APPLICANT: GAULALA COMMUNITY SERVICES DISTRICT
AGENT: RALSTON, Ernie
CASE #: CDU 9-2005

Not To Scale



CALIFORNIA NATURAL DIVERSITY DATABASE RAREFIND (Janurary 2005)

OWNER: MENDOCINO COUNTY DEPARTMENT OF TRANSPORTATION
APPLICANT: GAULALA COMMUNITY SERVICES DISTRICT
AGENT: RALSTON, Ernie
CASE #: CDU 9-2005

720 360 0 720 Feet

CALIFORNIA COASTAL COMMISSION
NORTH COAST DISTRICT OFFICE
710 E STREET, SUITE 200
EUREKA, CA 95501
VOICE (707) 445-7833 FAX (707) 445-7877

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT

Please Review Attached Appeal Information Sheet Prior To Completing This Form.

SECTION I. Appellant(s)

Name: See Attachment A

Mailing Address:

City: Zip Code: Phone:

EXHIBIT NO. 6
APPEAL NO.
A-1-MEN-07-043
GUALALA COMMUNITY SERVICES DISTRICT
APPEAL (1 of 11)

SECTION II. Decision Being Appealed

1. Name of local/port government:

Mendocino County

2. Brief description of development being appealed:

Coastal Development Use (CDU) Permit #9-2005 to extend a 6-inch diameter wastewater main approximately 1.25 miles within the County road right-of-way from an existing Gualala Community Services District system to serve a proposed school in Gualala.

3. Development's location (street address, assessor's parcel no., cross street, etc.):

Approximately 1 mile northeast of Gualala, along a right-of-way segment beneath Old Stage Road (CR #502), beginning approximately 0.9 miles north of State Highway 1 at the intersection of Bodhi Tree Lane, and extending to an access road to the proposed Arena Union Elementary School at 39290 Old Stage Road.

RECEIVED
OCT 30 2007
CALIFORNIA COASTAL COMMISSION

4. Description of decision being appealed (check one.):

☐ Approval; no special conditions

☒ Approval with special conditions:

☐ Denial

Note: For jurisdictions with a total LCP, denial decisions by a local government cannot be appealed unless the development is a major energy or public works project. Denial decisions by port governments are not appealable.

CALIFORNIA COASTAL COMMISSION

NORTH COAST DISTRICT OFFICE
710 E STREET, SUITE 200
EUREKA, CA 95501
VOICE (707) 445-7833 FAX (707) 445-7877

TO BE COMPLETED BY COMMISSION:

APPEAL NO: A-1-MEN-07-043

DATE FILED: 10/30/07

DISTRICT: North Coast

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 2)

5. Decision being appealed was made by (check one):

☐ Planning Director/Zoning Administrator

☐ City Council/Board of Supervisors

☒ Planning Commission

☐ Other

6. Date of local government's decision: September 20, 2007

7. Local government's file number (if any): CDU 9-2005

SECTION III. Identification of Other Interested Persons

Give the names and addresses of the following parties. (Use additional paper as necessary.)

a. Name and mailing address of permit applicant:

Gualala Community Services District
P.O. Box 124
Gualala, CA 95545

b. Names and mailing addresses as available of those who testified (either verbally or in writing) at the city/county/port hearing(s). Include other parties which you know to be interested and should receive notice of this appeal.

(1) Matrix Environmental Planning
Attn: Ernie Ralston
301-C East Street
Healdsburg, CA 95448

(2) Mendocino County Department of Transportation
340 Lake Mendocino Drive
Ukiah, CA 95482

(3) Arena Union Elementary School District
P.O. Box 87
Point Arena, CA 95468

(4) Gualala Municipal Advisory Council
P.O. Box 67
Gualala, CA 95445

(5) Aspen Street Architects, Inc.
P.O. Box 370
Angels Camp, CA 95222

3 of 11

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 3)

SECTION IV. Reasons Supporting This Appeal

PLEASE NOTE:

- Appeals of local government coastal permit decisions are limited by a variety of factors and requirements of the Coastal Act. Please review the appeal information sheet for assistance in completing this section.
- State briefly **your reasons for this appeal**. Include a summary description of Local Coastal Program, Land Use Plan, or Port Master Plan policies and requirements in which you believe the project is inconsistent and the reasons the decision warrants a new hearing. (Use additional paper as necessary.)
- This need not be a complete or exhaustive statement of your reasons of appeal; however, there must be sufficient discussion for staff to determine that the appeal is allowed by law. The appellant, subsequent to filing the appeal, may submit additional information to the staff and/or Commission to support the appeal request.

See Attachment B

State briefly your reasons for this appeal. Include a summary description of Local Coastal Program, Land Use Plan, or Port Master Plan policies and requirements in which you believe the project is inconsistent and the reasons the decision warrants a new hearing. (Use additional paper as necessary.)

See Attachment B

Note: The above description need not be a complete or exhaustive statement of your reasons of appeal; however, there must be sufficient discussion for staff to determine that the appeal is allowed by law. The appellant, subsequent to filing the appeal, may submit additional information to the staff and/or Commission to support the appeal request.

SECTION V. Certification

The information and facts stated above are correct to the best of my/our knowledge.

Signed: Signature on File
Appellant or Agent

Date: 10/30/07

Agent Authorization: I designate the above identified person(s) to act as my agent in all matters pertaining to this appeal.

Signed: _____

Date: _____

State briefly your reasons for this appeal. Include a summary description of Local Coastal Program, Land Use Plan, or Port Master Plan policies and requirements in which you believe the project is inconsistent and the reasons the decision warrants a new hearing. (Use additional paper as necessary.)

See Attachment B

Note: The above description need not be a complete or exhaustive statement of your reasons of appeal; however, there must be sufficient discussion for staff to determine that the appeal is allowed by law. The appellant, subsequent to filing the appeal, may submit additional information to the staff and/or Commission to support the appeal request.

SECTION V. Certification

The information and facts stated above are correct to the best of my/our knowledge.

Signed: Signature on File
Appellant or Agent

Date: 10/30/07

Agent Authorization: I designate the above identified person(s) to act as my agent in all matters pertaining to this appeal.

Signed: _____

Date: _____

ATTACHMENT A

SECTION I. Appellant(s)

1. Mary K. Shallenberger
45 Fremont Street, Suite 2000
San Francisco, CA 94105

Phone: (415) 322-0995

2. Sara J. Wan
45 Fremont Street, Suite 2000
San Francisco, CA 94105

Phone: (415) 904-5201

7911

ATTACHMENT B

APPEALABLE PROJECT:

After certification of Local Coastal Programs (LCPs), the Coastal Act provides for limited appeals to the Coastal Commission of certain local government actions on coastal development permits (Coastal Act Section 30603). Section 30603 states that an action taken by a local government on a coastal development permit application may be appealed to the Commission for certain kinds of developments, including developments located within certain geographic appeal areas, such as those located between the sea and the first public road paralleling the sea, or within 300 feet of the inland extent of any beach, or of the mean high tide line of the sea where there is no beach, or within 100 feet of any wetland or stream, or within 300 feet of the top of the seaward face of any coastal bluff, or those located in a sensitive coastal resource area. Furthermore, developments approved by counties may be appealed if they are not designated the "principal permitted use" under the certified LCP. Finally, developments which constitute major public works or major energy facilities may be appealed, whether approved or denied by the city or county. The grounds for an appeal are limited to an allegation that the development does not conform to the standards set forth in the certified local coastal program and, if the development is located between the first public road and the sea, the public access policies set forth in the Coastal Act.

The subject development is appealable to the Commission pursuant to Section 30603 of the Coastal Act because (1) the approved development is not designated the "principal permitted use" under the certified LCP, and (2) the approved development constitutes a major public works project.

REASONS FOR APPEAL:

The County of Mendocino approved Coastal Development Use (CDU) Permit #9-2005 to extend a 6-inch diameter wastewater main approximately 1.25 miles within the County road right-of-way from an existing Gualala Community Services District system to serve a proposed school in Gualala. The approved development is located approximately one mile northeast of Gualala, along a right-of-way segment beneath Old Stage Road (CR #502), beginning approximately 0.9 miles north of State Highway 1 at the intersection of Bodhi Tree Lane, and extending to an access road to the proposed Arena Union Elementary School at 39290 Old Stage Road.

The approval of CDU #9-2005 by Mendocino County is inconsistent with the policies of the certified Local Coastal Program (LCP) including, but not limited to, the policies and standards regarding (1) concentration of new development within the urban side of the urban-rural boundaries where it can be served by community water and sewer systems, and (2) protection of lower cost visitor-serving and recreational facilities.

LCP Policies:

Land Use Plan (LUP) Policy G3.1-2 in the Gualala Town Plan states the following:

New development in the Gualala area shall be concentrated within the urban side of the urban-rural boundaries, where it can be served by community water and sewer systems and will minimize additional traffic impacts on Highway 1.

LUP Policy G3.1-1 in the Gualala Town Plan states the following:

The urban-rural boundary for the town of Gualala shall be conincident with the boundary lines delineated on Land Use Map 31.

LUP Policy G3.7-8 in the Gualala Town Plan states the following:

Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.

LUP Policy 3.7-5 states the following:

The locations designated and types of use permitted are intended to result in accommodations of all price ranges, including lower cost ones such as campgrounds and hostels. Lower cost visitor and recreational facilities for persons and families of low and moderate income shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.

Discussion:

The Gualala Community Services District (GCSD) wastewater treatment system was completed in 1993. According to the Sewer Service/Septic Availability discussion in the Gualala Town Plan segment of the LUP, the GCSD area encompasses approximately 1,430 acres, 550 acres of which area included in the initial Sewer Assessment District boundary. The Service/Assessment Area is roughly coincident with the urban/rural boundary designated in the LCP. LUP Policy G3.1-1 states that the urban-rural boundary for the town of Gualala shall be coincident with the boundary lines delineated on Land Use Map 31. The GCSD is divided into four zones, with Zone 1 and 2 being the commercial and residential development closest to the coast (within the initial Sewer Assessment District boundary, which more or less corresponds with the urban/rural boundary), and Zones 3 and 4 being those more easterly areas lying up the hill and along Old Stage Road, mostly outside of the urban/rural boundary. The subject project area is located within Zone 4, in the rural area outside the urban/rural boundary.

The approved development is inconsistent with the policies and standards of the certified LCP regarding development within Gualala, including but not limited to LUP Policy G3.1-2 in the Gualala Town Plan. This policy states in part, that new development in the Gualala area shall be concentrated within the urban side of the urban-rural boundaries, where it can be served by community sewer systems. The Gualala Town Plan area currently has significant development constraints in that sewer capacity is limited. The GCSD wastewater treatment system has a capacity of 625 Equivalent Single-Family Dwellings (ESDs), of which 460 were allocated as of October 1997. The remaining unused capacity as of 1997 was approximately 165 ESDs. The

Gualala Town Plan points out that the remaining ESDs may not be sufficient to accommodate the demands for sewer connections for the 30-year planning horizon of the Town Plan. Using a 75/50 percent buildout scenario, buildout of residential uses under the existing LCP would require an additional 759 ESDs. Under this scenario, the remaining capacity of the GCSD treatment plant would be exceeded. When 500 ESDs are in use, the GCSD is required by the State Water Resources Control Board to initiate plans for wastewater treatment plant expansion. The County, in its approval of the subject development, failed to address the remaining capacity of the GCSD wastewater treatment facility and what percentage of the remaining capacity would be devoted to the proposed school.

As approved, the sewer line extension project can accommodate more development outside of the urban/rural boundary than just the school itself. The County-approved service extension is sized larger than necessary to serve the proposed school, as evidenced in the January 2005 Initial Study and Mitigated Negative Declaration prepared for the project by GCSD's consultant, Matrix Environmental Planning. The Initial Study states the following:

> "Even though the 6-inch diameter pipe is sized to meet future expansion of the wastewater collection system into the adjacent unserved District service territory, GCSD feels it is fiscally and environmentally prudent to avoid installation of a second pipeline if and when service is extended into the adjacent unserved territory...." (Page 1-1)

Thus, the capacity of the approved sewer line will accommodate an unspecified amount of additional development in Zone 4 and 3 within the rural area, outside of the service area of the district. The County's conditions of approval do not preclude hookups to the sewer line by other development. To the contrary, Special Condition No. B-10 provides a mechanism for residential connections to be made to the new sewer line. Special Condition No. B-10 states as follows:

> "The proposed wastewater pipeline is specifically limited to providing wastewater service to the proposed Gualala Elementary School. No residential connections to this extended line may be provided unless approved by the County of Mendocino, priority should be given to failed septic systems in the area."

This condition is principally aimed at prohibiting growth inducement, and a lengthy discussion of the project's growth inducement potential is included in the County staff report. However, the condition still allows for future residential hook-ups to the service extension, subject to County approval. Given the limited remaining capacity of the sewer system, hookups allowed outside of the service area and urban area may come at the expense of hookups for development within the urban area and within the service area of the District. Therefore, the project as approved, which facilitates additional residential growth outside of the urban/rural boundary is inconsistent with LUP Policy G3.1-2, as development would not be concentrated within the urban side of the urban-rural boundary.

By facilitating development on the rural side of the urban/rural boundary, the project as approved is also inconsistent with LUP Policies 3.7-5 and G3.7-8. These policies state that lower cost visitor and recreational facilities shall be protected and encouraged, and development providing public recreational opportunities is preferred. The zoning districts that allow for lower cost

visitor and recreation opportunities within the Gualala area are located on the urban side of the urban/rural boundary. Facilitating hookups for residential development outside of the urban/rural boundary would reduce the limited remaining sewer capacity available for priority visitor serving and recreational uses within the urban zoning districts. Therefore, the approved development would not protect and encourage the development of lower cost visitor and recreation facilities, inconsistent with LUP Policies 3.7-5 and G3.7-8.

CONCLUSION:

The project, as approved by Mendocino County, is inconsistent with the policies of the certified LCP, including, but not limited to the following:

- LUP Policy G3.1-2, which requires concentration of new development in the Gualala area within the urban side of the urban-rural boundaries where it can be served by the community sewer systems and will minimize additional traffic impacts on Highway 1; and

- LUP Policies 3.7-5 and G3.7-8, which require the protection of lower cost visitor and recreational facilities.

11911

Gualala Community Services District
P.O. Box 124
Gualala, CA 95445
(707) 785-2331
Fax: (707) 785-3845

November 19, 2007

EXHIBIT NO. 7
APPEAL NO.
A-1-MEN-07-043
GUALALA COMMUNITY SERVICES DISTRICT
APPLICANT'S CORRESPONDENCE (1 of 102)

RECEIVED
NOV 28 2007
CALIFORNIA COASTAL COMMISSION

Coastal Commission,
North Coast District Office
c/o Bob Merrill, District Manage
710 E Street, Suite 200
Eureka, CA 95501

RE: Coastal Commission Appeal # A-1-MEN-07-043

Dear Mr. Merrill,

The only intention of this application was to accommodate the proposed school. The County Planning Commission revised the Special Condition B #10 to the application, changing the original intent. The Initial Study/Mitigated Negative Declaration (IS/MND) on pages 1-1 under item 1.2 – Project Description states: "The purpose of the new wastewater line is to serve the proposed school only – no residential connections are proposed as part of this project." And they still aren't, even though, the idea of hooking up "failed septic systems" is beneficial for the environment.

The reason for the 6–inch diameter line is as the Coastal Commission correctly stated in the appeal by quoting the IS/MND on page 1-1. Rather than install the same line twice it would seem more prudent and cost effective to install it once and at the same time provide for the future whenever that time would occur. The size of the line needed at that time was determined to be 6 inches in diameter in an engineering study done by Winzler & Kelly performed in 2002-2003 that would accommodate future growth all the way to the Ocean Ridge development, as depicted in the Gualala Town Plan (GTP) figure 1.1, but the treatment plant is not ready to handle that level of development until it expands its facilities.

In an effort to do nothing more than to help a school get built, the Gualala Community Services District (GCSD) has spent about $100,000 on an IS/MND, on engineering for the placement of the line and on a Geotechnical Survey. Add to that another $60,000 for a feasibility study to look at what would be required if the GCSD were to expand. The design flow from the school would not significantly impact the treatment capabilities of the District nor restrict future hookups in the urban area of Gualala. The design flow of the treatment plant is 0.151 MGD AWWF. The treatment plant has on occasion treated flows greater than that without negatively impacting discharge limits. The calculated average daily flow for the last five years shows approximately 0.101 MGD and there would be an additional 4000 gpd at build out for the school added on to that total.

The GCSD is not prepared at this time to expand its facilities and treatment capabilities or to revise the GTP to move the urban-rural boundary to accommodate just the school. This was intended as an opportunity for students to go to school close to home rather than to be bused 30 miles. The GCSD would hope that the Commissioners would reconsider or modify their appeal to accommodate this application.

Thank you, Signature on File

Greg Girard, District Manager
enc 3
Cc: 4 Tedd Adshade, Chairman; GCSD BOD; Rick Miller, County Planning – Fort Bragg
Charles Reed, Waterboard; Arlene Taeger, Arena School
Ignacio Gonzales, County Planning – Ukiah; Jim Jackson, Law Offices

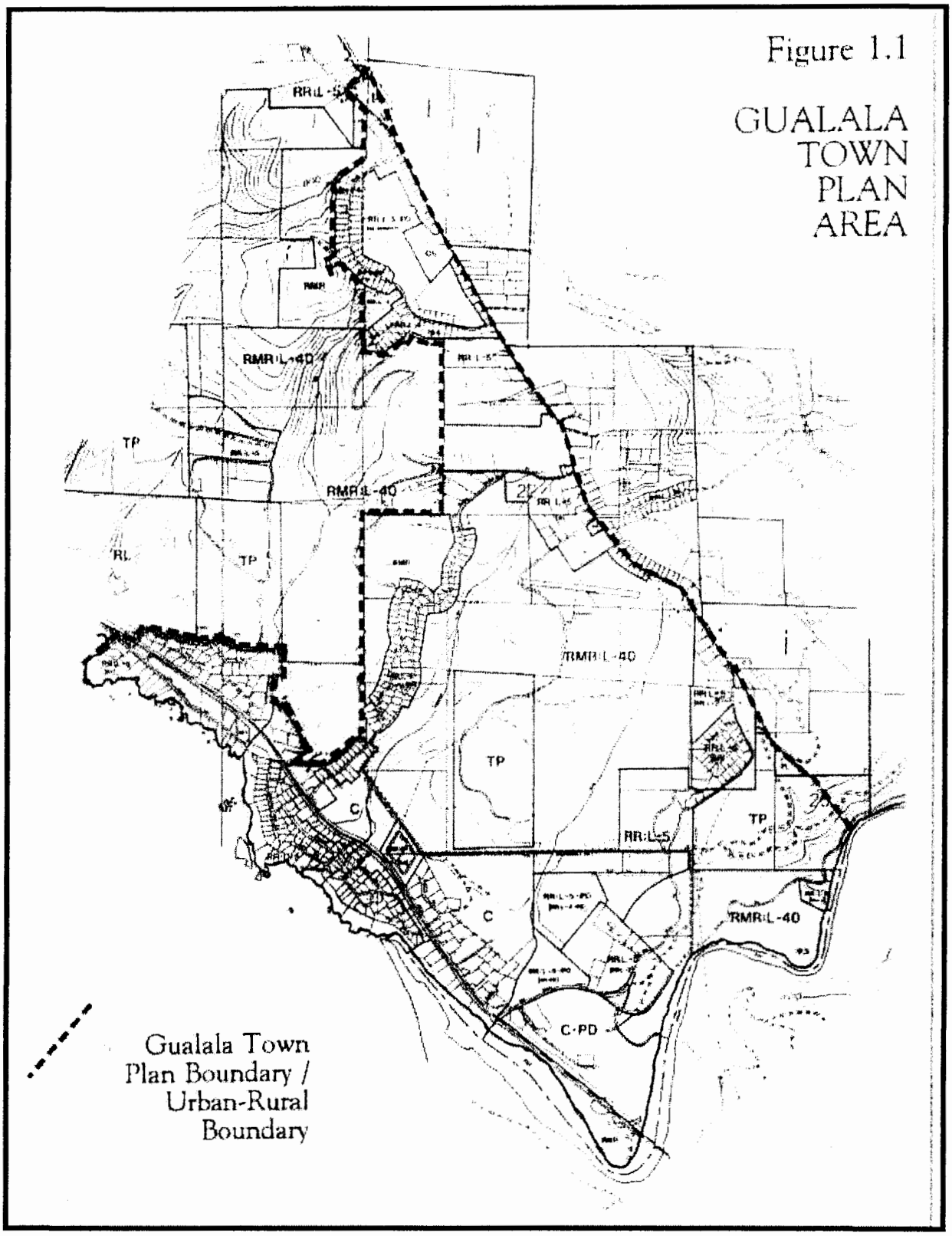


Figure 1.1
GUALALA TOWN PLAN AREA
RR:L-5
RMR
RMR:L-40
TP
RMR:L-40
RL
TP
RMR:L-40
TP
C
RR:L-5
TP
C
RMR:L-40
C-PD
Gualala Town Plan Boundary / Urban-Rural Boundary

GUALALA COMMUNITY SERVICES DISTRICT
SEWER FEASIBILITY STUDY

EXPANSION OF SEWAGE COLLECTION SYSTEM
EVALUATION OF WASTEWATER TREATMENT FACILITY

GUALALA COMMUNITY SERVICES DISTRICT
P.O. Box 124
Gualala, CA 95445

February 2003

WINZLER & KELLY
CONSULTING ENGINEERS
633 Third Street
Eureka, California 95501
707.443.8326
707.444.8330 fax
www.w-and-k.com

02-1788-01001

GUALALA COMMUNITY SERVICES DISTRICT
SEWER FEASIBILITY STUDY
Expansion of Sewage Collection System
Evaluation of Wastewater Treatment Facility

February 2003

Prepared for:
Gualala Community Services District
P.O. Box 124
Gualala, CA 95445

Prepared by:
Winzler & Kelly Consulting Engineers
633 Third Street
Eureka, CA 95501
707-443-8326

Gualala Community Services District
Sewer Feasibility Study
Table of Contents

TABLES

FIGURES

APPENDICES

EXECUTIVE SUMMARY

1.1 Introduction

1.1.1 Location

Gualala is a small coastal community situated in the southwest corner of Mendocino County, along the north bank of the Gualala River at its junction with the sea. Gualala is located approximately 100 miles north of San Francisco and 60 miles south of Fort Bragg along Highway 1 (see Figure 1-1). The town of Gualala currently serves a population of approximately 2500 persons, not counting those in The Sea Ranch just south of the town in northern Sonoma County. In addition, the recreational opportunities and scenic beauty of the Gualala area attract thousands of visitors each year. This area is unincorporated and the County of Mendocino, under the Mendocino County Local Coastal Program and the Mendocino County General Plan, administrates all land used decisions.

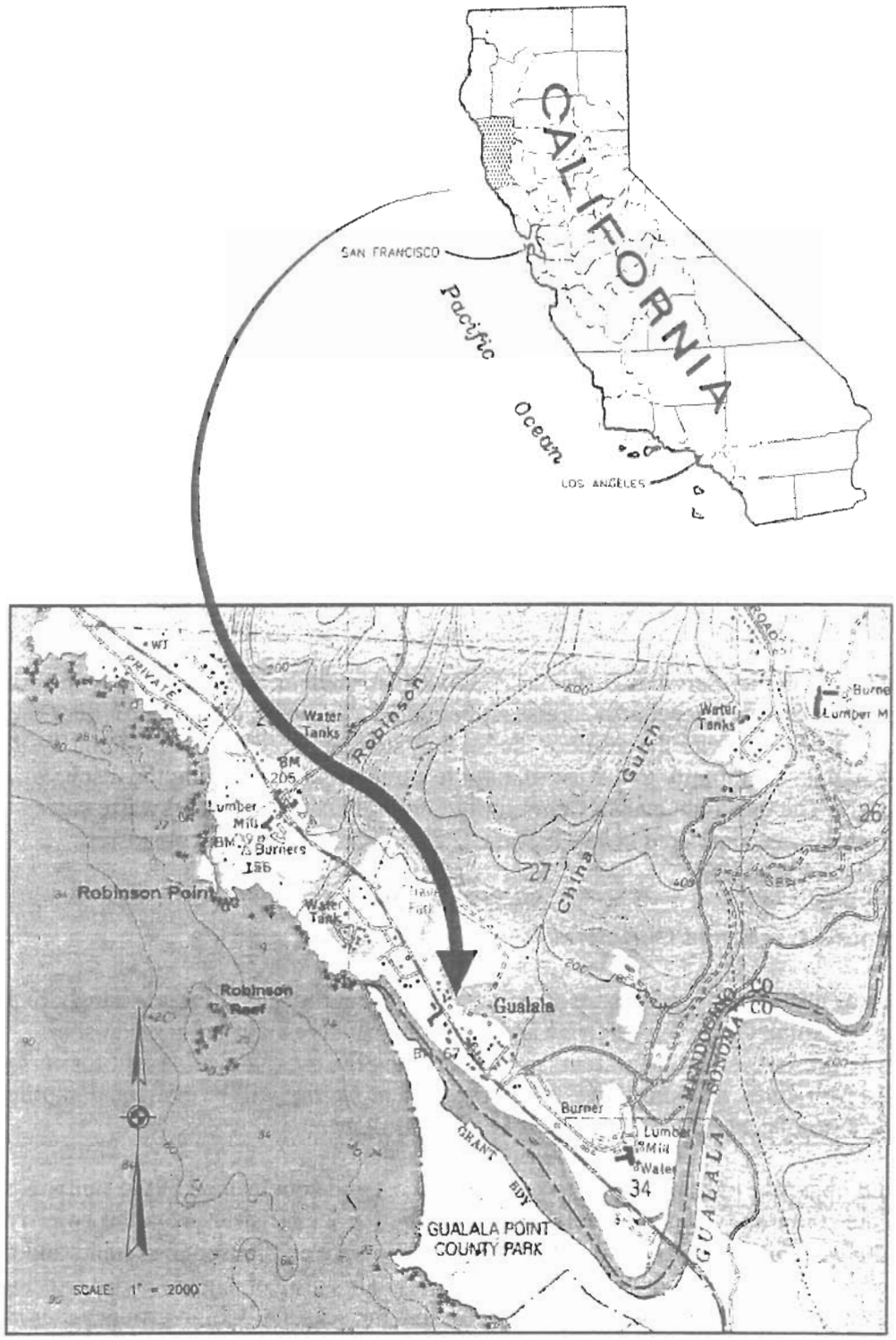
1.1.2 Background

The Gualala Community Services District (GCSD) was formed in 1986 after the Mendocino County Board Of Supervisors approved district boundaries and gave approval for district formation. This approval was the result of the State Water Resources control Board (SWRCB) adding the Gualala community to the list of eligible communities following the results of a 1987 pollution study. The existing Gualala Community Services District (GCSD) wastewater treatment system was completed in 1993. The GCSD sewer zone area encompasses approximately 1,430 acres.

1.2 Purpose, Goals, and Objectives

The purpose of this report is to prepare an engineering feasibility study for sewering GSCD zones 3 and 4 and the Ocean Ridge Drive area including an investigation of the cost of expanding the present collection system, and establishing the most logical layout for current and future needs. Moreover, the current wastewater treatment facility will be evaluated in order to determine if it has the capacity to handle the additional flows.

The goal and objective of this study is to present the cost and conclusions of the study to the citizens of the community and the Gualala Community Services District, with the objective of removing the possibility of groundwater pollution by separate on-site septic systems and to meet the needs of future development within the community. This project is in response to prior studies and GCSD staff experience that has shown that the seasonally high groundwater and soil conditions have made it troublesome for individual on-site sewage disposal systems to function properly.



VICINITY MAP

Figure 1-1

1.3 Existing Facilities

Private septic systems presently serve GCSD zones 3 and 4 and north to Ocean Ridge Drive. Seasonally high groundwater and clay type soil conditions have caused individual on-site sewage disposal systems to fail creating odors and public health concerns.

The Gualala Community Services District Wastewater treatment system was completed in 1993 and serves roughly one-third of the district boundary area, or approximately 465 EDU's (Equivalent Single Family Dwelling Units). The plant was designed as an extended aeration activated sludge plant and was designed to treat the raw wastewater so that it can be used for irrigating the Sea Ranch golf course.

1.4 Existing and Projected Wastewater Flows

Currently, the GCSD WWTF is receiving approximately 66 gpd per person during the winter period when larger flows generally occur. For this report, a value of 70 gpd per person along with a factor of 2.8 people per household was used to account for future demands on the system.

These design values were used to determine that the average daily flow in sewer zones 3, 4, & the Ocean Ridge Drive area to be 137,000 gpd. This value would be reached if all existing houses in the area to be sewered plus an additional 377 EDU's were added into the collection system. For a complete analysis and future projection of flows, please refer to Chapter 5.

1.5 Costs

The costs for the new collection system and wastewater treatment plant improvements are summarized below in Table 1-1. Please refer to Tables 6-2 and 7-1 for each item respectively for an itemized cost breakdown. Please note that the Ocean Ridge Drive costs require zones 3 and 4 to also be sewered.

Table 1-1
Cost Summary

Item	Estimated Cost
Collection System	
Sewer Zones 3 & 4	$3,600,000
Ocean Ridge Drive Area	$1,800,000
Subtotal	$5,400,000
Wastewater Treatment Plant Improvements	
Sewer Zones 3 & 4	720,650
Ocean Ridge Drive Area	308,850
Subtotal	1,100,000
Totals	**$6,500,000**

There are some cost benefits to sewering both zones 3 and 4 and the Ocean Ridge Drive area. Sewering both of these areas reduces the cost for construction for the residents of zones 3 and 4, as shown in Table 1-2. It will also reduce the monthly sewer bills for the existing residences by increasing the rate base.

Table 1-2
Unit Costs for Sewer Service[1] ($/EDU)

Area	Collection System	Treatment Plant	Total
Zones 3 and 4	$9,278	$1,857	$11,135
Ocean Ridge Drive area	$5,787	$993	$6,780
Combined	$7,725	$1,574	$9,299
[1]See Tables 1-1 and 5-5 for backup data.			

1.6 Collection System Layout

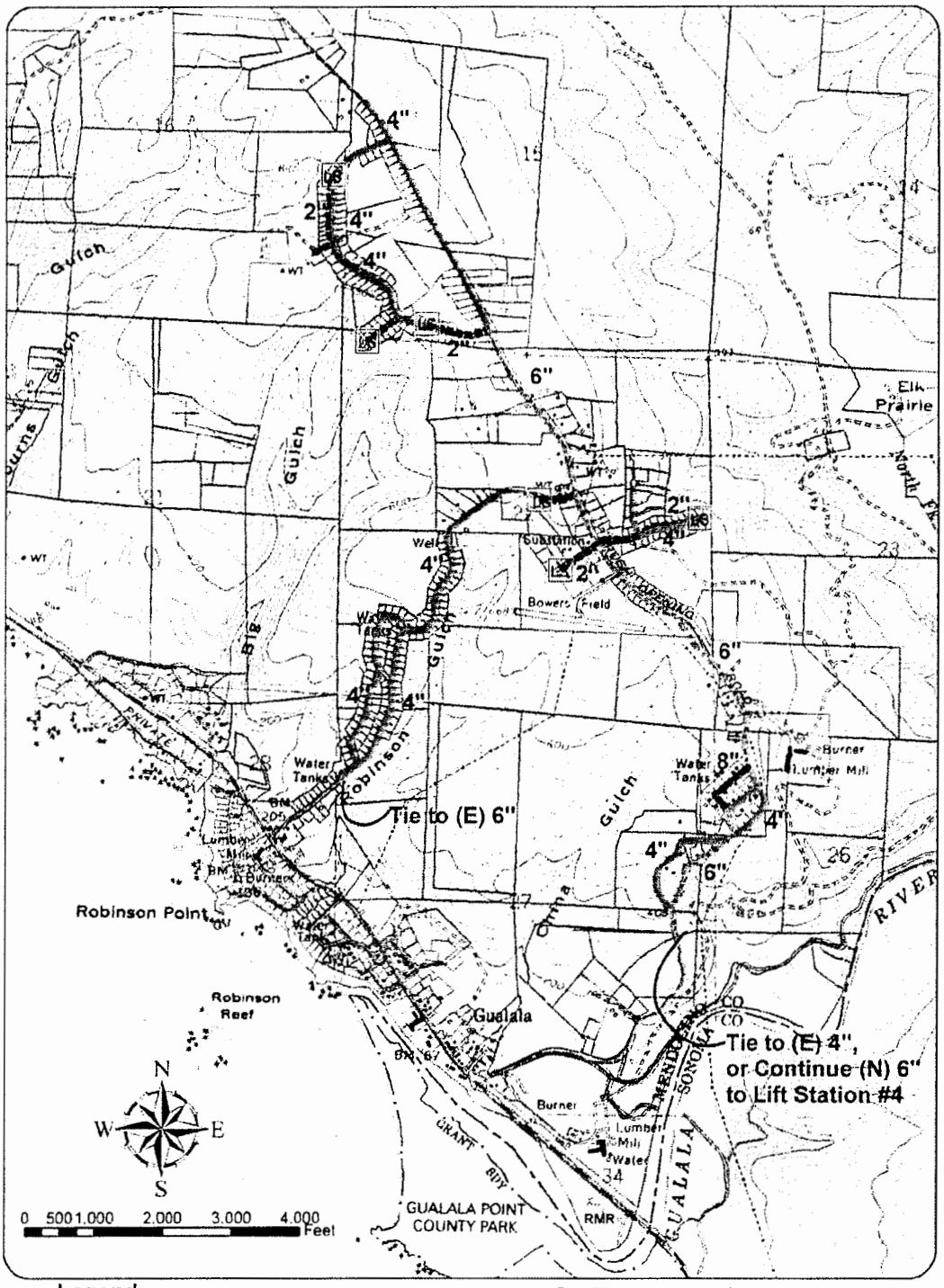
The chosen collection system conveys the wastewater through the collection system by the use of gravity. The wastewater is conveyed uphill with pump stations and force mains where required. Manholes and cleanouts provide access for maintenance and inspection as well as realignment of flow. For the proposed collection system, fewer manholes and cleanouts than the standard will be utilized. This is because the system will be carrying sewage effluent without solids as part of a Septic Tank Effluent Pumping system (STEP).

The collection system alignment has been developed following the general topography of the District carrying flows generally from east to west, with all wastewater terminating at existing sewer line locations at Pacific Woods Road and Old Stage Road. Please refer to Figure 1-2.

1.7 Implementation Plan

The District must undertake the following actions in order to secure a funding package for the project that maximizes the grants and low interest loans that are potentially available and to result in a constructed project:

1. Complete this Sewering Feasibility Study.
2. Form a Citizens Advisory Group.
3. Conduct a public meeting to present the project
4. Determine if a majority of property owners in Ocean Ridge Drive area wish to annex to GCSD and receive service.
5. Conduct an informal income survey of the area to be served.
6. Follow-up on the Clean Beaches Grant application.
7. Submit a pre-application to RUS.
8. Request that the SWRCB place this project on the SRF loan program if it does not get funding under the Clean Beaches Initiative.
9. Apply for funding through the CDGB program if appropriate.
10. Complete the CEQA/NEPA process.
11. Monitor Proposition 50 developments and attempt to secure funding through that program.
12. Complete the project design
13. Complete the project construction.



Legend

Pipe Diameter

- 2" Pressure
- 4" Gravity
- 6" Gravity
- 8" Gravity
- LS Lift Station

Collection System
Alternative Alignment #1
Gualala Community Services District

Figure 1-2

CHAPTER 2

INTRODUCTION

2.1 Project Description

The unincorporated community of Gualala is located on the coast in the extreme southwest corner of Mendocino County. This project was developed to provide wastewater collection, treatment and disposal to the unsewered portions of the community which is experiencing health risk and water pollution problems due to the failure of on-site septic systems. Seasonally high groundwater and low permeable soils, that have very slow percolation rates, result in many of the septic systems in Gualala being of poor to marginal value. Many of these systems have needed costly repairs and this problem is expected to continue. Further, development in new areas within the eastern Gualala area has been hindered because of the lack of a wastewater collection system.

This project will provide sewer service to Zones 3 and 4 of the District. The project could also provide sewer service to the Ocean Ridge Drive Area, which is contiguous with Zones 3 and 4.

The project will connect to the existing wastewater treatment plant that has been designed to produce reclaimed water, suitable for golf course irrigation in accordance with Title 22 requirements.

2.2 Purpose and Approach

The Gualala Community Services District (GCSD), the responsible agency for wastewater collection and treatment has commissioned this study to evaluate various wastewater collection and disposal alternatives. Therefore, the purpose of this report is to examine solutions for sewering GCSD zones 3, 4, and Ocean Ridge Drive, including development of an engineer's opinion of the probable cost for expanding the present collection and treatment system. This report will identify the apparent best project, including the type of wastewater collection systems to be constructed, the location thereof, and will provide our opinion of the probable capital cost and annual operation and maintenance cost for such a facility. In addition, the existing wastewater treatment plant will be evaluated to determine if it can handle the additional flows for sewering the expanded area.

If the proposed development and its cost is acceptable to local citizens and the various governmental agencies from which loans or grants can be obtained, then the project can proceed so that failing septic systems can be corrected, and development on existing and proposed parcels may take place.

2.3 History

Because of a history of onsite wastewater system failures and a chronic odor problem in the commercial areas along Highway 1, an unofficial Gualala Sewer Committee was formed to start the process of establishing a community services district to address the problem. In 1986, the Mendocino County Board of Supervisors and the Local Area Formation Commission (LAFCO) approved the formation of a community services district and set district boundaries. Thus, the official Gualala Community Services District was established.

Oscar Larson & Associates (OLA) completed a pollution study; financed by the Gualala Community Services District in 1987, to examine the problem and to lead to a wastewater facilities plan. The results of the pollution study concluded that a very large number of marginal and faulty onsite wastewater systems existed within the Gualala area. Analysis documented a severe degradation of surface water quality by the presence of human wastes in the drainages in the coastal terraces draining to the Gualala River and the Pacific Ocean. Based on review of the pollution study, the North Coast Regional Water Quality Control Board (RWQCB) recommended to the State Water Resources Control Board (SWRCB) that the wastewater facilities plan project be placed on the Clean Water Grants "A" priority list. The SWRCB included the project on the priority list for the 1987-1988 fiscal year as well as obtain Environmental Protection Agency (EPA) approval.

The initial project, which sewered Zones 1 and 2 (See Figure 2-1), consisted of interceptor tanks, collection system, lift stations and wastewater treatment and storage facilities. That project was completed in September 1992, and the wastewater treatment plant (WWTP) began operations on October 1, 1992.

It has been recognized by the GCSD that the general inability of the soils to accommodate on-site wastewater disposal systems is resulting in failures at existing dwellings not connected to the system and is the limiting factor in the future growth of the easterly portion of the community. Thus, Winzler and Kelly, Consulting Engineers has been retained to examine the feasibility of expanding the current collection and treatment system.

2.4 Existing Septic Systems

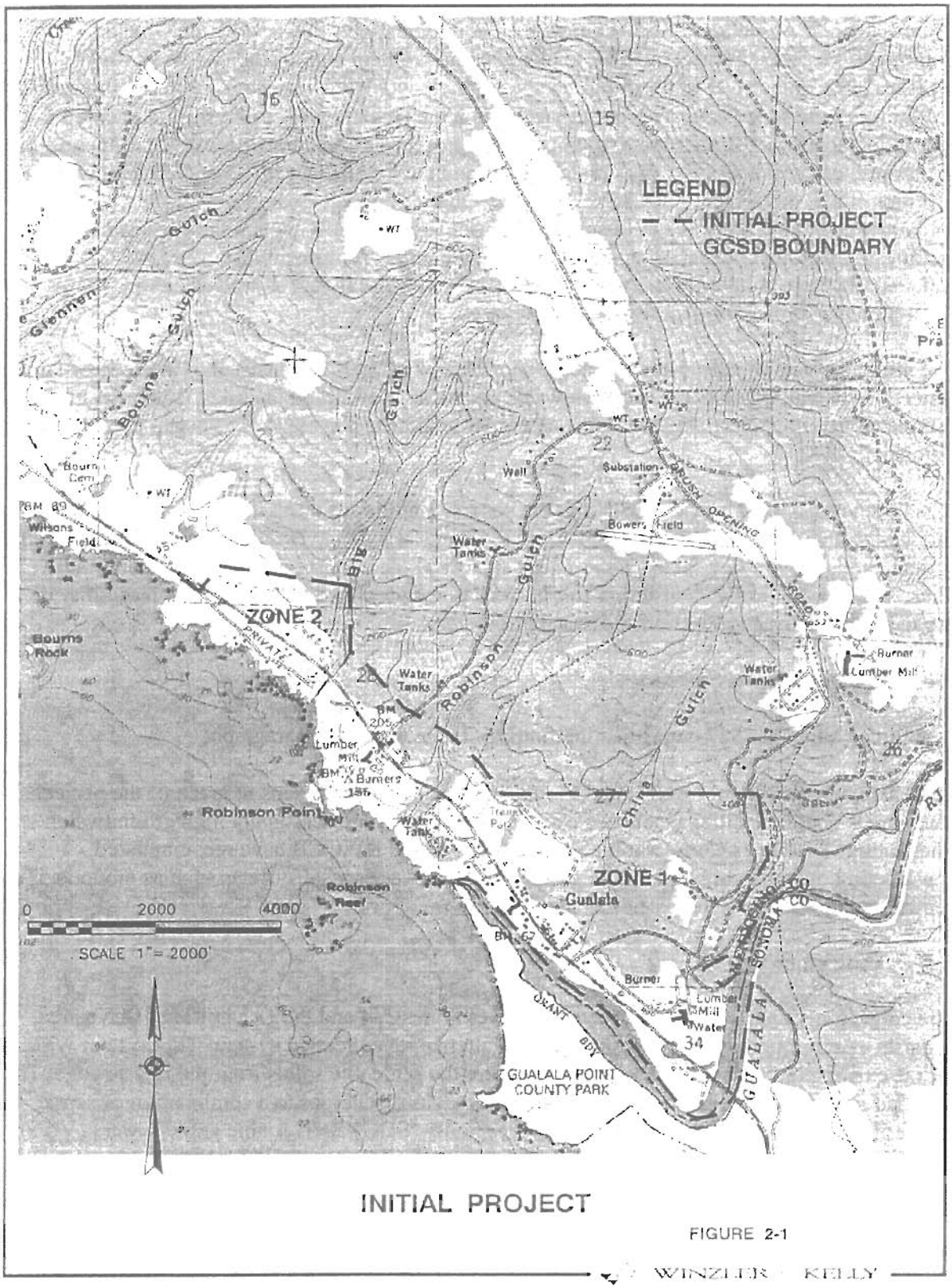
A pollution study in 1987 confirmed the findings in the following paragraph.

Soil characteristics are not well suited for conventional on-site systems in much of the project study area. These conditions include slow percolating soils and seasonally high groundwater. The Natural Resources Conservation Service (NRCS) and RWQCB have recommended constructing oversize soils absorption fields or alternative disposal systems such as mounds, if a centralized collection system is not available.

2.5 Collection System

The collection systems to be constructed to sewer Zones 3, 4 and the Ocean Ridge Drive area consists of approximately 40,566 linear feet of alternative collection system. This system will utilize existing or new septic tanks, which capture the settleable solids from the raw sewage. The clarified raw sewage effluent from the interceptor tanks discharges to a combination of septic tank effluent pumping (STEP), small diameter gravity (SDG) and variable grade sewers (VGS). These improvements will connect into the existing collection system at 2 locations.

Three small lift stations pump the septic tank effluent through approximately 6,500 linear feet of force main to the primary collection line. The total flow is discharged to Lift Station Number 4 (LS4), the main lift station. From LS4 the flow is pumped through a 6,388 foot 6-inch force main to the WWTP located south of the Gualala River in Sonoma County.



INITIAL PROJECT

FIGURE 2-1

WINZLER KELLY

2.6 Wastewater Treatment Plant (WWTP)

The following description summarizes the design of the WWTP facilities. The WWTP is designed as an extended aeration activated sludge plant. The purpose of the WWTP is to treat the soluble and suspended waste material in settled raw wastewater from the septic (interceptor) tanks to a degree that it can be used for irrigation of the Sea Ranch golf course. The water quality criteria for use for golf course irrigation are established in the Waste Discharge Requirements (WDR) No. 92-120 issued by the California Regional Water Quality Control Board – North Coast Region (RWQCB) (See Appendix A). The 30 day averages for these requirements are summarized as follows:

BODs	10 mg/l
Nonfilterable Residue (suspended solids)	10 mg/l
Settleable Solids	0.1 ml/l
Total Coliform Organisms	2.2 MPN/100 ml
Turbidity	2 NTU
Chlorine Residual	1.5 mg/l minimum

The plant was designed for an initial average dry weather flow design flow of 78,300 gallons per day (gpd), and an ultimate average dry weather flow of 131,000 gpd. The design provided for a maximum month flow of 151,000 gpd. The design loading for BOD was estimated at 150 mg/l, and for suspended solids 75 mg/l. These values calculate at 98 pounds per day (ppd) for the initial BODs loading, and 49 ppd for suspended solids. The ultimate loads are 160 ppd and 80 ppd for BODs and suspended solids, respectively. For the maximum month the loadings are 190 ppd for BODs, and 95 ppd for suspended solids.

The raw waste stream enters the plant through a manhole containing a flow meter and sampling port for determining the quality of the influent to the plant. This raw wastewater is then discharged to the treatment process. The process consists of an aeration basin, clarifier and tertiary filter with related piping and pumping facilities.

The function of the extended aeration process is to convert the soluble and suspended organic materials in the wastewater into settleable biologic floc (clumps of bacteria). The biological floc is called mixed liquor, and quantified as mixed liquor suspended solids (MLSS) in milligrams per liter (mg/l).

The raw waste material entering the aeration basis is mixed with the MLSS where it is "food" for the biological floc which converts the waste material to more biological floc.

The design of the aeration basin was based on maintaining a MLSS between 1,000 and 3,000 mg/l, and a food to microoreganism (F/M) ratio between .05 and .15. The F/M ratio is the pounds per day of influent BOD divided by the pounds of mixed liquor volatile solids (MLVSS). The MLVSS are estimated as 70% of the MLSS. The design for the maximum month anticipated MLVSS of 1,050 mg/l and F/M ratio of 0.06.

The effluent from the aeration basin containing the MLSS flows by gravity to the clarifier. The function of the clarifier is to separate the solids, the activated sludge, from the liquid portion of the waste stream. The clarified effluent goes to the tertiary filter. The settled sludge is removed by a vacuum collector and returned to the aeration basin to mix with the MLSS to maintain a biological density adequate to treat the incoming waste material. Excess sludge, resulting from the continuous conversion of incoming waste to biological cell material, is wasted to a second aeration basin for holding and further aerobic digestion of the excess sludge. A schematic outline of the process is shown in Figure 2-2.

The design objective is to produce a filtered effluent with BOD and suspended solids concentrations no greater than 10 mg/l and turbidity no greater than 12 NTU. The clarifier is designed with a peak surface loading rate of 796 gpd/sf. The maximum month rate is 334 gpd/sf. The peak solids loading rate is 0.83 pounds/sf/hour. The maximum month average solids loading rate is 0.35 pounds/sf/hour. The design provides capability to inject polymer to assist in coagulation and improving settling.

The clarifier effluent flows to the tertiary filter by gravity. The filter is used to polish the effluent by removing more of the light fraction of residual suspended material in the clarifier effluent. The filter is a traveling bridge, automatic backwash shallow bed filter. It is capable of filtering at a maximum rate of 2 gallons per minute (gpm) per square foot, for a total of 288 gpm. The filter was sized to process the anticipated peak flows from the District and produce an effluent that meets the criteria of the WDR. As with the clarifier, provision is made to add polymer ahead of the filter to improve filter efficiency.

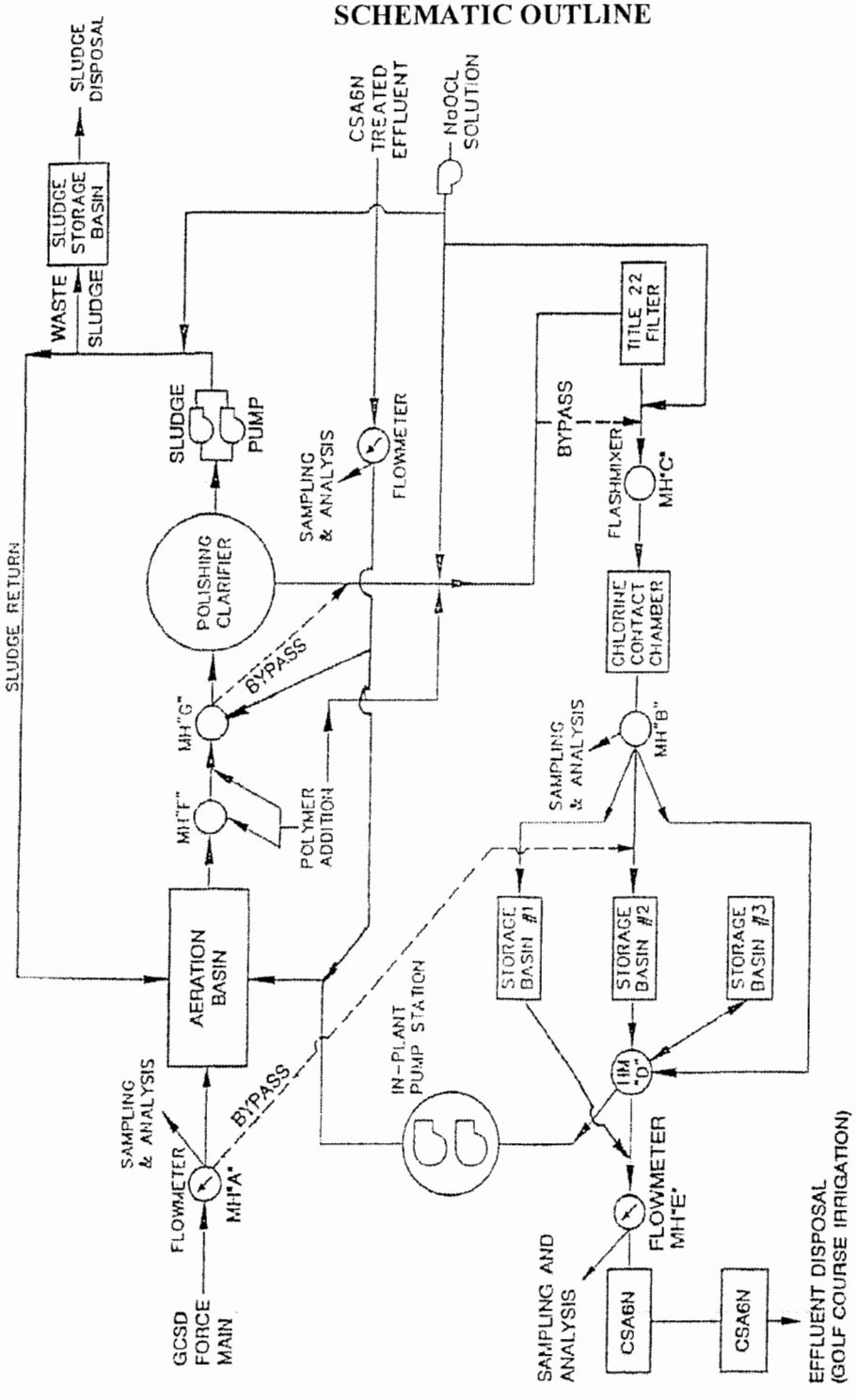
The plant design also provided for secondary effluent, maximum BOD and suspended solids of 30 mg/l and maximum turbidity of 10 NTU, from Sonoma County Service Area No. 6 (CSA6) WWTP, an existing plant servicing the northern portion of The Sea Ranch community in Sonoma County, to be processed through the tertiary filter in combination with the District flow. This was done to provide additional reclaimed water for the golf course.

The effluent from the tertiary filter is piped to a buried chlorine contact chamber to provide disinfection, meeting Title 22 requirements. A chlorine solution, calcium hypchlorite prepared in solution tanks, is injected, and flash mixed, prior to the flow entering the contact chamber. The rate of chlorine injection is based on a flow paced signal from the influent flow meter. The chlorine contact chamber consists of 256 feet of 48 inch concrete pipe for a total volume of 24,000 gallons. This provides a detention time of 86 minutes at a peak flow of 280 gpm.

The effluent from the chlorine contact chamber is the point at which the effluent must meet the WDR criteria.

The final effluent is then discharged to one of three 7.0 million gallon storage basins. Effluent meeting WDR criteria is first sent to storage basin Nos. 1 and 3. To provide for plant upsets or poor quality treatment Basin No. 2, the east basin, was designed to accept bypassed flows and recycle the water back through the plant when operations were again stable and meeting requirements. This basin is the last basin used to store effluent meeting WDR criteria because in the event of a bypass to the pond the full content of the pond must be recycled through the plant.

FIGURE 2-2
TREATMENT PLANT
SCHEMATIC OUTLINE



The stored reclaimed water is delivered to the golf course through an 8-inch pipeline from the ponds to the CSA6 plant where the line connects to a previously existing line to the golf course. Deliveries are made to the golf course on request.

The District entered into an agreement in 1991 with County Service Area No. 6 and the Sea Ranch Village, Inc., to accept up to 50 MG/yr of secondary treated wastewater. The Sea Ranch Golf Links agreed to construct 10 MG in storage facilities and to accept up to 100 MG/yr. The Sonoma County Water Agency is currently conducting an Environmental Impact Statement on expanding sewer service in the Sea Ranch area. This will increase flows to the Gualala plant. An engineering analysis was performed by Winzler & Kelly Consulting Engineers and estimated that the flow from CSA 6 (Sea Ranch North Plant) would increase by about 26,000 gpd.

In this report we will evaluate what modifications are needed to the existing collection system and treatment plant to accommodate the additional flows. Chapter 3 will provide background information on the study area. Chapter 4 provides a discussion of the institutional considerations. Chapter 5 projects wastewater flows and loads, while Chapter 6 evaluates collection system alternatives. Chapter 7 provides an evaluation of the wastewater treatment plant, while Chapter 8 discusses project financing. Chapter 9 describes the next steps for project implementation.

STUDY AREA CHARACTERISTICS AND EXISTING FACILITIES

3.1 Introduction

This chapter will discuss the general boundaries of the area of Gualala where wastewater collection is planned. It will also discuss topography, soils, geologic hazards, climate, land use, population, and will also describe the existing facilities of the Gualala Community Services District in Gualala. All of this is to serve as Background to better envision constraints or mitigation required for construction and operation of the wastewater collection system.

3.2 Study Area Boundaries

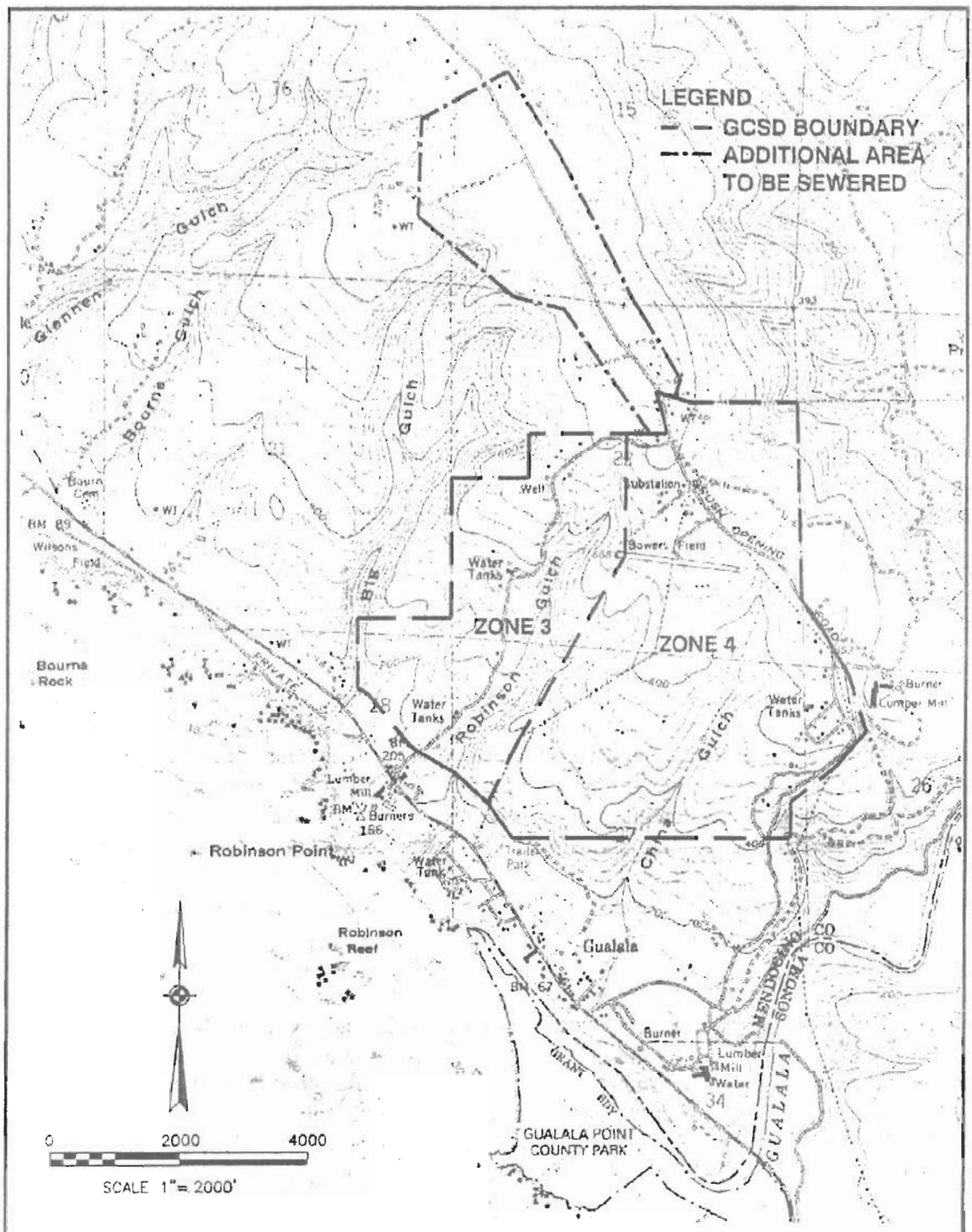
The boundaries of this study area have been set as the boundaries of the Gualala Community Services District sewer zones 3 and 4 and the adjacent Ocean Ridge Subdivision area. These boundaries are shown in Figure 3-1. In general, it includes all of Section 22 of Township 11 North Range 15 West, the Northwest quarter of Section 26, the West half of Section 23, the North half of Section 27, and the Southwest quarter of Section 15. It basically includes the properties bounded by Old Stage Road to the south and east, Pacific Woods Road to the north, and Hwy 1 to the east.

The planning area contains approximately 880 acres with a total number of developed residences of 322. Potential lots for future development also exist in the project study area. One such development is the Ocean Ridge Subdivision in the northern part of the study boundary. The Ocean Ridge Subdivision has 100 lots with 40% of those currently developed. In addition, the planning area includes a "residential reserve". The "residential reserve" is a 480-acre area east of town that was identified as a suitable location for future residential development. The intention of having this area is to concentrate future town growth in an area that would be easily accessible to the commercial areas of town yet could be served with municipal water and sewer services.

3.3 Topography

The area to be sewered is located near in the town of Gualala and the nearby coastal range mountains within the GCSD boundary. The site topography varies from near elevation 600-ft on the northeast corner of the site along Old Stage Road to near elevation 80-ft at the town of Gualala, in a distance of less than two miles from the Pacific Ocean.

China Gulch and Robinson Gulch drain the entire study area, with China Gulch being a tributary for the Gualala River in the south of the study area and Robinson Gulch feeding directly to the Pacific Ocean in the north of the study area.



PROJECT STUDY BOUNDARIES

FIGURE 3-1

WINZLER KELLY

3.4 Soils

General soils information for Mendocino County and the Gualala area has been preliminarily generated by the USDA National Resources Conservation Service (NRCS). The following reviews the soils found in the project area boundary:

The predominant soil type in the Gualala area is the Ferncreek-Quinliven-Shinglemill complex. This type is found in the Gualala town area in the slopes ranging from 2 to 15%. The Shinglemill soil type is poorly drained and consists of a 3" upper surface layer of light gray or pale brown loam, followed by a reddish or yellowish loam. At about 15" below the surface the soil turns to light yellowish brown clay and this type is characteristic of the subsequent depths. Below 60" the soil consists of yellowish brown clay and sandy clay with light gray, white, or red mottles.

Just East of Gualala, in the "residential reserve" area, is Quinliven and Ferncreek soil. The Quinliven soil is present on about 60% of this unit and is a deep and well-drained type. Typically, this soil consists of upper layers of gray sandy loam varying to white and pale brown loam and yellowish brown loam. At about 18' below the surface a substratum of brownish yellow clay and yellowish red clay is found. Below 64"the soil is a yellowish red sandy loam with brown mottles. The Ferncreek soil is deep and poorly drained. This soil type is very similar to the Quinliven soil except that a very pale brown and light yellowish brown clay loam is found only 9" below the surface instead of 23". This clay reaches a depth of around 61", where the substratum continues as a brownish yellow sandy loam with red mottles.

The Quinliven, Ferncreek, and Shinglemill soils offer low to moderate permeability and generally groundwater can be found at minimal depths. For example, soil saturation in Shinglemill soils can be located at a depth of 12" below the surface during the rainy season. The seasonally saturated soil conditions and the restricted permeability of the Shinglemill soil increases the possibility of leach field failures, a noted problem in the Gualala area and the reason for doing this study. All of these soils are suitable for residential development as the surface water runoff is small and erosion is small.

Within the hilly mountainous areas along Old Stage Road and in the drainages of China and Robinson Gulches, lies the Irmulco-Dehaven-Vandamme complex. This type of soil is found in the Redwood and Douglas fir forested hills east of Gualala where the ground slopes vary from 2 to 75%. The Irmulco soil is a well drained and deeply weather bedrock derived from sandstone. Generally, this soil ranges from a pale brown loam near the surface to a light brown, pink, and reddish yellow loam to a depth of about 60". Below that is fractured sandstone. The Dehaven soil is well drained and is deep to bedrock. The 17" upper layer is made up of a brown gravelly loam followed by 35" of brownish yellow gravelly sandy clay loam. Fractured hard sandstone bedrock is reached at a depth of 52". The Vandamme soil is well drained and is derived from sandstone. Typically, the surface layer is pale brown loam changing to a light brown clay loam to a depth of approximately 14". The next 11"-28" is reddish yellow and brownish clay loam with soft sandstone occurring at around 40" below the surface.

The Irmulco, Dehaven, and Vandamme soils are in steep areas with brisk surface water runoff. All are moderately permeable and are highly erosive if the land has been cleared of vegetation.

3.5 Seismicity

The Mendocino County coast was formed during the Cretaceous and Early Tertiary ages or between 144 and 1.6 million years ago. Seismic activity is responsible for the major geological features including the coastal terraces and the coastal mountain ranges.

The most evident tectonic feature in the Gualala project planning area is the San Andreas Fault. This is a major, active fault, and can create major seismic hazards including ground shaking, surface faulting, ground failure, and Tsunamis. The San Andreas Fault is capable of earthquakes with a magnitude of 8.0 or larger and mass destruction. In fact, according to the Mendocino County Seismic Safety Element, "there is a very real possibility of a major earthquake ranging in magnitude 6.5 to 8 within the next 25 to 50 years in this portion of Mendocino County" (Wentworth, 1972). In addition, other smaller minor faults occur in the project area, but there activity is minimal compared to the larger, more prominent San Andreas Fault.

3.6 Climate

The Mendocino County Coast is much like the rest of the Northern California coast in that it is characterized by a maritime climate with foggy mild summers and cool wet winters. This weather occurs when the moisture-laden winds coming predominantly from the Pacific Ocean intercept the coastal mountains and are cooled as they pass over the mountains.

3.6.1 Temperature

The nearest complete long term records for temperature data were available from a nearby Point Arena weather station and are representative of the coastal weather conditions experience by the town of Gualala. Temperature data has been gathered at this station since 1948.

Temperature means for the winter months of December, January, and February have an average about 48.8°F with a mean low of about 40.5°F and a mean high of about 57.2°F. For the spring months of March, April, and May, the average is 51.6°F with the minimum average being 43.3°F and a maximum average temperature being 59.8°F. June, July, and August are the hottest months with a temperature mean of approximately 57.5°F with a mean low of 49.6°F and a mean high of 65.3°F. For the fall months, the average is around 55.5°F with the mean low being 46.2°F and the mean high of 64.9°F. Generally, temperatures can vary from 30's in winter to the 80's in summer and fall months. Temperature extremes have been as high at 95°F and as low as 22°F, but these are rare for Northern California coastal regions.

3.6.2 Precipitation

Precipitation has been recorded at the nearby weather station in town of Point Arena since 1948. Monthly and annual means are shown in Table 3-1. The average annual precipitation in the Gualala area is 40.88 inches. The lowest total annual rainfall on record is 21.23 inches, while the maximum has reached 83.34 inches.

Table 3-1
Precipitation Record
Gualala, CA

Month	High Recorded Rainfall (in)	Low Recorded Rainfall (in)	Mean Recorded Rainfall (in)
January	18.34	0.78	7.82
February	21.99	0.34	6.74
March	15.51	0.58	5.70
April	7.65	0.26	2.93
May	2.13	0	0.73
June	1.39	0	0.25
July	1.57	0	0.13
August	3.15	0	0.35
September	3.56	0	0.85
October	9.44	0	2.74
November	15.03	0.05	5.89
December	15.76	1.16	6.75
Annual	83.34	21.23	40.88
Winter	42.23	5.99	21.32
Spring	22.55	3.60	9.36
Summer	4.00	0.00	0.74
Fall	20.51	2.40	9.47

1. Measured at DWR Weather Station #047009 @ Point Arena, CA, recorded from 1948 to 1988.
2. Mean precipitation is from the means of all the data recorded between the years 1948 and 1988, not from the highs and lows shown above.
3. The high and low values are taken from the individual year (between 1948 & 1988) when the maximum precipitation was reached.

3.7 Land Use

The Mendocino County Zoning Ordinance and more specifically the Gualala Town Plan implements the provisions of the general county plan making specific regulations for land use and development. These specific zoning designations were amended from original county zoning to adjust for the larger population growth rate the area has experienced over the original county plan estimate.

The existing pattern of development and land use within the proposed study area of GCSD sewer zones 3 & 4 is as described in the Gualala town plan and the Mendocino County Zoning Ordinance, and as shown in Figure 3-2. Most of the land in the study area is classified as rural residential with the principle uses being for residential, light agriculture, and coastal open space. The zoning primarily exists along Pacific Woods Road and Old Stage Road. In the upper

northwest corner of GCSD sewering zone 3 and within 415 acres of the 480 acre "residential reserve", the land is classified as being remote residential. The primary uses of remote residential zoning is the same as that for rural residential except that the permitted parcel sizes are larger. For example, presently the current zoning for development in the "residential reserve" requires 40-acre minimum parcel sizes. Within the reserve is a 65-acre zone classified for timberland production. Zoning for timber production also exists along the southeast portion of the planning area on land owned by the Gualala Redwoods Company.

3.8 Present and Future Population

Population data for the town Gualala was obtained from the U.S. Census Bureau of the years 1980, and 1990. During this time period the Gualala area experienced a jump in population from 1275 people to 1750 people, or a growth rate of about 37%. In comparison, Mendocino County as a whole experienced a 20% growth rate to reach a 1990 population of 80,345.

Presently the population in Gualala is approximately 2500 residents, not counting seasonal visitors. This value was approximated from the growth rate that nearby Point Arena had between 1990 and the year 2000. Between 1990 and the year 2000, Point Arena had a population jump from 407 people to 574, representing a growth rate of approximately 30%. Thus, a 30% growth rate was used to estimate the present population in Gualala, as the U.S. Census Bureau did not have current data for the town. In contrast, Mendocino County as a whole has experienced a much lower growth of approximately 7% between the years of 1990 to the present.

For future projections of population one must look at the above growth rates estimated for the County of Mendocino and Gualala. No specific information exists for the sewering feasibility planning area so general projections and assumptions must be made for the town of Gualala itself and surrounding areas. New planned residential developments such as lots in Ocean Ridge Drive Subdivision and potential development within the "residential reserve" will have an effect on the population.

Legend

- Gualala Town Plan Area - Urban-Rural Boundary
- Coastal Zone Boundary
- Zoning Boundary
- Residential Reserve

Zoning Map
Gualala Community Services District

Figure 3-2

From Mendocino County data and the Gualala Town Plan the future growth rate is expected to be 3.7%, much lower than the growth rate between 1990 and the year 2000. When planning wastewater facilities, a twenty-year planning horizon is typical. In the year 2022, the projected Gualala population will be around 5170 people. This population growth will likely appear in the eastern portion of the district where proposed development, as mention above, can take place.

3.9 History and Archaeology

The Northwest Information Center (NIC) of Sonoma State University indicated in (OLA, 1988) that prehistoric sites exist south of the Gualala River and the general project area contains numerous environmental settings which might yield unrecorded sites. Collection system alternatives identified in this document will be subject to archaeological investigations, archival record searches, and appropriate mitigation measures.

Three Pomoan language-speaking groups formally occupied the project planning area. The Central Pomo controlled the coast between the mouth of the Gualala River and the Navarro River; The southwestern Kashaya Pomo territory ranged along the coast, south from the mouth of the Gualala River to Duncans Point; and, the Southern Pomo occupied inland areas with a narrow extension to the coast between the Central and Kashaya tribes. Between these tribes, a village was established at the north side of the Gualala River at the present location of the town of Gualala to act as the location of inter-tribe trading and communication.

Gualala was the name applied to the Kashaya as well as the Southern and Central Pomo occupying the area near the mouth of the Gualala River. Besides the ocean resources available to the tribes, the nearby hills provided game, acorns, and other subsistence resources

During the 1860's and 1870's the Gualala area took part in lumber production and a sawmill was constructed at the mouth of the Gualala River. It was timber production that brought workers and families to the area and started growth in the town of Gualala. The lumber mill operated until 1920, when it was shut down. Timber production has since slowed in the area and today its production accounts for very little in the local economy and has since been replaced by tourism as the main source of revenue.

3.10 Environmental Features

Some environmental features are given protection by local, state, and federal ordinances or laws. Normally, these are features that could be destroyed or damaged by residential and municipal development and have been recognized as having a benefit the public sees as worth preserving. For the scope of this report, historical and archaeological sites as well as environmentally sensitive areas have been researched within the areas within the study area.

Sensitive resources in the project study area include the two gulches within the outer edges of the "residential reserve". These two fragile ecosystems include Robinson Gulch to the north of the study area near Pacific Woods Road, and China Gulch to the south of the study area. Being seasonal creeks as well as supplementary water for the town of Gualala increases the importance to protect these natural areas. Certain coastal areas in Mendocino County are known for having

species of plants and other habitats preserved under the Endangered Species Act. Although, known occurrences have been along the coastal prairies and at Gualala Point, the laws potentially cover the ecosystems found in the two gulches identified above.

3.11 Existing Facilities

3.11.1 North Gualala Water Company

The North Gualala Water Company (NGWC), whose boundaries include approximately 12,000 acres of land extending from the Gualala River north to Fish Rock Road, provides domestic water service in the Gualala area. From 1965 to 1989, the water source for the Gualala area was from an offset well located near the confluence of the Little North Fork and North Fork of the Gualala River. Due to company concerns regarding the drinking water quality it was decided to abandon this original point of diversion and construct a new primary water source.

The primary source of water for the NGWC is from a 142-foot production well near Elk Prairie. This new well is able to produce a max output of approximately 250-260 GPM. Supplementary water sources also exist at Big Gulch and Robinson Gulch were created. In addition, the NGWC has three wells that are only used for observation and water quality sampling.

Storage for the NGWC water system is by large water tanks on Pacific Woods Road. In 1995, there were approximately 917 connections to the NGWC water system (Gualala Town Plan). Currently, there are approximately 1200 connections to the water system.

3.11.2 Private Wastewater Systems

The only facilities that exist within the GCSD zones 3 and 4 and Ocean Ridge Drive are private septic systems. Prior studies and GCSD staff experience has shown that the seasonally high groundwater and clay type soil conditions (see Soils information above) have made it troublesome for individual on-site sewage disposal systems to function properly. During the peak of the rainy season, private landowners and GCSD staff have observed leach line effluent seeping to the surface, causing odors and public health concerns.

The prime reasons for this project is to improve sewage treatment for existing residential developments and to allow service to be provided on sites that have already been subdivided, but not developed.

3.11.3 GCSD Wastewater System

The Gualala Community Services District Wastewater treatment system was completed in 1993 and serves roughly one-third of the district boundary area. The area currently is sewered within GCSD sewer zones 1 and 2. The treatment plant was designed to be adaptable for increases in treatment capacity.

CHAPTER 4

INSTITUTIONAL CONSIDERATIONS

4.1 Introduction

Institutional considerations cover local, regional, County, State, and Federal entities that may have either regulations or policies that could affect the implementation of the Gualala wastewater collection system construction.

Various agencies have regulations, such as the California Environmental Quality Act, the National Environmental Policy Act, and other Acts that exert control over the construction and operation of facilities such as the GCSD wastewater collection system expansion. These will be briefly described to serve as background for those reviewing this report.

4.2 Agencies and Jurisdictions

4.2.1 North Gualala Water Company (NGWC)

This privately owned water company controls domestic and irrigation water for the Gualala Community and the nearby town of Anchor Bay. This agency has water rights, storage facilities, treatment facilities, and a distribution system within their boundaries.

This agency, under the authorization of the State Water Resources Control Board (SWRCB) diverts water from various streams tributary to the Pacific Ocean in Mendocino County.

4.2.2 Mendocino County

Gualala comprises about 3% of Mendocino County's Population. The largest community is Ukiah, about 66 road miles east of Gualala. The county seat is in Ukiah, where general county government takes place under the jurisdiction of the Board of Supervisors.

The county has jurisdiction on all land use decisions and future development in the coastal regions under the Mendocino County Local Coastal program. The Gualala Town Plan provides guidance on these issues and this has been used as reference in this study.

4.2.3 Regional Water Quality Control Board (RWQCB)

The Regional Water Quality Control Board is in charge of sewage policies for the state of California to maintain the quality of receiving waters. The regional authority for Mendocino County and thus Gualala is the North Coast Regional Water Quality Control Board (RWQCB), with offices in Santa Rosa.

The RWQCB sets discharge standards for wastewater systems, and monitors performance of all authorities handling sewage within the State of California. The RWQCB sets policies for each community, which varies from area to area. Typically, they set discharge standards, which govern effluent quality and the conditions under which any discharge can occur.

GCSD currently has waste discharge requirements (WDR) that are set by the RWQCB, and are included in Appendix A. A modification to this permit will be required with this project. This modification is needed to document the changes in the service area and at the treatment plant.

4.2.4 Local Area Formation Commission (LAFCO)

The local Agency Formation Commission (LAFCO) is a local governmental authority acting under the jurisdiction of the County Board of Supervisors. LAFCO governs the interaction between various districts, towns, or political subdivisions, establishes spheres of influence, and decides (with the board of Supervisors) which agencies should construct various facilities. LAFCO also assists with establishing the authority to governmental agencies in exercising powers within their logal jurisdiction that have not previously been exercised by that agency. In this case, the Gualala Community Services District (GCSD) is the LAFCO approved sewer authority for the town of Gualala.

4.2.5 California Department of Health Services (DHS)

The California DHS is more concerned with public health than water quality, even though at times the two are related. For Gualala, the California DHS exercises control and sets standards for effluent that may by irrigated onto crops, forestlands, and public areas such as golf courses.

The United States Environmental Protection Agency, the California Water Resources Control Board, the California Department of Water Resources, the California Department of Health Services, the California Conference of Directors of Environmental Health, the United States Bureau of Reclamation, and the Water Reuse Association of California all support water reclamation. For Gualala this would imply that they support adequate treatment and water reuse irrigation.

4.3 Existing and Potential Future Regulations

4.3.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) will require the filing of an initial study, which has indicated that the preparation of either a mitigated negative declaration or an Environmental Impact Report (EIR) for this project is required. CEQA is the State's environmental protection law that was enacted in 1970 and was modeled after the federal legislation contained in the National Environmental Policy Act (NEPA). Documentation to comply with CEQA for potential projects that may result from this Feasibility Study may include the preparation of one or more of the following:

- Preliminary Review/Initial Study
- Notice of Exemption
- Negative Declaration (Neg Dec)
- Environmental Impact Report (EIR)

This Feasibility Study itself is exempt from CEQA based upon Article 18 of the Guidelines for Implementation of CEQA which states: "A project involving on feasibility or planning studies for possible future actions which the agency Board of Commission has not approved, adopted or funded does not require the preparation of an EIR or Negative Declaration, but does require consideration of environmental factors. This section does not apply to the adoption of a plan that will have a legal binding effect on later activities."

Although this Feasibility Study is exempt from CEQA, implementation of a project in the future based on this Feasibility Study will require some phase of CEQA compliance, possibly a mitigated Negative Declaration, a focused EIR, or a full EIR.

4.3.2 National Environmental Policy Act

The National Environmental Policy Act (NEPA) may require the filing of documents or preparation of an Environmental Impact Statement (EIS) for a project. NEPA is the nation's broadest environmental law that is a result of federal legislation that has been in effect since 1970. The requirements of NEPA are triggered by any federal action such as federal permitting or funding of an activity. An example of a project that would require NEPA permitting is a project that involves wetlands or requires a permit from the Army Corps of Engineers. Documentation to comply with NEPA may include preparation of one or more of the following:

- Preliminary Review/Initial Study
- Categorical Exclusion Documentation
- Environmental Assessment (EA)
- Finding of No Significant Impact (FONSI)
- Environmental Impact Statement (EIS)

The provisions of NEPA will likely apply to potential projects that result from this Feasibility Study due to the participation by federal agencies.

4.3.3 Regulations Pertinent to Gualala

A. Since Gualala is part of the sensitive coastal area by the North Coast Regional Water Quality Control Board, wastewater effluent, no matter how well treated, cannot be discharged directly to a ditch, creek, or stream.

B. Wastewater reclamation and thus irrigation is considered a beneficial use of treated wastewater, along with uses such as industrial cooling, recreation, groundwater recharge, environmental enhancement, and other uses permitted under California law. The California State Legislature has adopted statewide goals for water reclamation to provide 1 million acre-feet by the year 2010, so as to help the State meet its future water supply needs.

The Department of Water Resources estimates that California will need to increase its water supply by 3 million to 5 million acre-feet by the year 2020, which includes an assumption that 1,300,000 acre-feet of conservation will be achieved by that time. It is felt that California law and regulations are fully protective of human health and require specific levels of water quality and treatment corresponding to each beneficial use of reclaimed water. Title 22 provides required levels of treatment for various types of reclamation.

C. As regulations are ever changing, potential future changes to regulatory requirements should be anticipated. As water reclamation is advantageous to the State, future regulations could require more emphasis be put on this method of water reuse. This is particularly true where water can be used for irrigation.

Although, secondary treatment requirements have not changed greatly in recent years, there is the tendency of the RWQCB to require that all treatment plants try to upgrade their treatment facilities to provide lower BOD and suspended solids. Hence, consideration for this will be made in the expansion of the existing collection and treatment system.

Filtration, or tertiary treatment, is also looked upon favorably and currently there is a need of such a highly treated irrigation waters in the Gualala area. Thus, there may be a tendency towards higher degrees of treatment to provide for such uses.

CHAPTER 5

PROJECTED WASTEWATER FLOW AND LOAD

5.1 General

The purpose of this chapter is to project the wastewater flows and loads from the Proposed service area. Flows and load characteristics will be projected utilizing existing records, comparison to similar areas and from generally accepted engineering standards. Flows will be projected by utilizing the population projections set forth in Chapter 3 of this report and by determining the number of lots that could be potential future connections. The results of the projection will be used in sizing the collection, treatment and disposal facilities.

5.2 Wastewater Flows

The wastewater flows that a collection, treatment, and disposal system will experience vary based on many factors including the following:

- Type of connection (i.e., domestic, industrial, etc.)
- Water conservation
- Type and condition of collection system
- Weather and groundwater conditions
- Lifestyle

The type of connection and water conservation efforts affect the base wastewater flow. Rainwater and groundwater can enter a collection system through direct connections to the collection system or through leaks in piping. As a collection system ages, it tends to allow more water into the piping through leaks that develop as roots penetrate the pipe or as the ground shifts. If allowed or connected illegally, storm drain connections can add considerable flows into this system. Currently, there are no storm drain connections in the proposed area to be sewered area. No anticipated storm drain connections to the Gualala collection system will be allowed.

The following wastewater flow scenarios will be considered to account for potential variations in flow:

- Average Daily Flow (ADF)
- Peak Daily Flow (PDF)
- Peak Wet Weather Flow (PWWF)

Average Daily Flow (ADF)

The daily average flow is the flow for the total year divided by 365 expressed in gallons per day (gpd). As an instantaneous flow rate it is the average spread out over a 24-hour period, and expressed in gallons per minute.

Peak Daily Flow (PDF)

The peak daily flow is the highest flow anticipated any time during an average day. Daily peaks occur because the timing of wastewater generation depends on the timing and the type of water uses that take place. Domestic users tend to have a high morning peak with a lower evening peak corresponding to bathing, food preparation, dishwashing, and clothes washing trends. Industrial users, on the other hand, tend to use water on a more consistent basis with much more subdued daily peaks.

Peaking factors for systems, which are primarily residential, vary between 2 and 5. Based on the limited population to be served by the Gualala Community Services District study area collection system, a peaking factor of 3 was selected for use in this study. The daily peaking factor is multiplied by the average flow to result in the anticipated peak daily flow.

Peak Wet Weather Flow (PWWF)

The peak wet weather flow (PWWF) is the highest flow anticipated anytime during a major rainfall event. Wet weather peaks occur in any collection system, although with proper design, construction, and maintenance can help minimize peaks. Well-built and inspected collection systems, which utilize PVC mains, have peak flows on the order of 150% of peak daily flow. For the purpose of this study, the peak-wet weather flow has been estimated as 150% of peak daily flow.

Wastewater flows for Gualala Community Services District can be estimated from existing sewer use records. Table 5-1 through 5-3 shows monthly influent and effluent flows for the years 2000, 2001 and 2002. Winter wastewater use records for the existing sewage collection system can be utilized to estimate the number of gallons per capita day consumed by each equivalent single-family dwelling unit (EDU). Winter records for the months of January, February, and March were used to determine that the average daily wastewater produced per EDU in the District's zones 1 & 2 is 187 gpd/EDU. Thus, at 2.8 people per household, this value represents approximately 66 gpd per person. For this report, a value of 70 gpd per person (or 196 gpd/EDU) was used to account for possible future demands in flow and that the year 2001 and this year (2002) are know to be "dry" years. Table 5-4 lists the current and projected population, EDU's, Average Daily Flow, Peak Daily Flow, and Peak Wet Weather Flow for the years 2002, 2012, and 2022. Moreover, Table 5-4 also compares the above with the total flow that can be expected at "build out" if all currently developed lots, vacant lots, and potential splitable lots are connected into the system. Table 5-5 provides the backup to determine the potential development in the serviced areas.

5.3 Septage

For information on the present GCSD wastewater treatment facility please refer to Section 2.6.

5.4 Septage Characteristics

In reviewing the EPA Handbook for Septage Treatment and Disposal, characteristics of septage in the United States would be expected to have the following design values:

Total Solids, 40,000 mg/l
Total volatile solids, 25,000 mg/l
Total Suspended solids, 15,000 mg/l
Volatile suspended solids, 10,000 mg/l
BOD_5, 7000mg/l
COD, 15,000 mg/l
TKN, 700 mg/l
NH_3-N, 150 mg/l
Total P, 250 mg/l
Alkalinity, 1,000 mg/l
Grease, 8,000 mg/l
pH, 8 units

As it can be seen above, with an average BOD of 7,000 and total suspended solids of 15,000, the strength is 28 to 60 times the strength of average domestic waste. For this reason, people allowed to dump septage at the treatment facility should be charged accordingly.

Table 5-1
Gualala Community Services District
Year 2000 Annual Report

Month	GCSD Influent MG*	CSA6N Influent Gallons	Effluent MG*	Monthly Averages of								
				BOD mg/L	NFR mg/L	Coliform mg/L	NTU units	Chlorine mg/L	Nitrates mg/L	pH units	EC unhos/cm	TDS mg/L
January	1.3279	0.0000	0.0000	4.91	0.43	0.00	0.14	4.35	0.01	6.10	268.0	126.0
February	1.7112	0.0000	0.0000	3.76	0.59	0.00	0.26	3.65	0.01	6.40	299.0	115.0
March	1.3860	0.9277	0.0000	4.30	0.97	0.00	0.24	4.03	0.01	6.40	299.0	115.0
April	1.3122	1.4614	2.0022	3.55	1.23	0.00	0.37	2.88	0.01	5.78	192.6	95.3
May	1.3513	1.9660	5.1592	3.79	1.20	0.00	0.46	2.72	0.01	6.50	186.0	91.0
June	1.3536	1.9965	4.109	2.30	0.44	0.00	0.54	2.48	0.01	6.50	186.0	91.0
July	1.4236	2.8012	3.4547	3.02	0.46	0.00	0.31	2.32	0.00	6.03	264.0	131.0
August	1.5480	2.4262	6.6176	3.19	1.12	0.00	0.48	2.74	0.00	5.93	234.0	118.0
September	1.2925	2.5108	6.3570	4.61	0.80	0.25	0.77	2.9	0.00	5.82	240.0	125.0
October	1.2958	2.2803	5.5133	3.88	1.50	0.33	0.79	2.91	0.01	6.00	270.0	125.0
November	1.2592	0.0085	0.0000	3.70	0.49	0.00	0.41	3.01	0.01	5.67	227.0	114.0
December	1.2221	0.0000	0.0000	4.30	0.46	0.00	0.51	3.15	0.02	5.71	233.0	111.0
Total in MG*	**16.4834**	**16.37864**	**33.20390**									

*MG = million gallons

Table 5-2
Gualala Community Services District
Year 2001 Annual Report

Month	GCSD Influent MG*	CSA6N Influent Gallons	Effluent MG*	Monthly Averages of				
				BOD mg/L	NFR mg/L	Coliform mg/L	NTU units	Chlorine mg/L
January	1.3854	0.00000	0.0000	3.99	0.63	0.00	0.58	2.48
February	1.4594	0.18680	0.0000	3.97	1.22	0.00	0.52	2.74
March	0.0000	1.81600	0.0000	2.89	0.97	0.00	0.54	2.95
April	1.2358	2.33794	0.6696	3.80	1.08	0.00	0.37	2.98
May	1.3974	1.81476	7.5290	4.23	1.13	0.50	0.70	3.16
June	1.4036	1.32580	5.9213	3.51	1.21	0.00	0.31	3.57
July	1.4774	2.63220	5.2574	3.72	1.00	0.00	0.31	3.01
August	1.4306	2.48290	7.3155	2.56	0.98	0.00	0.25	3.35
September	1.2609	1.66720	3.9867	1.80	0.61	0.00	0.25	2.85
October	0.6485	0.00000	0.5150	2.00	0.45	0.00	0.33	2.21
November	1.4646	1.07000	1.1410					
December	1.8704	0.00020	0.0000					

*MG = million gallons

Table 5-3
Gualala Community Services District
Year 2002 Annual Report

Month	GCSD Influent MG*	CSA6N Influent Gallons	Effluent MG*
January	1.6900	0.00000	0.0012
February	1.2270	0.7376	0.0229
March	1.2802	2.3295	0.0045
April	1.1974	2.3293	0.3117
May	1.1723	2.0281	4.3913
June	1.1688	2.0923	5.2746
August	1.3632	2.8728	6.0774

*MG = million gallons

Table 5-4
Gualala Community Services District
Flow Projections
Sewer Zones 3, 4 & Ocean Ridge Drive Subdivision

Future Projections Using a 3.7% Growth Rate			
Year	**2002**	**2012**	**2022**
Sewer Zones 3 & 4			
Population	580	834	1,200
EDU's	207	298	429
Average Daily Flow (gpd)	40,572	58,346	83,908
Peak Daily Flow[1] (gpd)	121,716	175,038	25,724
Peak Wet Weather Flow (gpd)	182,574	262,557	377,586
Ocean Ridge Drive Subdivision			
Population	322	463	666
EDU's	115	165	238
Average Daily Flow (gpd)	22,540	32,415	46,615
Peak Daily Flow[1] (gpd)	67,620	97,245	139,845
Peak Wet Weather Flow (gpd)	101,430	145,868	209,768
Totals			
Average Daily Flow (gpd)	63,112	90,761	130,523
Peak Daily Flow[1] (gpd)	189,336	272,283	391,569
Peak Wet Weather Flow (gpd)	284,004	408,425	587,354
Buildout of All Existing/Vacant/Splitable Lots			
Sewer Zones 3 & 4[3]			
EDU's	388		
Average Daily Flow (gpd)	76,048		
Peak Daily Flow[1] (gpd)	228,144		
Peak Wet Weather Flow (gpd)	342,216		
Ocean Ridge Drive Subdivision[3]			
EDU's	311		
Average Daily Flow (gpd)	60,956		
Peak Daily Flow[1] (gpd)	182,868		
Peak Wet Weather Flow (gpd)	274,302		
Totals			
Average Daily Flow (gpd)	137,004	*Buildout will occur approximately in the year 2023	
Peak Daily Flow[1] (gpd)	411,012		
Peak Wet Weather Flow (gpd)	616,518		

[1] PDF = ADF x 3
[2] PWWF = PDF x 1.5
[3] The EDU's and Average Daily Flows calculated in this section were added to the 2002 values

Table 5-5
Gualala Community Services District
Backup for Current and Future Flow Projections

GCSD Sewer Zones 3 & 4										
Sewer Shed	**# Developed**	**# Dev. Not Shown**	**# Vacant**	**# Vac. Not Shown**	**Developed EDU's**	**Av. Daily Flow [1.] (gpd)**	**Undeveloped EDU's**	**Av. Daily Flow [1.] (gpd)**	**Potential Lot Split EDU's**	**Av. Daily Flow [1.] (gpd)**
1	15		11		15	2,940	11	2,156	13	2,548
2	30		5		30	5,880	5	980	8	1,568
3	11		8		11	2,156	8	1,568		0
4	15		14		15	2,940	14	2,744		0
5	11		2		11	2,156	2	392	10	1,960
6	7		4		7	1,372	4	784	7	1,372
7	10		4		10	1,960	4	784	12	2,352
8	19		9		19	3,724	9	1,764		0
9	7		2		7	1,372	2	392		0
10	17		9		17	3,332	9	1,764	22	4,312
11	4	4	1	2	8	1,568	3	588	0	0
12	30				30	5,880	0	0		0
13	16		1		16	3,136	1	196	33	6,468
14	11				11	2,156	0	0	4	784
				Subtotals	207	40,572	72	14,112	109	21,364
						0.040572		0.014112		0.021364
Ocean Ridge Drive										
15	15		4		15	2,940	4	784	57	11,172
16	14		8		14	2,744	8	1,568		0
17	12		3		12	2,352	3	588	2	392
18	45		21		45	8,820	21	4,116	34	6,664
19	3		4		3	588	4	784		0
20	12		1		12	2,352	1	196	30	5,880
21	14		1		14	2,744	1	196	31	6,076
				Subtotals	115	22,540	42	8,232	154	30,184
						0.02254		0.008232		0.030184
				Totals	322	63,112	114	22,344	263	51,548

1. Assumed design flow = 70 gpd/person w/2.8 persons/EDU
2. All values above are for single family residences = 1 EDU

Total Undev. Connections (EDU)		377
Current Undeveloped Flow (gpd)		73,892
	in MGD	**0.073892**

CHAPTER 6

COLLECTION SYSTEM ALTERNATIVES

6.1 Introduction

Many different types of systems are available to collect wastewater from a service area. Several types of wastewater collection systems will be discussed and evaluated in this chapter that may be applicable for the Gualala Community Services District proposed wastewater collection system.

6.2 Factors Affecting Selection of Collection Systems

The type of collection system that is most appropriate for a specific area depends on certain characteristics of the study area. The following characteristics of the study area are most important when considering collection system alternatives:

- Topography and Soils
- Overall housing density
- Length of the collection system

6.2.1 Topography and Soils

The topography and soils of the study area were discussed in Chapter 3. Steep coastal range mountains with several rolling sections characterize the study area. Existing and potential future development exist along Pacific Woods Road and Old Stage Coach Road. Generally, there is a continuous downhill grade from east to west, with the low points being near the town of Gualala along both of the two above-mentioned roads.

6.2.2 Overall Housing Density

The Gualala Community Services District Boundaries encompasses approximately 1430 acres of area in and around the Town of Gualala. The present population within the district is estimated to be approximately 2,500 people with a projected population of approximately 3,595 in the year 2012. The proposed sewered area consists of 880 acres in the eastern portion of the district boundary, or within GCSD sewer zones 3 & 4. This area includes approximately 322 developed residences and an estimated 377 future residential lots within the eastern district boundary.

6.2.3 Length of Collection System

The proposed sewered area includes three major areas: north of Pacific Woods Road along Old Stage Road, south of Pacific Woods Road along Old Stage Road and along Pacific Woods Road itself. The sewered area north of Pacific Woods Road consists of approximately 12,915 linear feet of collection main from a location approximately 665 feet past the Ocean Ridge Drive Subdivision to the intersection of Old Stage Road and Pacific Woods (including Ocean Ridge Drive). The main arterial south of Pacific Woods Road runs along Old Stage Road, removing the existing 4" main, and runs 7,900 linear feet to the existing 10" main line just south of the town of Gualala, replacing approximately 4,000 linear feet of existing pipe. The sewer main along Pacific

Woods runs approximately 5,260 linear feet or the entire length of Pacific Woods Road to Highway 1, connecting into the existing 6" line. Several other minor pipelines would be needed to collect wastewater and direct it to the main collection system.

6.3 Collection System Alternatives

The types of collection systems to be considered to serve the study area must be appropriate for the physical conditions of the area. Wastewater can be transported through a collection system by the following three basic methods:

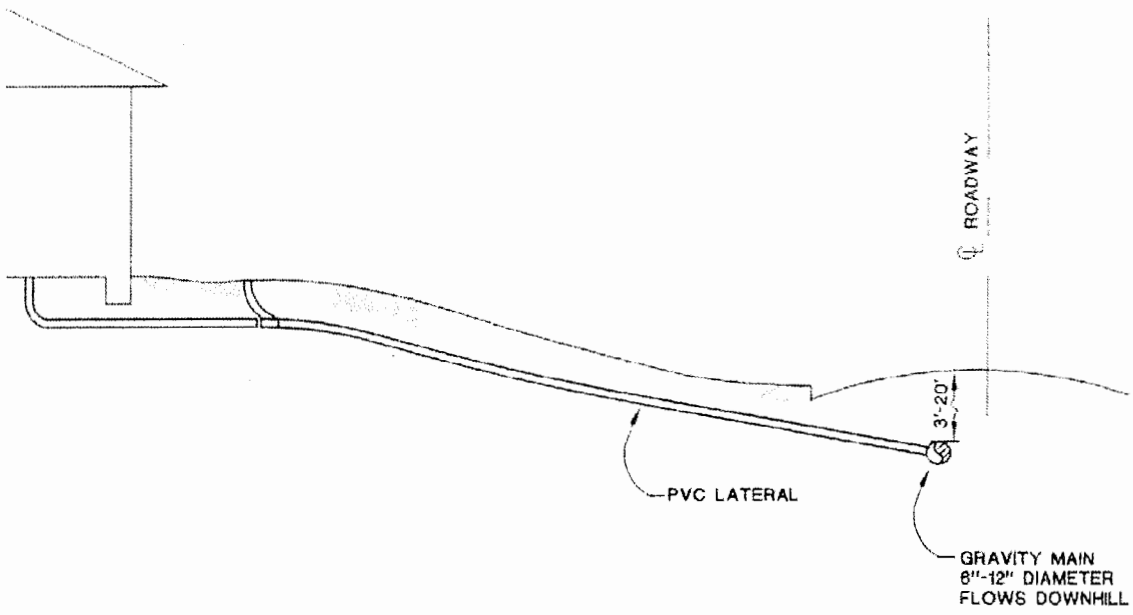
- Gravity sewers (normal method)
- Pressure sewers (pumps)
- Vacuum sewers (central vacuum system)

6.3.1 Gravity Sewers

Conventional gravity sewers are the most common type of collection system in the United States and are used in urban areas to collect wastewater from a large number of connections. The have been installed since the early Roman era and once properly installed, they require little attention with respect to operation and maintenance. A typical gravity sewer collection system consists of a main collector pipe, which is located in the street at the front of the residences. The pipe is installed at a depth to collect flows from the homes without the need for pumping and to maintain a continuous downhill grade under the street surface. Homes are connected to the main with 4-inch diameter pipe laterals. The utility district is generally responsible for the lateral within the street right-of-way. The homeowner provides for installation and maintenance of the portion on his property.

The minimum sewer main diameter for a conventional gravity sewer is 6 inches, with larger diameter pipes required in areas of flat grades and as flows increase. Main collector pipes from the side streets and cul-de-sacs are connected to larger diameter sewer interceptor lines located in the arterial streets. Manholes are required at 400-foot intervals, at changes in direction, and at pipe intersections. Figure 6-1 presents a schematic of a conventional gravity collection system. Manholes provide access for maintenance and cleaning which is required to periodically remove solids or grease buildup in the pipelines. Because of the need to maintain a constant downhill grade and / or to serve houses below the road level, the sewer pipe can become fairly deep out in the street. This is more of a problem in very flat areas and in areas of rolling or side hill terrain.

A variation of the conventional gravity collection system is the small diameter gravity system. This system utilizes existing (or new) septic tanks to remove most of the settleable solids. Because the collection system only conveys the clarified (septic tank) effluent, a minimum diameter of 4 inches can be used for the sewer lines and manholes are not needed as frequently. The system can also include sections of variable grade sewers. These are sections where the "local" grade is reversed. As long as the overall hydraulic grade flows downhill, this reverse grade section does not create a problem since the solids have been removed. The system can also include septic tank effluent pumping (STEP) systems for those houses located below the collection system.



TYPICAL GRAVITY SYSTEM SCHEMATIC

N.T.S.

GCSD SEWER
FEASIBILITY STUDY

FIGURE 6-1

WINZLER KELLY

Lift stations (i.e., pump station) can be employed within a gravity sewer system to lift the wastewater in the main pipeline from low areas in the collection system so it may once again flow by gravity. It is desirable to minimize the number of lift stations required; however, this can require deeper trenching to maintain the proper pipe slope for gravity sewer operation. Some individual homes or clusters of homes may be below a gravity line and require an pumps to lift the wastewater from the low areas up into a gravity main.

Advantages and Disadvantages

The advantages and disadvantages of conventional gravity sewers are listed below.

Advantages

Historically, this is the conventional way to sewer most projects.

1. If properly constructed, this system requires little maintenance expense.
2. Construction costs are reduced with shallow depth, and good soil characteristics
3. Most contractors are familiar with this type of construction.
4. There are no moving parts except for any required lift or pump stations.
5. Takes advantage of gravity flow.

Disadvantages

1. Poor soils conditions can result in many problems:
   - Poor pipe grades can cause ponding, clogging, and subsequent odors
   - Poor pipe bedding can result in breaks, leaks, and clogging.
   - Poor conditions such as deep pipe, unstable ground, high groundwater, rock and boulders cause high construction costs.
2. Manholes are required for maintenance and add to the construction cost.
3. Deep laterals and mains are required to provide gravity service to some homes and are costly.
4. Some homes on the lower side of the road on hillsides will have to pump.
5. Materials are fairly costly in large diameter, and installation is labor intensive, depending on the required depth of pipe.

Operation and Maintenance

Operation and maintenance of conventional gravity systems should be very low, and with properly constructed systems in good soils and good terrain, costs are nominal. Some gravity systems can be ignored for several years at a time, however, such things as poor grades that

allow sags to occur in the pipe and debris to accumulate, will cause plugs to occur, requiring jetting or rodding to remove. Poor construction and/or deteriorating pipelines can result in allowing groundwater and rainwater into the pipe, which adds to pumping and treatment costs.

Oversizing of pipelines for anticipated future development can lead to low flow velocity and settling of solids in the pipeline in the early years of service. More intensive gravity line maintenance may be required until wastewater flows are sufficient to keep solids from settling. Low flow velocity can be remedied in a gravity system that has lift stations by adjusting wet well size, pump size, and cycling time to produce adequate flow velocity intermittently to flush the system. If anticipated growth does not occur and design flows are not realized, intensive maintenance may be required for the life of the pipeline. Also, solids deposition can lead to increased odors from the collection system. Flush tanks can alleviate this condition.

Reliability

Reliability of conventional gravity systems once installed is likely the highest of any of the systems considered. The use of plastic pipe reduces the likelihood of breaks and leaks in the pipeline, and with heat fused polyethylene pipe in areas with known high groundwater, the likelihood of infiltration is practically eliminated.

Cost

Most of the cost for a conventional gravity sewer system is included in the initial construction of facilities that are designed to handle anticipated ultimate flows. Individual gravity laterals for each connection are relatively inexpensive and grinder pump laterals are somewhat more expensive. Initial costs can be recouped in a timely manner if build out occurs quickly. Slow development or lower than anticipated ultimate build out, however, could lead to under-utilization of facilities and unnecessary expenditure of capital.

Shallow surface soils, underground utilities and storm drains, and other underground obstructions can affect the pathway of a gravity pipeline and dramatically, increase costs. Existing utilities may have to be relocated or additional lift stations may have to be constructed at an increase cost to avoid underground obstructions.

6.3.2 Pressure Sewers

Pressure sewers are often used in areas of low development density, areas with variable terrain where wastewater may have to be pumped uphill, and areas with high trenching costs, shallow surface soils, high groundwater or other underground obstructions. Pressure sewer systems are not as common as gravity sewer systems, however they have relatively widespread application.

There are two major types of pressure sewer systems that have been constructed for various applications: the grinder pump (GP) system and the septic tank effluent pump (STEP) system. The major difference between the two systems is the on-site equipment and layout. In both types of systems, effluent is collected and conveyed by gravity to the pressurization facility. In a GP system, each connection is equipped with a grinder pump to reduce solids to a slurry before being pumped through small, 2" lateral to the collection system.

In a STEP system, each connection is equipped with a septic tank and pump. Wastewater from each home is discharged into a conventional type septic tank. The solids settle out and are retained in the tank. The effluent flows out of the tank by gravity into a small sump. A pump located in each sump pumps the effluent through a small diameter (1-1/2 to 2 inches) lateral out to the main in the street.

The main line in the street is also small, 3- to 4-inch diameter pipe. Because the solids, grease, and oils are retained in the septic tank, manholes are not required for maintenance. Pipes are installed with the minimum amount of cover necessary to protect them from traffic loads and freezing (3 to 4 feet). A typical STEP system schematic is shown on Figure 6-2.

Advantages and Disadvantages

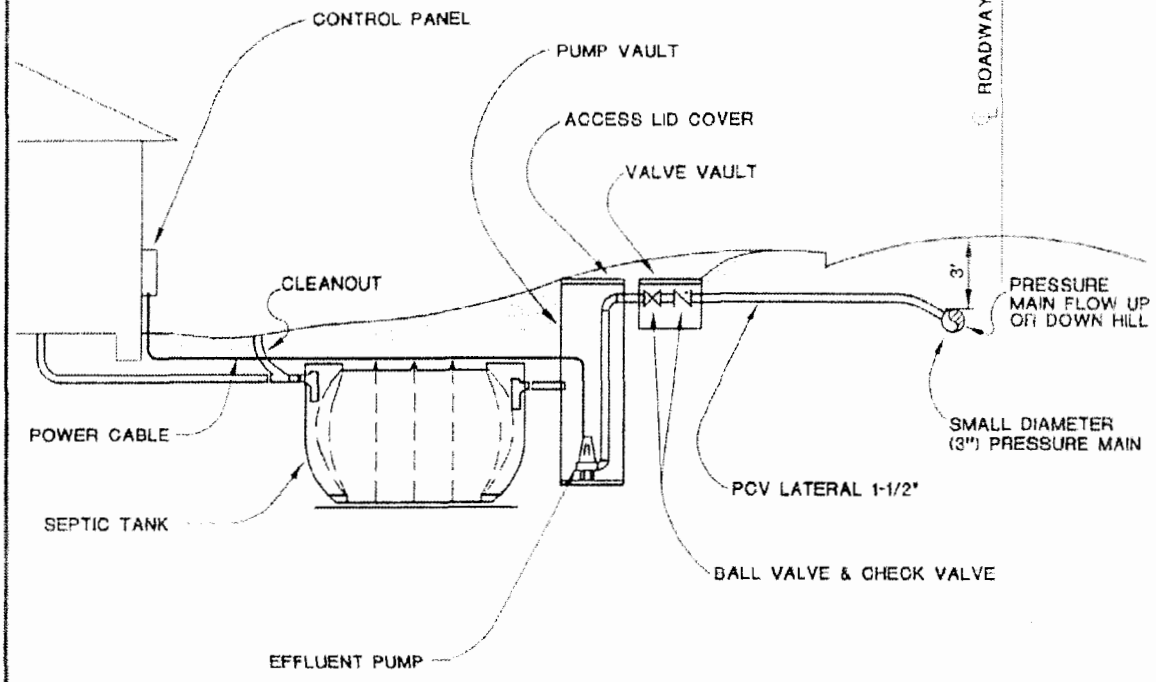
The advantages and disadvantages of pressure sewer systems are listed below.

Advantages

1. Distribution pipe is smaller diameter, 3-inch versus 6-inch; 4-inch versus 8-inch
2. Pipe can be shallow, 3 feet deep, and follow the road grade.
3. Construction cost is less in rocky or boulder strewn areas as cut is nominal, and the trench can be narrow and curved.
4. Construction cost is lower in rolling terrain or high groundwater.
5. Less expensive per customer for long runs with few homes.
6. Advantageous to connect homes well below the road or remote from the main.
7. Minimal solids or grease in pipes, solids removal occurs in the septic tank.
8. Partial treatment occurs in the septic tank reducing treatment plant loadings.
9. Expected callback on pump units is once in four years. Mechanical and electrical parts are easily replaced.
10. Very low infiltration/inflow potential.
11. Existing good quality septic tanks can be used; pump power is supplied from the home.
12. Can be combined with other alternative or conventional systems.

Disadvantages

1. Tank, pump and controls add to the homeowner cost ($1500-$5000).
2. All homes must pump into the system.
3. Many mechanical and electronic parts to potentially fail.
4. An extended power outage (over 1 day) can cause backup in plumbing.



TYPICAL STEP SYSTEM SCHEMATIC

N.T.S.

GCSD SEWER
FEASIBILITY STUDY

FIGURE 6-2

WINZLER KELLY

5. Usually requires one unit/home because of the potential for power shutoff by a renter or absentee owner.

6. Overall cost can exceed gravity sewer costs in good soil allowing shallow gravity pipe and in built-up areas.

7. Tanks require solids removal each 5 to 8 years.

8. Non-corrosive materials must be incorporated into the design.

Operation and Maintenance

In a GP system the grinder pump at each site must be properly maintained to ensure the proper operation of the overall system. The grinder pump is generally the responsibility of the homeowner, although the District could maintain the entire collection system.

In a GP system the transport of solids in the small diameter pipeline may require more pipeline maintenance than gravity systems although sufficient flow velocity can keep the solids in suspension and prevent them from settling in the pipeline.

In a STEP system sewage from the home enters a septic tank, solids settle to the bottom grease rises to the top and are digested. The solids need to be pumped from the septic tank every 5 to 8 years.

STEP system mainline pipe does not require manholes. However, some cleanouts might be installed at termination points and at intermediate locations where pipe junctions occur. Air release valves are required at high points in the system to vent buildup of air or gas in order to minimize the possibility of a vapor lock.

Annual exercising of shutoff valves and periodic inspection of air release valves are required. Flushing of mains is not typically necessary with STEP systems. Actual mainline emergency repair seldom occurs and is usually related to inadvertent excavation damage to the pipe.

Sulfide concentration in septic tank effluents can create a maintenance problem with STEP systems. Sulfides are corrosive to some pipe materials, valves and concrete manholes. Proper design and choice of construction materials are required to minimize these problems.

Reliability

Pressure sewer system reliability can be expressed as a mean time between service calls.

The State of California was concerned about the large number of so many mechanical devices in a system located on the California coast and thus commissioned Winzler & Kelly to monitor the Manila, California, system for two years to see where and what components might fail and judge the overall reliability of the system. The design utilized several types of level controls and various pumps so that performance of all pump/control combinations could be evaluated. The reports are available for review but, in general, it found that the frequency of callback was once in four years. The first year of operation typically reflects a greater need for service calls than subsequent years due to initial construction or equipment startup problems.

Cost

It is generally less expensive to construct the main pressure sewer line of a pressure system than a gravity system. Pipelines for a pressure system can be buried several feet beneath the ground surface following the natural terrain. This results in a savings in trenching costs over gravity sewers that must follow a consistent slope. Pipelines for pressure sewers are usually smaller in diameter that gravity sewers and can be made of inexpensive plastic. Pressure sewers also use inexpensive small diameter cleanouts instead of the full sized manholes for a gravity system.

Much of the cost of a pressure system is in the individual effluent pumps, and in the case of a STEP system there is the added cost of a septic tank for new buildings. This offers an advantage for planning for future developments whose timing and extent is unknown because on-site facilities for each connection can be constructed as needed, thereby saving initial capital cost.

6.3.3 Vacuum Sewers

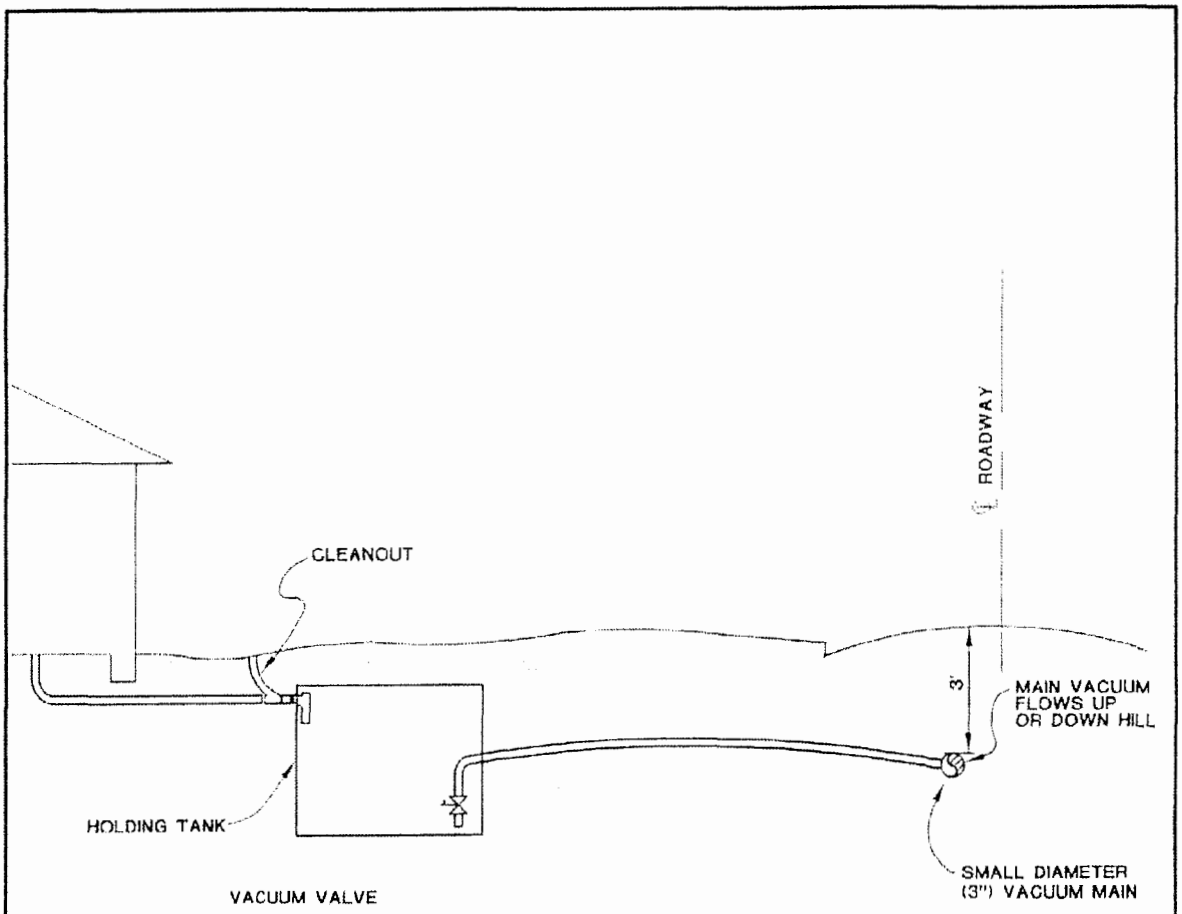
Generally, the concept of vacuum collection involves the transport of an air/wastewater mixture (two phase flow) from a residence through a special vacuum valve to a central collection station using air pressure differentials as the driving force. A vacuum pump located at the central collection station maintains the vacuum throughout the system. This is possible because at any one time the amount of wastewater in the system is small when compared to the volume of air. The wastewater is gradually driven towards the collection station by the action of pressure differentials between the valves and the vacuum collection station. A schematic of a vacuum sewer is presented in Figure 6-3. Total lift is limited to about 20' with 15' being more common.

Advantages and Disadvantages

Advantages

1. Vacuum sewers can be installed shallow and fairly level or slightly uphill.
2. They can be advantageous in the following situations:
    - Rocky soil
    - Sandy or unstable soil
    - High groundwater in unstable soil
    - Widely disperses homes in flat terrain
    - Rolling terrain that would require lift stations
3. Infiltration/inflow is reduced or eliminated.
4. Power is not required at every home.
5. Several nearby homes can be connected to a single valve and sump.

The main disadvantage is that vacuum sewers are sensitive to population density due to limiting length of vacuum lines between stations. If the proposed system contains several areas with significant lengths of pipe between stations this makes a vacuum sewer an unattractive alternative.



TYPICAL VACUUM SYSTEM SCHEMATIC

N.T.S.

GCSD SEWER
FEASIBILITY STUDY

FIGURE 6-3

WINZLER KELLY

Disadvantages

1. An air-operated valve is required at each sump. Failure to operate or close fully can cause local and system malfunction. Air leaks can be a problem.
2. Lift from the home sump to the vacuum station is limited to about 15 feet.
3. Special care must be exercised in grade control to eliminate pockets; 0.2 percent minimum fall is recommended.
4. Higher energy requirements than other systems.

Operation and Maintenance

Vacuum systems are somewhat more mechanically complicated than other types of collection systems. The mechanical facilities require more complex and more regular maintenance than gravity or pressure sewer systems

There are three areas of potential high maintenance with the vacuum sewer. They are:

1. The interface valve
2. The vacuum main
3. The vacuum station

Historically, the interface valve and its controller mechanism have been the primary source of owner service call demands in past years. The mechanical nature and relatively unique operating characteristics of vacuum sewers will require trained operation and maintenance (O&M) personnel with appropriate support equipment and ancillary facilities.

Reliability

In the same manner as pressure sewers, vacuum sewer on-site component reliability could be expressed as a mean time between service calls. On six systems reported in current literature, it varies from 1.5 to 10 years with 60 percent less than four years.

Cost

A vacuum system pipeline is similar to a pressure system pipeline and therefore has similar capital costs. However, individual septic tanks, pumps, and controls are not required. A vacuum system has more complicated centralized vacuum pump station and vacuum interface valves at each site that can increase both capital and maintenance costs over a pressure sewer system.

6.4 Collection System Alternative Comparison

Each type of collection system considered in the previous section has advantages and disadvantages. The best type of collection system for a specific application depends on the individual circumstances of the installation. A summary of the comparison of general characteristics of the three collection system alternatives considered in the previous section is presented in Table 6-1.

Table 6-1
Alternative Collection System Comparison
Gualala Sewering Feasibility Study

Characteristic	Gravity System	Pressure System	Vacuum System
Common Application	Low to high density, consistently sloped terrain	Low density, long collection system, hilly terrain	Low density low flow, mild rolling terrain
Common Type of Pipe	Concrete, Clay, Plastic, Steel	Plastic	Plastic
Pipe Size[1]	4 inches to 8 inches	2 inches to 4 inches	2 inches to 4 inches
Pipe Routing	Must follow consistent slope	Can follow ground contours	Can follow ground contours
Trench Depth	Up to 20 feet	Usually 3 to 4 feet	Usually 3 to 4 feet
On-site Requirements	Gravity Lateral[2]	Sump, grinder pump, check valves and pressure lateral	Sump Vacuum valve and vacuum lateral
In-line Facilities	Lift Station[3]	Booster Station[3]	Vacuum Pump Station[4]
Allocation of Capital Costs	Most cost in central collection system	Most cost in on-site facilities	

Notes:
[1] Pipe size anticipated for Gualala.
[2] May require grinder pump if below main sewer line.
[3] May be required depending on topography.
[4] Required for all installations.

Gravity sewer systems are used successfully throughout the United States. In areas where the topography of a proposed service area generally maintains a downward slope, gravity sewers are attractive due to their simplicity and long life with limited maintenance. The area to be sewered is on a downward grade from north to south along Old Stage Road and East to West along Pacific Woods Road. Thus, generally, the flows are carried east to west from the coastal range to the town of Gualala. However, there are several areas with a limited amount of homes that may need the use of effluent pumps in order to lift sewage into a gravity system.

For Gualala, the existing sewage collection system along the Highway 1 corridor is predominantly a small diameter gravity sewage system that utilizes septic tanks to treat the primary solids. Septic tank effluent flows by gravity to four lift stations, which pump the sewage to the GCSD Wastewater facility. The new collection system will tie into the existing system, which is shown in Figure 6-4. Due to the remoteness of the project location, the possibility of power outages, and the fact that the existing collection system is a gravity sewer system; it appears that pressure and vacuum systems are inappropriate for the study area. Thus, a gravity collection system is appropriate due to the general grade of the area, its relatively maintenance free application, its functionality during power outages, and its compatibility to the existing sewage collection system.

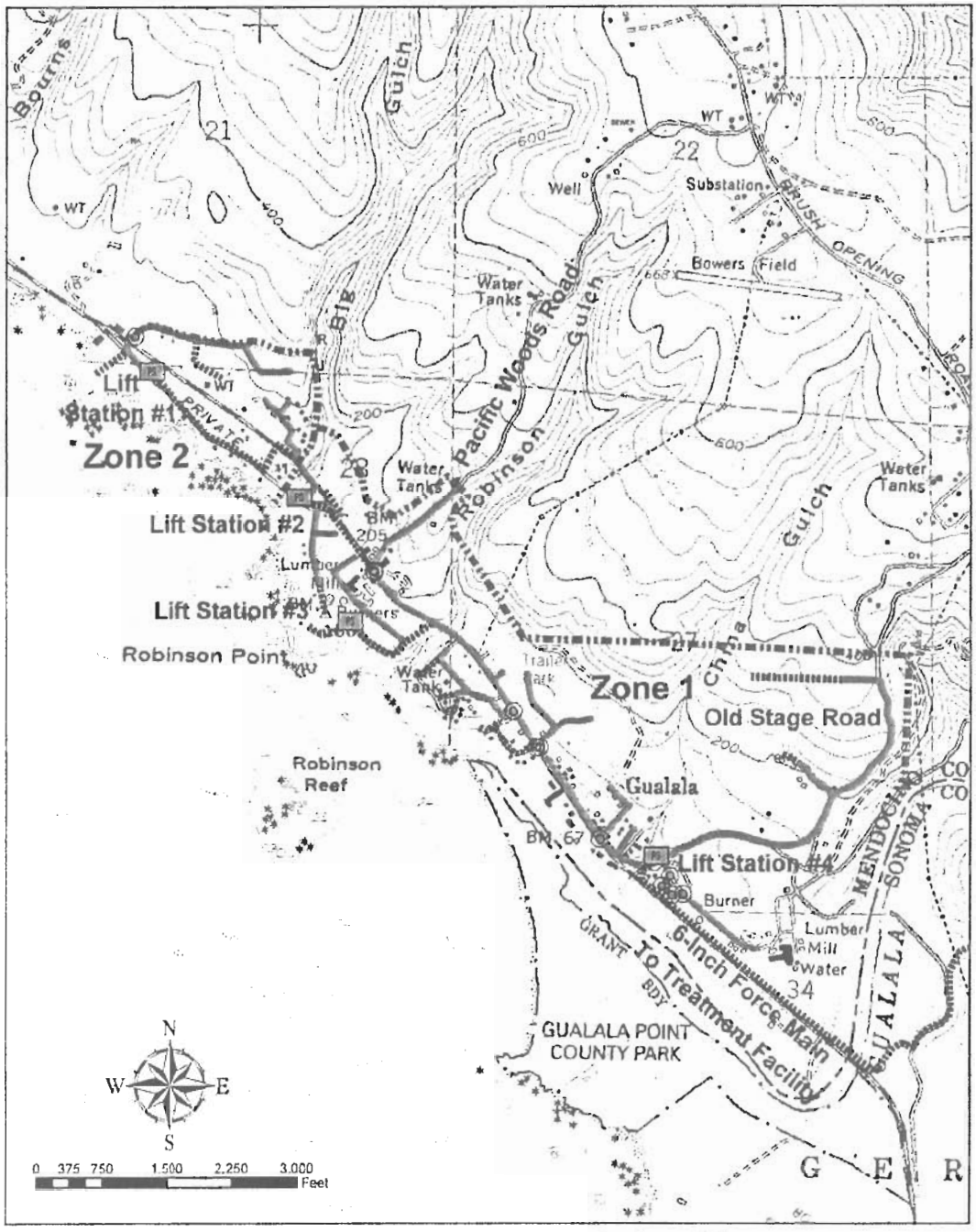
Two collection system alignment alternatives were evaluated for this Feasibility Study. Alignment Alternative 1 is shown in Figure 6-5. This layout utilizes eight lift stations. The benefits of alternative 1 are that it would require only a small easement from two property owners in the Gualala Court area and that the pipelines mostly lie within the existing roadways. Other benefits would be ease of construction and lower cost, as fewer sewers mains would be needed. The main drawback of this alternative is that it requires more lift stations, which could increase the amount of periodic maintenance.

Collection System Alignment 2 is shown in Figure 6-6. This alignment uses four lift stations, as the focus of this layout was to make this alternative primarily a gravity system without many pressure mains. Thus, this layout requires more in the way of easements. One such easement is for the use of the logging road between Ocean Ridge Drive and Tiger Trail. While this logging road would allow gravity flow down to the tiger trail area, the stability of this roadway is an issue and sections of slip out are abundant. Another such large easement would be required to run a gravity line from eastern Moonrise Drive south to Old Stage Road, through an existing large vacant lot. The benefit is of this layout is that fewer lift stations are used, resulting in a reduced possibility of mechanical system failures. The disadvantages of this system are that it requires easements over rough terrain and substantially larger quantity of sewer main is needed making it more expensive.

It shall be noted that both alignments require the removal and replacement of the existing 4" sewer line from Bodhi Tree Lane along Old Stage Road to Lift Station #4 with an 6" main line, as the existing line would be over capacity. Also, the proposed collection system layout cannot be finalized until the proper easements have been obtained and a topographic survey completed.

6.5 Proposed Collection System

For the proposed project, Collection System Alignment 1 has been chosen for its ease of construction, cost, and lack of expansive easements. The chosen collection system conveys the wastewater through the collection system by the use of gravity as discussed earlier in this chapter. The wastewater is conveyed uphill with pump stations and force mains where required. Manholes or cleanouts are generally placed at all grade breaks, pump station, sharp bends, and at a maximum separation of 400 feet. Manholes and cleanouts provide access for maintenance and inspection as well as realignment of flow. For the proposed collection system, fewer manholes and cleanouts than the standard will be utilized. This is because the system will be carrying sewage effluent without solids as part of the STEP system described earlier.



Legend

Pipeline Type

Gravity

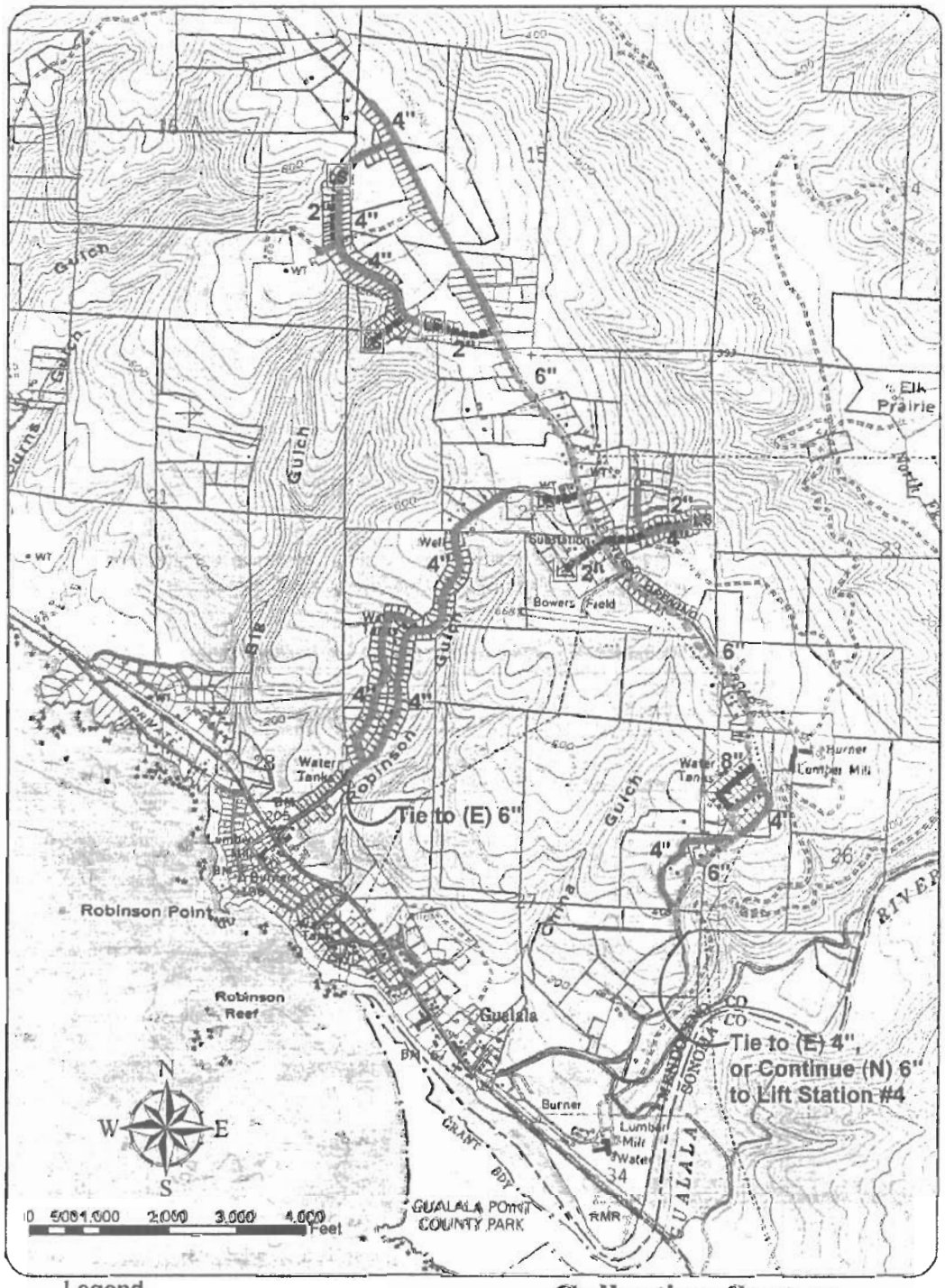
Pressure

Lift Stations

Manhole

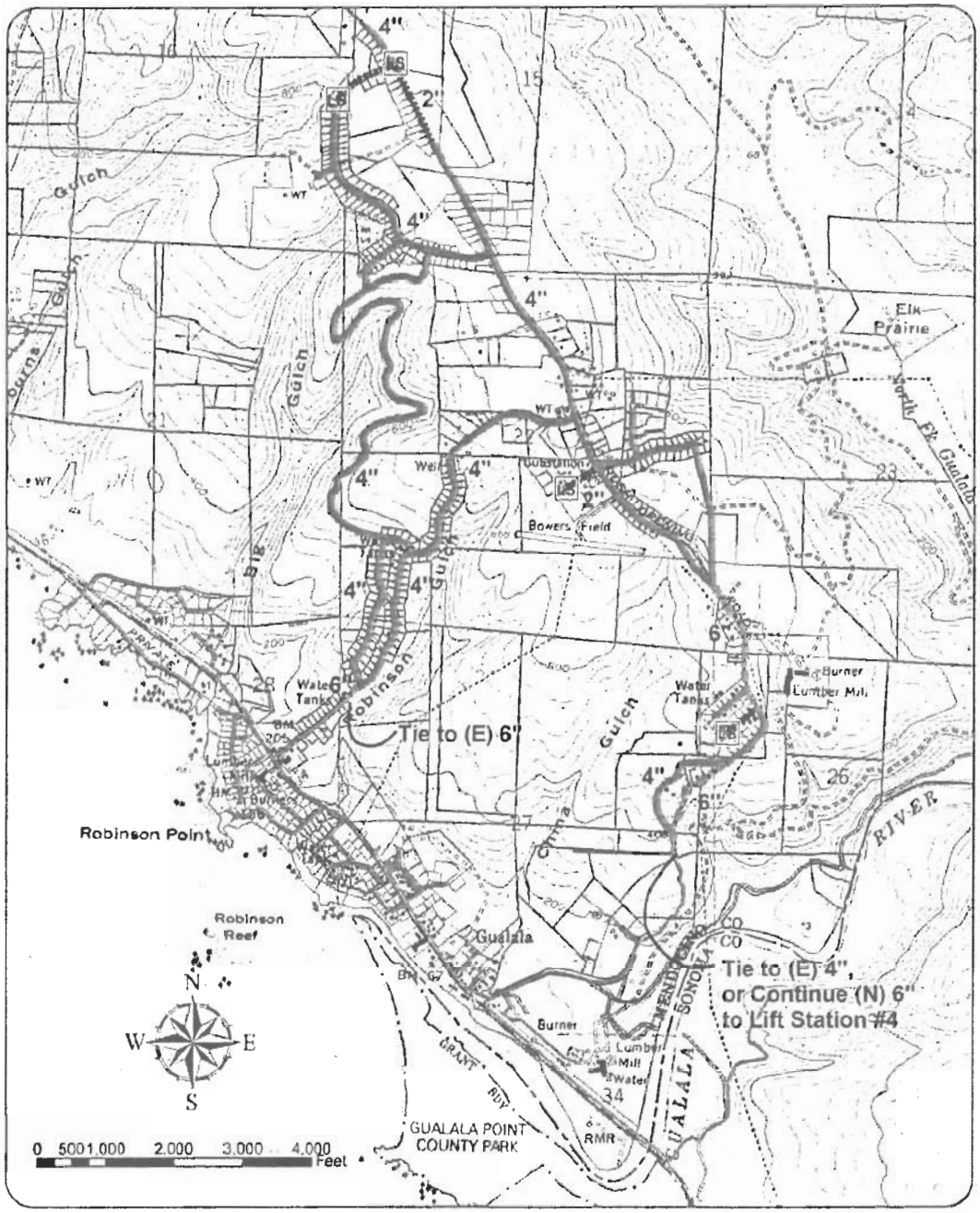
Existing Wastewater Collection System
Gualala Community Services District

Figure 6-4



Collection System
Alternative Alignment #1
Gualala Community Services District

Figure 6-5



Legend

Pipe Diameter

2" Pressure

4" Gravity

6" Gravity

LS Lift Station

Collection System
Alignment Alternative #2
Gualala Community Services District

Figure 6-6

The chosen collection system alignment has been developed following the general topography of the District carrying flows generally from east to west, with all wastewater terminating at existing sewer line locations at Pacific Woods Road and Old Stage Road. The system is laid out on a 1" = 1500' scale plot created from a USGS map of the Gualala area as shown in Figure 6-5. In addition, the system grades were estimated from the topography on this USGS quad map.

Capital costs have been estimated for a conventional gravity collection system and include materials, equipment, and labor required for construction. Cost estimates were based on the preliminary layout included with this report and are based on quoted vendor prices and similar contract bids as available. Table 6-2, 6-3, and 6-4 present our opinion of the probable costs for construction of the collection system. Table 6-2 displays the probable cost of sewering outside of the GCSD boundaries in the Ocean Ridge Drive area. Table 6-3 shows the probable cost of sewering GCSD sewering zones 3 and 4, while Table 6-4 shows the probable costs for the total collection system. Note the GCSD zones 3 and 4 can be sewered without sewering the Ocean Ridge Drive area. However, to sewer the Ocean Ridge Drive area requires that zones 3 and 4 also be severed. Sewering both areas (zones 3 & 4 and the Ocean Ridge Drive area) provide benefits to both areas by reducing the unit costs for construction and by reducing the monthly sewer bills for the existing customers.

Table 6-2
Opinion of Probable Cost for Sewering Ocean Ridge Drive Area

	Item	Quantity	Unit	Unit Price	Total
1.	4" PVC Gravity	7689	LF	$45	$346,005
2.	6" PVC Gravity	2708	LF	$54	$146,232
3.	8" PVC Gravity	0	LF	$63	$0
4.	2" PVC Pressure	2514	LF	$35	$87,990
5.	Replace (e) 4" Sewer	0	LF	$54	$0
6.	Manholes	4	EA	$2,300	$9,200
7.	Cleanouts	28	EA	$800	$22,400
8.	Laterals	115	EA	$1,000	$115,000
9.	Paving	12911	LF	$10	$129,110
10.	Lift Stations	3	EA	$80,000	$240,000
11.	Effluent Pumps	14	EA	$3,500	$49,000
12.	Easements & ROW	1	LS	$60,000	$30,000
13.	General Cond./Mob/Demob.	1	LS	$180,000	$90,000
				Construction Subtotal	$1,264,937
				Contingency (15%)	$189,741
				CEQA, Engineering, Legal, & Admin (30%)	$379,481
				Total	$1,834,159
				CALL	$1,800,000

Table 6-3
Opinion of Probable Cost for Sewering GCSD Zones 3 & 4

	Item	Quantity	Unit	Unit Price	Total
1.	4" PVC Gravity	12898	LF	$45	$580,406
2.	6" PVC Gravity	7081	LF	$54	$382,391
3.	8" PVC Gravity	918	LF	$63	$57,835
4.	2" PVC Pressure	2758	LF	$35	$96,514
5.	Replace (e) 4" Sewer	4000	LF	$54	$216,000
6.	Manholes	8	EA	$2,300	$15,400
7.	Cleanouts	61	EA	$800	$48,800
8.	Laterals	207	EA	$1,000	$207,000
9.	Paving	27655	LF	$10	$276,548
10.	Lift Stations	5	EA	$80,000	$400,000
11.	Effluent Pumps	14	EA	$3,500	$49,000
12.	Easements & ROW	1	LS	$60,000	$30,000
13.	General Cond./Mob/Demob.	1	LS	$180,000	$90,000
				Construction Subtotal	$2,452,895
				Contingency (15%)	$367,934
				CEQA, Engineering, Legal, & Admin (30%)	$735,868
				Total	$3,556,697
				CALL	$3,600,000

Table 6-4
Opinion of Probable Cost for Proposed Total Collection System

	Item	Quantity	Unit	Unit Price	Total
1.	4" PVC Gravity	20587	LF	$45	$926,411
2.	6" PVC Gravity	9789	LF	$54	$528,623
3.	8" PVC Gravity	918	LF	$63	$57,835
4.	2" PVC Pressure	5272	LF	$35	$184,504
5.	Replace (e) 4" Sewer	4000	LF	$54	$216,000
6.	Manholes	12	EA	$2,300	$27,600
7.	Cleanouts	89	EA	$800	$71,200
8.	Laterals	322	EA	$1,000	$322,000
9.	Paving	40566	LF	$10	$405,660
10.	Lift Stations	8	EA	$80,000	$640,000
11.	Effluent Pumps	28	EA	$3,500	$98,000
12.	Easements & ROW	2	LS	$60,000	$60,000
13.	General Cond./Mob/Demob.	2	LS	$180,000	$180,000
				Construction Subtotal	$3,717,834
				Contingency (15%)	$557,675
				CEQA, Engineering, Legal, & Admin (30%)	$1,115,350
				Total	$5,390,859
				CALL	$5,400,000

CHAPTER 7

WASTEWATER TREATMENT PLANT EVALUATION

7.1 Introduction

This section describes the existing unit processes and includes recommendations on needed improvements at the treatment plant.

7.1.1 Overall Treatment Plant Capacity

The existing wastewater treatment plant was designed for an average daily flow of 131,000 gallons per day (gpd). Recent flows were varied from a low of 42,500 gpd to a high of 101,200 gpd. While current flows are below the design value, the remaining capacity should be reserved for future growth in zones 1 and 2.

The projected flows from zones 3, 4, and the Ocean Ridge Drive area are estimated to average 137,000 gpd or a doubling in treatment plant capacity. Portions of the plant should also be expanded to treat the flows from the Sea Ranch (CSA6).

In evaluating the wastewater treatment plant it is important to analyze the individual unit processes for their capability to treat current and future flows. While the treatment plant has an overall design capacity, the individual unit processes have distinctive features that may or may not be limiting. This chapter will review each of the unit processes in the wastewater treatment plant and develop recommendations outlining the necessary improvements.

7.2 Aeration Basin Facilities

The extended aeration basin is designed to provide nitrification and denitrification of the treated effluent.

The operation basin has an operating volume of 361,000 gallons, and operating depth of 13 feet. The surface area is 6,624 square feet (SF). The basin is equipped with 2 – 10 hp floating surface aerators. Each aerator has an oxygen transfer rating of 3.0 pounds per hour (pph) hp in clean water at standard conditions. The field rating of the aerators as installed is rated at 1.5 pph hp. Each aerator is capable of providing 360 ppd of oxygen when run continuously, for a total of 720 ppd maximum oxygen transfer capacity.

7.2.1 Basin Design Values

The aeration basin is designed for a maximum inflow of 350 gpm from LS4, a peak rate of 0.504 mgd. The maximum rate for design is based on the maximum month flow of 0.151 mgd. At this rate the detention time is 2.4 days. The effluent weir for the basin is designed to limit flow to the clarifier to 250 gpm. At the design BOD concentration of 150 mg/l the maximum BOD load is 190 ppd. The aerators provide 3.8 pounds of oxygen for each pound of BOD. The design assumes a MLSS of 1,500 mg/l, and MLVSS of 1,050 mg/l. From the design loadings and concentrations the F/M ratio is 0.06.

The volumetric loading for BOD is 4 pounds per 1,000 cubic feet of basin volume. The design is based on a return activated sludge recycle rate of 1.5 times the aeration basin effluent. The design value for waste activated sludge is 110 ppd at a concentration of 6,000 mg/l. These values yield a Mean Cell Resident Time (MCRT) of approximately 40 days.

7.2.2 Standard Design Criteria

The following are recommended design criteria for extended aeration plants from page 550 of Metcalf & Eddy, Wastewater Engineering, Third Edition.

MLSS	1,500 to 5,000 mg/l
Detention Time	0.75 to 1.5 days
F/M	0.05 to 0.15
Volumetric Loading	10 to 25 pounds, BOD/1,000 cubic feet
Recycle Rate	0.5 to 1.5
MCRT	20 to 30 days

The oxygen demand for BOD reduction is estimated at 1.5 pounds of oxygen per pound of BOD. The added oxygen requirement for nitrification is estimated at 75% to 100 % of that required for BOD. Using the more conservative value, the maximum oxygen demand for the plant is 3.0 pounds of oxygen per pound of BOD.

Comparing these values to the plant design values shows that the plant design is very conservative. The detention time and MCRT are longer. F/M is at the low end of the range. The volumetric loading is only 40% of the minimum value. The oxygen delivery capacity is 25% greater than required.

By all standard design criteria the aeration basin is more than adequate to meet the design criteria for the plant. It should be noted that the capacity of the plant was an issue between the design engineer and the SWRCB during the approval of the contract documents. At the suggestion of the SWRCB the District retained Dr. George Tchobanoglous, Professor of Engineering at U.C. Davis, and principal author of the Metcalf and Eddy book, referenced above, to review the design. Dr. Tchobanoglous concurred in the design with two changes. He recommended the second aerator in the aeration basin and a change in the clarifier sludge removal system. Both of these changes are incorporated in the current project.

7.2.3 Current Operation

The aeration basin is currently operating in the extended aeration mode as provided in the design. The flows and BOD loadings are substantially below the values expected at plant startup. The aerators are not operated continuously. The east aerator, closest to the influent pipe, is on a time cycle operating intermittently for a total of only three hours per day to allow anoxic conditions to facilitate denitrification. The west aerator is on a time cycle operating intermittently for a total of twelve hours per day to maintain a dissolved oxygen (DO) of 3.0 mg/l or greater.

As noted in Section 2 the influent line from the CSA6 plant has been relocated to discharge the secondary effluent to the head end of the aeration basin instead of ahead of the filter as designed. This adds the flow from CSA6 and a small additional BOD load. This change was made to facilitate operations with the very low flows and BOD loadings.

The plant has been operating at very low F/M and long detention times, which produces a highly stabilized sludge and a low volume of waste biosolids. The wastewater also undergoes considerable nitrification and denitrification.

7.2.4 Ultimate Capacity

Based upon the typical extended aeration basin standards, the existing basin could take between 2 and 2.4 times the current design loading rate. When the flow rate gets above 200,000 gpd the existing aerators should be replaced with ones that have a 20 hp motor. This is a simple change, which will enable the aeration basin to meet the added loading from Zones 3, 4 and Ocean View Drive.

7.3 Clarifier

The clarifier is designed to provide for separation of the MLSS by gravity settling to produce an effluent, influent to the filter, having BOD and suspended solids concentrations of 30 mg/l or less and a turbidity of 20 NTU or less.

7.3.1 Facilities

The clarifier is 24 feet in diameter, with a side water depth of 12 feet. The surface area is 452 sf. A vacuum drawoff collector removes the settled solids. The settled return activated sludge (RAS) is returned to the aeration basin by a pump with a capacity of 160 gpm, or 230,400 gpd.

7.3.2 Clarifier Design Values

The maximum month design flow is 151,000 gpd. This results in a surface loading rate of 334 gallons per square foot per day (gpsfpd). The peak flow to the clarifier is limited to 250 gpm, 360,000 gpd, by the effluent weir in aeration basin. This is a surface loading rate of 796 gpfpd.

The detention time for maximum month flow is 6.5 hours.

7.3.3 Standard Design Criteria

The following are recommended design criteria for clarifiers for extended aeration plants from page 588 of Wastewater Engineering:

Overflow Rate,	Average	200-400 gpfpd
	Peak	600-800
Solids Loading,	Average	0.2-1.0 pounds/sf/hr
	Peak	1.4

The design overflow rate for the maximum month of 334 gpfpd is well within the recommended design range. The peak overflow rate of 796 gpfpd is just barely within the recommended range. This could be a problem in the event of poor settling sludge, but can be controlled by use of coagulant chemicals.

At a MLSS of 3,000 mg/l, as provided in the design, the total solids loading for the maximum month flow would be 3,778 ppd, or a solids loading rate of 0.35 pounds per square foot per hour. This is well within the recommended criteria. The peak solids loading at 360,000 gpd would be 9,007 ppd. The peak solids loading rate would be 0.83 pounds per square foot per day, significantly less than the recommended value of 1.4.

A loading rate of 1.0 pounds per hour per square foot would allow a total solids loading of 452 pounds per hours, 10,848 ppd. At the maximum month flow of 151,000 gpd the maximum MLSS would be limited to a MLSS of 8,60-0 mg/l. For average flows the clarifier can handle all reasonable operating concentrations of MLSS.

A loading rate of 1.4 pounds per square foot per day yields a total loading of 633 pounds per hour, and 15,187 ppd. At the peak flow of 360,000 gpd the maximum MLSS would be limited to approximately 5,000 mg/l. Therefore, the peak loading rate will control the maximum MLSS than can be used.

The design of the clarifier is well within the recommended design criteria, with the possible exception of the peak flow surface loading rate. The solids loading rates are well within normal design criteria.

7.3.4 Current Operations

The clarifier has operated at flows ranging from 170,000 gpd to a low of 32,000 gpd. These flows produce a detention time of 5.7 hours to 30 hours. These long detention times create the potential for denitrificaiton and resulting floating sludge in the clarifier.

The surface loading rate for the highest flow of 170,000 is 297 gpsfpd. For the lowest flow of 32,000 gpd, the loading rate is 71 gpsfpd.

At an average MLSS value of 2,380 mg/l the solids loadings rate for the maximum flow of gpd is 0.19 pounds per square foot per hour. For the low flow of gpd the loading rate is 0.06 pounds per square foot per hour.

Although the plant has experienced peak flows above the design value, the clarifier is under loaded by the District flows alone, and is well within design criteria even when the current CSA6 flows are included.

7.3.5 Ultimate Capacity

As discussed in a prior section the flow from CSA6 can be introduced into the aeration basin or mixed with the flow from the aeration basin to the clarifier. Either way the total flow to the clarifier would be the same. The difference would be in the solids loading.

The maximum month flow for the District is 151,000 gpd. Under the agreement with CSA6 and SRVI the maximum capacity for CSA6 is 180,000 gpd. The combined maximum flow is 331,000 gpd. The surface loading for this combined flow is 732 gpsfpd, which is considerably in excess of the 400 gpsfpd maximum recommended for average flows. Thus, the clarifier does not have capacity to handle the combined ultimate flows of both the District and CSA6. However, the flow from CSA6 can be sent directly to the filter. This will provide capacity in the clarifier for additional flow.

Limiting the average surface loading rate to 400 gpsfpd, the maximum allowable flow is 181,000 gpd.

The solids loading to the clarifier are significantly different depending on the point of introduction of the CSA6 flow. If introduced into the aeration basin the total combined flow carries the MLSS to the clarifier. For an average combined flow of 331,000 gpd the maximum MLSS would be 3,930 mg/l for a solids loading of 1.0 pounds per square foot per hour.

With the CSA6 flow introduced at the aeration basin or the clarifier the clarifier is limited to an average flow of 181,000 gpd by the maximum surface overflow rate of 400 gpfpd. As the flows increase it will be necessary to change the piping to restore the original design to introduce the CSA6 flow to just ahead of the tertiary filter.

While the clarifier has some excess capacity, it should be recognized that the plant only has one clarifier. This makes it impossible to take the unit out of service, should that be needed. Further, the secondary clarifier does not have sufficient capacity for the existing flows and the flows from zones 3 and 4. Therefore, we recommend that a second clarifier be constructed. Further, the flows from CSA6 should be redirected to just ahead of the filter after the CSA6 treatment plant is modified to send its flows directly to GCSD after clarification.

7.4 Tertiary Filter

The tertiary filter is provided to polish the clarifier effluent to meet the RWQCB WDR prior to discharge to disinfection in the chlorine contact chamber. As discussed previously the original design provided for the CSA6 flow to be introduced ahead of the filter. This has been changed to introduce the CSA6 flow into either the aeration basin or the clarifier. This modification was necessary because of how the CSA6 plant was being operated. Essentially, that facility stored their effluent in an open pond prior to discharging it to GCSD. This method of operation allows algae to regrow in the effluent which overloaded the filter. It has been recommended that the CSA6 plant modify its process so that its effluent is sent directly to GCSD after clarification. This will prevent the algae from having an opportunity to regrow and will allow the existing 8 million gallons (MG) of storage at the CSA6 plant to be used as tertiary storage. This can be

accomplished through some relatively simple changes at the CSA6 plant. Once these changes have been made, the flows from CSA6 should be changed so that it is added just ahead of the filter.

7.4.1 Facilities

The filter is a traveling bridge automatic backwash filter. The filter has 144 square feet of filter area, and is rated at 2 gallons per square foot per minute (gpfpm). This is maximum theoretical capacity of 288 gallons per minute, or 415,000 gpd. Head loss or timer can control the filter backwash. A backwash cycle requires approximately seven minutes.

7.4.2 Filter Design Values

The average design flow for the filter for the combined flows of the District and CSA6 is 180 gpm, or 259,200 gpd. The peak design flow for the two entitles is 280 gpm, or 403,200 gpd. The design values are for a filter influent (clarifier effluent) of not greater than 30 mg/l of BOD and suspended solids, and a turbidity of 10 NTU.

7.4.3 Standard Design Values

Each filter type must meet the requirements of Title 22 Reclaimed Water Requirements issued by the Department of Health Services as suitable for tertiary filtration of wastewater for use as reclaimed water.

The key criteria for the filter design is the ability to meet the final criteria required by the WDR. In this case 10 mg/l of BOD and suspended solids and 2 NTU. Table 11-3 of Wastewater Engineering, page 670, indicates that activated sludge plus filtration can be expected to produce residual BOD of <5-10 mg/l, suspended solids of 4-6 mg/l, and NTU of 0.3-5. On page 672 the reference indicates that filters can product an NTU of 2 of less if the influent has a turbidity of 7 to 9 NTU. With chemical addition, the 2 NTU can be achieved for influent NTU greater than 7 to 9 NTU.

While these values are not standard design values they are representative of what can be achieved with a filter.

The District plant is equipped to provide chemical feed ahead of either, or both, the clarifier and filter. This provides the capability to provide effluent in compliance with the WDR.

7.4.4 Current Operation

The filter is operating as designed. The timer is set to backwash once a day. The current experience is for the filter to be head loss activated to backwash at approximately 22 to 23 hour intervals. The filter has generally performed without problems to date.

7.4.5 Ultimate Capacity

The ultimate capacity of the filter is controlled by two factors: he filter design rate of 2.0 gallons per square foot per minute and the area of the filter, 144 square feet. This gives a theoretical maximum rate of 288 gallons per minute, 414,720 gpd. The maximum month flow for the District is 151,000 gpd. The maximum rate of delivery for CSA6 is 125 gpm, or 180,000 gpd if allowed to discharge full time. The combined absolute maximum flows total 331,000 gpd. This is an average loading rate of 1.6 gallons per minute per square foot. This is 80% of the rated capacity.

CSA6 is also limited to discharging to GCSD a maximum of 50 MG per year or, a daily average flow of 137,000 gpd. Using this average plus the District maximum month flow gives a total of 288,000 gpd. This reduces the average loading on the filter to 1.4 gallons per square foot per day. At this loading the filter should be adequate to meet the design effluent requirements.

While the filter has adequate capacity, Title 22 regulations require that the facility has redundant features such that one of the largest units can be taken out of service. Since this facility only has one (1) filter, the plant does not meet this requirement. Therefore, we recommend that a second filter be added.

The sewering of zones 3, 4, and the Ocean Ridge Drive could bring an additional 137,000 gpd on the average day. This coupled with the existing maximum flows of 331,000 gpd results in a total flow of 468,000 gpd or 325 pgm. This exceeds the capacity of the existing filter by 12%. While this might be a problem in the future, it would require that all flows be at their maximum simultaneously. This is considered to be unlikely to occur in the foreseeable future, particularly when one considers that the current flows from CSA6 and GCSD's zones 1 and 2 are significantly below these design values. We recommend that the new filter have a capacity of 325 gpm and be designed to conform with Title 22.

7.5 Disinfection System

The system consists of the equipment to control and monitor the injection of a chlorine solution into the filter effluent ahead of the chlorine contact chamber in order to maintain minimum residual chlorine at the outlet of the chlorine contact chamber.

7.5.1 Facilities

The chlorination facilities have been changed from the original design. The original design provided for the use of dry calcium hypochlorite mixed with water to form a solution for injection. This system did not function properly. There was difficulty dissolving the dry calcium hypochlorite, and solid particles clogged the chlorinators or solution lines. The operator switched to the use of liquid sodium hypochlorite. This system was used for over a year. The new operator, after evaluating the system, concluded it would be more efficient and cost effective to use chlorine gas. The chlorine gas is delivered in 150 pound cylinders. Three cylinders are typically onsite. The District purchased and installed a chlorinator and rotometer to control the feed rate for the chlorine solution.

The chlorine contact chamber consists of 256 feet of 48 inch buried concrete pipe. The chamber has a volume of 24,000 gallons. This provides a detention time of 86 minutes at peak flow of 280 gpm.

7.5.2 Standard Design Values

The standard design for disinfection systems is to achieve a residual coliform level of less than 2.2 MPN/100 ml for unrestricted use and less than 23 MPN/100 ml for restricted use. Disinfection is achieved through a combination of dosage or concentration and time. This is commonly referred to as the CT value. Studies have been done to determine what CT values are necessary to achieve a specific residual coliform level. Section 60301.230 of Title 22 (CCR) requires a CT value of not less than 450 mg-min/L, with a model contact time of at least 90 minutes based on peak dry weather flows.

7.5.3 Current Operations

The disinfection system operates properly with the exception of a small leak in the chlorine contact chamber as discussed in Section 6. The normal dosage is 3 to 4 pounds per day. The average chlorine residual for the six months of data is 6.0 mg/l, the highest value was 12.2 mg/l, and the lowest 3.0 mg/l. A residual of 1.5 mg/l minimum is required by the WDR. The system is in full compliance.

7.5.4 Ultimate Capacity

Based upon a design flow of 468,000 gpd (325 gpm), and assuming a contact time of 90 minutes, results in a contact volume of just under 30,000 gallons. This calculation assumes perfect mixing without any short circuiting, which is unrealistic. In practice, a realistic value of 60% of the theoretical detention is possible in a well designed contact chamber. This results in a volume of 48,750 gallons. This volume gives a theoretical contact time of 150 minutes. A chlorine dose of at least 3 mg/l would provide the necessary CT value.

Based on the above information, we recommend that an additional 25,000 gallons in chlorine contact basin be constructed. This should be plumbed so that it can operate in series with the existing basin and so that either basin can be bypassed and taken out of service.

7.6 Effluent Storage Ponds

The current GCSD treatment system includes three (3) effluent storage ponds, with a combined capacity of 20 million gallons (MG). The underlying agreement which governs the need for effluent storage is the Waste Discharge Requirements and the interagency agreement between GCSD, County Service Area No.1 and the Sea Ranch Villages, Inc. These agreements are included in Appendix A. Under that agreement the Sea Ranch Villages, Inc. (Sea Ranch Golf Links) agrees to build an additional 10 MG in new storage facilities. Further Winzler & Kelly in a recently competed study for the Sonoma County Water Agency found that the existing 8.4 MG of storage at the Sea Ranch Sanitation Zone North Plant (CGA #6) could be converted to store tertiary treated effluent. The combination of all of these facilities results in a total effluent

storage of 38.4 MG. To determine if this amount of effluent storage is sufficient, a water balance was performed. The results of that balance are described on the following section.

7.6.1 Discussion of Water Balance Parameters

The water balance analysis is based on a series of major parameters including the following:

- Wastewater Influent Flow
- Rainfall
- Pond Surface Evaporation
- Pond Bottom Percolation
- Net Irrigation Requirement
- Existing Storage Capacity

Essentially all of these parameters directly relate to the characteristics of the storage including area and volume.

Wastewater Inflow

The current average daily wastewater flows used for the water balance are based on available data from GCSD, the North Plant, the Central Plant, and the Lodge, while design flows are based on the North Coast Regional Water Quality Control Board waste discharge requirements for each plant. The flows for Ocean Ridge Drive and Zones 3 and 4 were those presented in Table 5-4 of this report. The current flows used at GCSD were 45,000 gpd for January through June and August to December, 50,000 gpd from June to September and 35,000 gpd for December[4]. The permitted flow for GCSD is 131,000 gpd. The flows used for the Central Plant were 10,000 gpd for the current flow and 27,000 gpd for the permitted. Flows for the North Plant were 27,000 current and 131,000 gpd permitted. Because the total build-out flow of the North Plant, the Central Plant and Lodge is less than the permitted flow, the permitted flow used for the North Plant water balance was a total of 131,000 gpd. The flow used for the Lodge was 16,000 gpd.

Rainfall

Rainfall data is from the National Weather Service station in Point Arena, California and the California Department of Water Resources (DWR) Flood Management Division. Both monthly averages and an annual rainfall with re-occurrence frequency of once every 100-years were considered. Monthly averages were obtained from data for 1948 to 1988. the data used for the 100-year re-occurrence frequency was derived from a whole-year number of 72.89 inches, which was proportionately divided into months using the data from 1948 to 1988.

Pond Surface Evaporation

Evaporation is based on Class A pan evaporation station data at Ferndale for the years 1963 to 1973. Although Ferndale is not in the general area of the study, it was the closest data available. DWR suggested that 35 inches be used for the study, based on the similarity in coastal climates. The average of monthly total pan evaporation was used for the analysis. A pan evaporation coefficient (Ep/Eo) of 1.3, representing the difference between pan evaporation and actual

surface water evaporation was used (pan evaporation divided by 1.3) in order to find the actual evaporation rate for the storage ponds.

Pond Bottom Percolation

Pond bottom percolation was assumed to be zero. While some amount of percolation likely occurs, this assumption serves to help conservatively estimate the amount of storage needed.

Net Irrigation Requirement

Information on the irrigation requirements for the Sea Ranch Golf Links was based upon *Strategic Plan for Meeting Golf Links Watering Needs* (Sept, 2001) and conversations with Greg Sherwood, Maintenance Superintendent of the Golf Links, Irrigation requirements are a minimum 46.5 million gallons per year. Rates for the water balance are, 3 million gallons for the month of April, 7.6 million gallons for May through September and 5 million gallons for October. The wetter months of November through March generally do not need irrigation. The total irrigation water used for the water balance was 46.5 million gallons for a year.

Storage Area

The storage area is needed to balance wastewater inflow with effluent flow or irrigation demand and evaluation rates that peak in the summer, and rainfall that peaks during the winter months. The area used for GCSD Storage Pond #1 is 81,769 square feet (ft^2), GCSD Storage Pond #2 is 75,154 ft^2 and GCSD Storage Pond #3 is 85,393 ft^2 giving a total area of 242,316 ft^2. The storage pond at the North plant is 91,315 ft^2 and the surface area of the storage pond at the golf course (to be constructed) has been estimated to be 126,291 ft^2.

7.6.2 Water Balance Results

The water balance results for GCSD are shown in Table 7-1. What this table shows is that the total inflow, if all of these area are served, varies between 73 MG/yr and 82 MG/yr. The golf course currently uses about 46 MG/yr, although golf courses typically use about 60 MG/yr. Assuming the golf course only needs 60 MG/yr, there is a potential excess of between 13 and 22 MG/yr. Sea Ranch Villages will need to identify uses for this additional water. Those uses could effect whether additional storage facilities, beyond the 38.4 MG used herein, are needed.

7.7 Sludge Storage Basin

The sludge storage basin is a basin equal in size to the aeration basin. The purpose of the basin is to store waste sludge from the extended aeration treatment process for later removal and disposal.

7.7.1 Facilities

The sludge storage basin has a volume of 361,000 gallons. It is equipped with one 10 hp surface floating aerator to provide oxygen for odor control and mixing. The supernatant from the basin is

Table 1 GCSD Water Balance
Total Storage Pond Area Approx. 454,000 sq.ft.
Total Storage Pond Capacity 38.4 MG

	Avg Precip Inches	100 YR precip Inches	Evaporation Inches	GCSD(1&2) Flow Curr, MG/Mo	GCSD Flow Des, MG/Mo	Gualala (3&4), Curr MG/Mo	Gualala (3&4) Buildout, MG/Mo	Ocean Ridge Curr, MG/Mo	Ocean Ridge Buildout, MG/Mo	CSA6 Flow Curr, MG/Mo	CSA6 Flow Des, MG/Mo
Jan	7.82	13.39	0.78	1.40	4.06	1.26	2.36	0.70	1.89	1.26	4.06
Feb	6.74	11.54	1.30	1.31	3.80	1.13	2.13	0.63	1.71	1.65	3.80
Mar	5.7	9.76	2.52	1.40	4.06	1.26	2.36	0.70	1.89	1.20	4.06
Apr	2.93	5.02	3.56	1.35	3.93	1.22	2.28	0.68	1.83	0.87	3.93
May	0.73	1.25	4.35	1.40	4.06	1.26	2.36	0.70	1.89	0.69	4.06
Jun	0.25	0.43	4.82	1.50	3.93	1.22	2.28	0.68	1.83	0.61	3.93
Jul	0.13	0.22	5.04	1.55	4.06	1.26	2.36	0.70	1.89	0.63	4.06
Aug	0.35	0.60	4.52	1.55	4.06	1.26	2.36	0.70	1.89	0.67	4.06
Sep	0.85	1.46	3.96	1.50	3.93	1.22	2.28	0.68	1.83	0.69	3.93
Oct	2.74	4.69	2.26	1.40	4.06	1.26	2.36	0.70	1.89	0.90	4.06
Nov	5.89	10.09	1.13	1.35	3.93	1.22	2.28	0.68	1.83	1.10	3.93
Dec	6.75	11.56	0.83	1.09	4.06	1.26	2.36	0.70	1.89	1.18	4.06
TOTAL	40.88	70.00	35.08	16.77	47.94	14.78	27.74	8.21	22.27	11.45	47.94

	CSA2 Flow Curr, MG/Mo	CSA2 Flow Des, MG/Mo	SRL&I Des, MG/Mo	Precip.to Storage Avg., MG/Mo	Precip.to Storage 100-YR, MG/Mo	Total Inflow, Curr, Avg. precip, MG/Mo	Total Inflow, Curr, 100YR precip, MG/Mo	Total Inflow, Des Avg. Precip, MG/Mo	Total Inflow, Des 100YR Precip, MG/Mo	Evap @ Storage MG/Mo	SRGL Irr. MG/Mo
Jan	0.43	0.96	0.5	2.22	3.79	7.75	9.33	16.04	17.62	0.02	0.00
Feb	0.49	0.88	0.45	1.91	3.27	7.57	8.93	14.68	16.03	0.04	0.00
Mar	0.50	0.92	0.5	1.61	2.76	7.16	8.31	15.40	16.55	0.07	0.00
Apr	0.63	0.85	0.48	0.83	1.42	6.05	6.64	14.13	14.72	0.10	4.55
May	0.31	0.84	0.5	0.21	0.35	5.05	5.20	13.91	14.06	0.12	9.88
Jun	0.29	0.80	0.48	0.07	0.12	4.84	4.89	13.32	13.37	0.14	9.88
Jul	0.30	0.83	0.5	0.04	0.06	4.97	5.00	13.73	13.76	0.14	9.88
Aug	0.36	0.84	0.5	0.10	0.17	5.13	5.20	13.81	13.88	0.13	9.88
Sep	0.30	0.81	0.48	0.24	0.41	5.10	5.27	13.50	13.67	0.11	9.88
Oct	0.34	0.87	0.5	0.78	1.33	5.86	6.42	14.51	15.06	0.06	6.5
Nov	0.39	0.90	0.48	1.67	2.85	6.88	8.06	15.02	16.20	0.03	0.00
Dec	0.41	0.94	0.5	1.91	3.27	7.04	8.40	15.72	17.08	0.02	0.00
TOTAL	4.75	10.44	5.87	11.58	19.81	73.42	81.65	173.78	182.01	0.99	60.45

Table 1 GCSD Water Balance
Total Storage Pond Area Approx. 454,000 sq.ft.
Total Storage Pond Capacity 38.4 MG

	Total Outflow, Evap. SRGL, MG/Mo	Net Flow, Curr., Avg Precip MG/Mo	Net Flow Curr, 100YR MG/Mo	Curr Flow 6 mo stor, AVG MG/Mo	Curr. Flow 6 mo stor, 100YR MG/Mo	Net Flow, Des., Avg Precip MG/Mo	Net Flow Des, 100YR MG/Mo	Des Flow storage, AVG MG/Mo	Des Flow storage, 100YR MG/Mo
Jan	0.02	7.73	9.31	7.73	9.31	16.02	17.59	16.02	17.59
Feb	0.04	7.53	8.89	7.53	8.89	14.64	16.00	14.64	16.00
Mar	0.07	7.09	8.24	7.09	8.24	15.33	16.48	15.33	16.48
Apr	4.65	1.40	1.99	1.40	1.99	9.48	10.07	9.48	10.07
May	10.00	-4.95	-4.80	0.00	0.00	3.91	4.06	3.91	4.06
Jun	10.02	-5.18	-5.13	0.00	0.00	3.30	3.35	3.30	3.35
Jul	10.02	-5.05	-5.03	0.00	0.00	3.71	3.74	3.71	3.74
Aug	10.01	-4.88	-4.81	0.00	0.00	3.80	3.87	3.80	3.87
Sep	9.99	-4.89	-4.72	0.00	0.00	3.51	3.68	3.51	3.68
Oct	6.56	-0.70	-0.15	0.00	0.00	7.95	8.50	7.95	8.50
Nov	0.03	6.85	8.03	6.85	8.03	14.99	16.17	14.99	16.17
Dec	0.02	7.02	8.38	7.02	8.38	15.70	17.05	15.70	17.05
TOTAL	61.44	11.97	20.20	37.62	44.84	112.33	120.56	112.33	120.56

Notes

1) Flows include Sea Ranch Lodge and Inn, Sea Ranch Sanitation Zone, Gualala Community Services Distric Zones 1&2 and 3&4 and Ocean Ridge Drive Subdivision

2) Design Flows based on permitted flows and buildout flows

3) 8.4 MG storage at SRSZ(CSA6), 10.0 MG storage at Golf Links and 20.0 MG storage at GCSD

returned to the aeration basin through the in plant pump station. A draw off line is provided from the bottom of the basin. Lines for drawing off supernatant are provided at 7 and 10 foot depths.

7.7.2 Current Operation

Although the plant has been in operation for over eight years relatively little sludge has accumulated in the basin. This is due to the light loadings and the high degree of sludge stabilization provided by the long MCRT in the aeration basin. At this rate of accumulation sludge removal will not be necessary for many years.

7.7.3 Sludge Disposal

As suggested in the SWRCB inspection report of January 1994 the District has made arrangements with the community of Mendocino to use their belt filter press to dewater the sludge prior to disposal in a landfill.

7.7.4 Ultimate Capacity

Based upon the low loading rates, we believe that the existing system is of adequate size to handle the design flows from GCSD zones 1 thru 4 and the Ocean Ridge Drive Area. Therefore, no improvements are anticipated.

7.8 Instrumentation

The instrumentation system is provided to control, monitor and record the operations of the various unit processes in the system.

The plant instrumentation system contains the following elements:

Influent flow meter with indicator, totalizer, and recorder, located in the plant building (PB).

Influent sampler for flow proportional sampling.

Hand-Off-Auto (HOA) switch for aerators in the aeration basis. Auto setting is for 24 hour timer operation. Run light to the PB.

Clarifier on/off switch with indicator light to PB.

Filter influent turbidity analyzer to signal chemical feed pump.

Filter control panel for filter control and starters for all motors. Run light to PB during backwash.

Coagulant solution feed pumps, on/off switches with run light to PB.

Filter effluent turbidity analyzer.

Chlorine Residual Analyzer with indicator and recorder.

Float switches for in plant pump station with run light at PB.

Effluent flow meter with indicator and totalizer.

Effluent turbidity analyzer with indicator and recorder.

Return sludge magnetic meter with indicator.

Number 2 water pressure tank, on and off pressure switches. Run light to PB.

CSA6 influent flow meter with indicator and totalizer.

HOA switch for influent pump from CSA6. Auto mode controlled by variable frequency drive and 24 hour time clock.

HOA switch for Number 2 water pump from CSA6. Auto is manual on by setting time (0 to 120 minutes) elapsed time shuts pump off. Run light to PB.

No change in the instrumentation, other than to accommodate the new equipment is anticipated.

7.9 Alarm Systems

The following alarms are included within the instrumentation for the original project.

7.9.1 Lift Stations

The Lift Stations 1, 2 and 3 controllers provide alarms for high water, low water, power failure and telemetry failure. These alarms are displayed at the controller and transmitted to the main panel at Lift Station 4.

Lift Station 4 is equipped with alarms for high water, low water, power failure and telemetry failure. In addition, the LS4 panel displays the alarm status at Lift Stations 1, 2 and 3. The station contains an autodialer, which calls the treatment plant alarm system in the event of any lift station failure. The autodialer also calls the operator in the order listed until a response is received.

7.9.2 Treatment Plant

In addition to the alarms from the lift stations, the treatment plant annumciator panel contains the following alarms as part of the instrumentation for the project:

High torque alarm on the clarifier.

High turbidity alarm from the filter effluent.

High level alarm in the filter.

High level alarm in in-plant pump station.

High and low water alarms for the number 2 water storage tank.

Loss of flow alarm on CSA6 influent.

An autodialer is provided at the plant to automatically call the listed personnel in order in event of an alarm. The autodialer will continue to call until it gets a response.

In addition, the District added a chlorine gas alarm when they converted the disinfection system to chlorine gas.

All of the alarm systems are functioning as intended.

7.10 Emergency Power Generation Systems

The project includes three emergency power systems. Each unit is diesel fueled. Each unit consists of an engine directly connected to the generator unit and mounted on a steel base skid, complete with fuel tank and all necessary engine and generator controls and accessories.

7.10.1 Portable Generator

This is a trailer mounted portable generator to provide emergency power to Lift Stations 1, 2 and 3 in the collection system. The unit is required to produce a minimum of 25 KW, 120/240 volts, three phase, 60 hertz at 1,800 rpm. A 65 gallon fuel tank is provided.

This unit was delivered as specified. The unit has been in service since the system was started in October 1992, and is used and tested on a regular basis.

During a power failure the unit is moved from lift station to lift station to pump down the station before an overflow occurs. From past experienced the operator was able to service all three lift stations without a problem.

The unit works fine and there have been no problems with it.

7.10.2 Lift Station 4 Generator

This is a fixed skid mounted unit housed in the pump station building. It is dedicated to providing emergency power to operate Lift Station 4, the main lift station, in the event of a power outage. The unit is required to produce a minimum of 125 KW, 277/480 volts, three phase, 60 hertz at 1,800 rpm. The unit is capable of starting and powering a 40 hp pump with another 40 hp running and a station base load of 8 KW. A separate aboveground 500 gallon fuel tank is provided.

The unit was supplied and installed as specified with all necessary controls and accessories. The unit has been in service since the startup of the system.

During a power failure the unit automatically starts immediately. An automatic transfer switch transfers the load from the utility service to the generator. An interlock is provided to prevent power service from the utility service and the generator at the same time. When utility power is restored the generator continues to carry the load for ten minutes to verify that utility power is back online. After ten minutes the automatic transfer switch transfers the load to the utility service. Following the transfer the generator continues to run for up to an additional ten minutes to cool without load.

The unit works as specified and described. There have been no problems with the unit. However, the unit may need to be upsized to handle the new pumps that will ultimately be needed at this lift station.

7.10.3 Treatment Plant Generator

This is a fixed skid mounted unit housed in the treatment plant building. It is dedicated to providing emergency power to operate key equipment in the treatment plant in the event of a power outage. The unit is required to produce a minimum of 75 KW, 460 volts, three phase, 60 hertz at 1,800 rpm. A separate aboveground 500 gallon fuel tank is provided.

The unit was supplied and installed as specified with all necessary controls and accessories. The unit has been in service since the startup of the system

During a power failure the unit operates the same as described above for the Lift Station 4 system.

The unit works as specified and described above. There have been no problems with the unit.

7.11 Opinion of Probable Cost to Expand Wastewater Treatment Plant

The following is a summary of the recommended improvements at the wastewater treatment plant so that it is able to handle the design flows from the existing and proposed service areas.

1. Increase aeration capacity in activated sludge basin from 20 hp to 40 hp.
2. Add another secondary clarifier.
3. Add another tertiary filter.
4. Add another chlorine contact basin.

Our opinion of the probable cost for these improvements is presented in Table 7-2.

Table 7-2
Opinion of Probable Cost for Treatment Plant Improvements

	Item	Estimated Cost
1.	Add 2 – 20 hp Aerators	$25,000
2.	Add Secondary Clarifier	$170,000
3.	Add Tertiary Filter	$380,000
4.	Add Chlorine Contact Basin	$45,000
5.	Misc. Piping & Valves	$50,000
6.	Misc. Electrical	$40,000
7.	General Conditions (Mob/DeMob)	$35,000
	Subtotal	$745,000
	15% Contingency	$112,000
	30% Engineering, Admin, Legal	$224,000
	TOTAL	$1,081,700
	CALL	$1,100,000

PROJECT FINANCING

8.1 General

Chapter 5, 6, and 7 have developed and presented alternatives for providing a wastewater collection system for GCSD sewering zones 3, 4, and the Ocean ridge drive area as well as evaluating the existing wastewater treatment facility for the town of Gualala. Total project costs have been estimated at $6,500,000, including planning, design and construction of all necessary facilities and acquisition of required rights of ways. This chapter will discuss the various options for and make recommendations regarding methods for securing the capital financing for the project and setting appropriate rates and charges for maintaining the project.

There are several ways a community can acquire funding for improvement projects. The agencies and programs applicable to Gualala include the following:

- U.S. Department of Housing and Urban Development (HUD) – Community Development Block Grant Program (CDBG)
- U.S. Department of Agriculture, Rural Development – Rural Utilities Service (RUS)
- U.S. Economic Development Administration (EDA) – Public Works Program

Each of these programs will provide funding of project capital costs in the form of grants (that do not have to be secured and paid back) and loans (that do have to be secured and paid back). Each of these agencies are more willing to participate in projects that "leverage" funding from a variety of sources and Gualala will be more successful is securing small grants and loans from a number of agencies than is securing all the project funding from one agency.

Subsection 8.2 will discuss the funding and financing programs and structures available to the District. Subsection 8.3 will discuss a recommended rate structure to cover operations, maintenance and depreciation costs for the project and a connection fee program for the Gualala project. Subsection 8.4 presents several project funding and financing scenarios and lays out necessary cost per connection for each of these scenarios to cover operations, maintenance and debt service (if any). Finally, section 8.5 outlines recommended actions for the GCSD to begin the process of securing long-term funding.

8.2 Funding and Financing

Basic funding options that are available to the District include the following:

- The CDBG Grant Program
- The RUS Grant /Loan Program
- The EDA Grant Program
- The Clean Beaches Initiative
- Proposition 50
- The State Revolving Fund Loan Program
- Tax-Exempt Bond Financing

8.2.1 CDBG Grants

Mendocino County is the recipient of federal grant money on an annual basis through the CDBG Program. The program is intended to assist in providing affordable housing to households with a Median Household Income (MHI) below the average of $41,500. Special consideration is given to communities where a substantial portion of the population is categorized as Very Low Income (MHI=1/2 the average MHI or $20,750). The CDBG guidelines allow funding of community infrastructure systems including water and sewer. The program is frequently utilized to provide "seed" money to communities in need and to help offset the connection costs and assessments of low income households.

In order to obtain these funds the community needs to do an income survey. We recommend that a preliminary survey, using the form contained in Appendix B to this report be used to develop an estimate of the number of low income households. (This group can include both renters and homeowners.) A grant application is then prepared to focus 100% of the activity on those households. The application is then submitted through the County and can be used to pay any assessment or connection related charges and to pay for the work done on private property. Between $500,000 and $1 Million can be obtained through this program, depending on the level of county support.

In addition, the District can apply for a small grant of $35,000 from the Rural Technical Assistance Program. This money could be used to partially offset the costs for the EIR, but could also delay the project from 6 months to 1 year. The downside to this grant is that the savings through the grand could be exceeded by the inflationary effects on construction costs.

8.2.2 RUS Grant and Loans

The Rural Utility Service provides grants and loans for community water and sewer facilities. The loans are tiered based on Median Household Income (MHI) and the tiers are as follows:

- Poverty: MHI < $27,728. Loan rate is 4.5% for a 40 year term
- Mid range $27,728<MHI<$34,661. Loan rate 5.5% for a 40 year term
- Market: MHI>$34,661. Loan rate 5.5% for a 40 year term

Grants are available to communities where the total monthly charge, including debt service, O&M and any required reserves exceed $24 to $30, depending upon median income level. The grant amount offered will be that amount necessary to reduce the total charge to the amount contained in RUS guidelines. RUS grants are highly competitive; there is approximately $12 million of grant money allocated to the entire State of California. National money is "pooled" twice a year in September and April. The Pooling process allows States with well-developed project funding lists to utilize funds that would otherwise be unused.

In order to qualify for a grant the community must have a letter from the local health officer indicating that there is a public health problem (this same letter allows the beginning of the assessment district process). There also must be an income survey, which can be combined with the CDBG income survey.

RUS prefers to combine their grants with some loan money also. Bonds secure RUS loans and the agency will typically buy General Obligation Bonds, Special Assessment Bonds and Revenue Bonds. These bond structures are discussed in detail in subsection 8.2.7.

The RUS funding process begins with a pre-application that is filed upon completion of the Facilities Plan. The pre-application is reviewed by RUS and qualifying projects are invited to apply for funding. RUS has historically conducted a National Environmental Quality Act (NEPA) study on all projects that they fund. The CERT program is endeavoring to coordinate this review more closely with the District's required review under the California Environmental Quality Act (CEQA). As work proceeds on the Gualala project, it will be important to carefully coordinate these efforts to streamline the project development process.

An application for RUS funding can be obtained by contacting Mr. Al Aiello at 707-526-6797.

8.2.3 EDA Grants

The classic EDA grant program is focused on providing funds to allow the development of infrastructure that will, in turn, allow the development of industry within the community. The EDA priority program looks at the cost of the project versus its economic benefits and weighs such factors as the number of long term jobs created by industries that locate in the community.

EDA's application procedure requires submittal of a Feasibility Study and supporting documentation of the cost versus economic benefit.

8.2.4 Clean Beaches Initiative (DBI)

California's coastal water monitoring requirements have, in recent years, revealed that bacterial pollution at the State's beaches is widespread and too often exceeds acceptable levels. In addition, beaches in California are periodically closed due to sewage spills. The major goal of the CBI Grant Program is to reduce these health risks and increase the public's access to clean beaches.

The State Water Resources Control Board's (SWRCB) Division of Clean Water Programs (Division) is currently soliciting viable projects that will help achieve the goal of clean and healthy coastal waters for all that reside in and visit California. Although funding has not yet been approved for these CBI grants, it appears that approximately 46 million dollars ($46,000,000) will be appropriated to the SWRCB by the Watershed, Clean Beaches, and Water Quality Act (AB 2534) authored by Assembly Members Pavley and Nakano. AB 2534 is expected to provide public agencies and non-profit organizations grants for the following types of projects:

- Projects designed to improve coastal water quality at public beaches to ensure the beach waters meet current bacteriological standards of the California Health and Safety Code.
- Projects to improve, upgrade, or convert existing sewer collection or septic systems for the restoration and protection of coastal water quality.
- Projects designed to implement stormwater and runoff pollution reduction and prevention programs that directly affect water quality at public beaches.

- Projects designed to implement best management practices for the restoration and protection of coastal water quality.

An application for funding under this program was submitted in October 2002. The SWRCB is still working on prioritizing the projects.

8.2.5 Proposition 50

Proposition 50, the Water Bond Initiative 2002, was recently approved by the voters. It is hoped that around $10 Million will be available for projects in Mendocino County. It generally takes from 6 to 18 months after the passage of a proposition for the State to develop guidelines for prioritizing projects for funding. While guidelines are not currently available, this proposition could be a funding source for a significant portion of this project.

8.2.6 State Revolving Fund (SRF)

The SRF program provides low interest loans for wastewater projects under two different methods. The conventional SRF loan has a twenty year term with the interest rate set at one half of the most current State G.O. Bond sale. These loans are capped at $5 million per community largely because the State of California has had difficulty providing the matching funds necessary to draw the full E.P.A. grant into California.

Because of this matching fund difficulty, the WateReuse Association of California has negotiated a second type of loan. Under this program, the community puts up to 20% of the eligible project cost. This amount is the required match to the Federal government and as a result the community gets a SRF loan interest free.

In order to be eligible for the SRF, a project must be put on a statewide priority list by the governing Regional Board (in this case the North Coast Regional Water Quality Control Board). The Gualala project is not currently on the priority list. Thus a request from the GCSD and a letter from the local health officer, is necessary to begin the Regional Board's process.

The contact person at the Regional Board is Mr. Charles Reed (707) 576-2752.

8.2.7 Tax Exempt Bonds

Should the District secure a loan from the RUS, some tax-exempt bond financing will be required. In addition, the District may market tax-exempt bonds to the private market to finance its infrastructure. While this private-market financing is common amongst many municipal agencies and special districts it is in all likelihood inappropriate for Gualala because of the comparatively high interest rates (6%-8%), short terms (15 years) and stringent reserve requirements (greater than 10% of the issue) required by private investors. This section will focus on three types of bond financing that are applicable for securing an RUS loan.

8.2.7.1 Special Assessment and Assessment Bond Proceedings

These procedures are the most widely used and thoroughly established method of financing public improvements of a local nature. The two basic reasons for the levy of assessments and the issuance of assessment bonds on a given project are:

- To insure the equitable and objective distribution of cost among the properties affected and benefited.
- To provide the owner of benefited properties with the means of paying their share of the cost over a period of time at reasonable interest rates.

In order to use these procedures, it is essential that the property to be assessed receive a direct and specific benefit as distinguished from a general benefit to the community as a whole. A community wastewater facility has a special and direct benefit to each property served, even though indirectly the community as a whole will benefit from the improvements.

The acts relating to the special assessment and assessment bond proceeding in the state are classified as:

- Assessment acts
- Assessment bond acts
- Combined assessment and assessment bond acts

Assessment acts are the laws, which set forth the procedure for accomplishing the work of a local improvement and for levying the assessment to pay for such work. The assessment acts available and in common used are the Municipal Improvement Act of 1913 (Division 12 of the Streets and Highway Code of the State of California) and the Improvement Act of 1911 (Division 7 of the Streets and Highway Code of the State of California).

Assessment bond acts set forth the procedure for the authorization and issuance of assessment bonds to represent assessments, which are not paid in cash. The assessment bond acts in common use are the Improvement Bond Act of 1915 (Division 10 of the Streets and Highways Code of the State of California) and Part 5 of the Improvements Act of 1911 (Division 7 of the Streets and Highway Code of the State of California).

The Improvement Act of 1911 (the 1911 Act) provides for the construction of improvements together with limited acquisition of necessary property, the levy of assessments and the issuance of bonds. The Municipal Improvements Act of 1913 (the 1913 Act) provides for the acquisition or construction of improvements, the acquisition of necessary property and the levy of assessments. The 1913 Act has no bond procedure. The Improvements Bond Act of 1915 (the 1915 Act) is solely a bond act. Bonds may be issued under it to represent assessment levied under any assessments act.

The Acts may be used in various combinations. There can be 1911 Act Assessment with an 1911 Act Bond or a 1915 Act Bond; or there may be a 1913 Act Assessment with a 1911 Act or 1915 Act Bond. There is no such thing as a 1913 Act Bond or a 1915 Act Assessment.

Improvement bonds may be issued in as many series as necessary, all with equal parity. Special assessment bonds have direct advantages to the property owners, which include ability to pay off the assessment in cash prior to bond issuance, the ability to finance the improvements at a low interest rate over a number of years and the ability to pay off the assessment lien at any time during the term of the bond.

Before work may be ordered in any assessment proceeding, under either of the assessment acts, it is necessary that proceedings be avoided under the Special Assessment Investigation, Limitation and Majority Protest Act of 1931 (Division 4 of the Streets and Highways code of the State of California). The most commonly used method for avoiding the Division 4 Report and Hearing is by a petition of the property owners requesting the entity undertake the proceedings.

A noticed public hearing is held on the engineer's report which contains the plans and specifications for the proposed improvements, map and description of land easements necessary to be acquired, itemized estimate of costs for the improvements, acquisition and incidental expenses, a diagram of the assessment district showing lots and parcels and a proposed assessment of the estimated cost and expense against the properties benefited. The hearing on the engineer's report is a quasi-judicial proceeding. It is necessary to present at the hearing evidence to provide a basis for the Board of Director's actions. In particular, extensive evidence must be advanced on the question of benefit. As the conclusion of the hearing, the Board of Directors has jurisdiction to issue assessment bonds. The end result of such proceedings is provision of public improvement financed by special assessment bonds secured by lien in a specific amount against each benefiting parcel.

8.2.7.2 Revenue Bonds

When a District plans to undertake the construction or acquisition of a facility that is revenue producing, such as the proposed wastewater facility system, the financing may be accomplished by the issuance of revenue bonds.

The sole source of payment of a revenue bond is the revenues derived from the facilities acquired, constructed or improved with the proceeds of the bonds. The bonds are a special obligation of the issuing entity, payable solely from the revenues derived from the facility and from no other funds. Also the revenues must be sufficient to cover the cost of maintaining and operating the facility. Before a District undertakes the issuance of revenue bonds, a determination must be made as to whether the revenues will be sufficient to provide for the principle and interest payments and the operations and maintenance of the facilities. This determination requires a projection of the number and types of users and hence the revenues of the facility during the life of the bonds.

Revenue bonds for sewer facilities may be authorized under the Sewer Revenue Bond Act of 1933. While this act does not require an election Proposition 218 does. This is generally done as either a special election or as a part of a normal election.

8.2.7.3 General Obligation Bonds

Prior to the passage of Proposition 13 in 1978, which added Article XIIIA to the California Constitution, general obligation bonds (G.O. Bonds) were significant financing vehicles for California water and wastewater agencies and many agencies have statutory authority to issue general obligations bonds. By eliminating the ability to assess ad valorem property taxes, Proposition 13 effectively eliminated the ability to issue new general obligation bonds. The Constitutional revisions created by Proposition 13 were subsequently amended to allow the issuance of general obligation bonds under some circumstances.

General obligations bonds are bonds secured by ad valorem property taxes levied and collected by the issuing agency for the purpose of paying the bonds. These property taxes are in addition to the ad valorem property taxes levied in accordance with the limits of the Article XIIIA and are levied throughout the jurisdiction of the agency. Pursuant to Article XIIIA, Section 1 (b), general obligation bonds may be issued only to finance the acquisition or improvement of real property and must be approved by a two-thirds vote. The bond must also satisfy any substantive or procedural requirement contained in the agency's governing statue.

One advantage of general obligation bonds is that the bonds carry with them a source of repayment over and above rates and charges, connection fees and standby and availability charges. Although paid by the agency constituents, general obligation bonds do not need to be supported by enterprise revenues.

8.3 Rates and Connection Fees

The monthly rates for this utility must be set to cover both the debt service and the costs for operation and maintenance. The District's current monthly sewer rate will not need to be raised for this project due to the increase in the customer base. While a rate study was not included in the scope of this study, the added customers will result in a **lower** monthly bill for existing customers due to the increase in the customer base.

A rate study should be performed after the actual costs for construction and the method of financing has been determined.

A connection charge is a fee charged to new customers to represent the portion of the existing system that is being used up. These fees are used to generate the funds needed to add capacity to the system to replace that incremental piece. In this project it is proposed to upgrade and expand portions of the existing system to provide this added capacity. Because of this we generally recommend that the District waive its normal connection charges for a period after construction is completed to allow the homes included in this project to connect to the system.

8.4 Project Financing Scenarios

Without additional information regarding median income levels for the service area it is impossible to develop the approach to funding this project. The first steps should be to do an income survey and to apply for funding under the SRF and RUS programs. If a sufficient number of users fall within the target income group (TIG) then a grant application through the CDBG program should also be submitted.

8.5 Recommended Actions

The District must undertake the following actions in order to secure a funding package for the project that maximizes the grants and low interest loans that are potentially available:

1. Conduct a public meeting to present the project.
2. Conduct an informal income survey of the area to be served.
3. Follow-up on the Clean Beaches Grant application.
4. Submit a pre-application to RUS.
5. Request that the SWRCB place this project on the SRF loan program if it does not get funding under the Clean Beaches Initiative.
6. Apply for funding through the CDGB program if appropriate.
7. Complete the CEQA/NEPA process.
8. Monitor Proposition 50 developments and attempt to secure funding through that program.

CHAPTER 9

IMPLEMENTATION PLAN

9.1 Introduction

This chapter provides guidance to the District on the necessary steps to complete the project.

9.2 Implementation Steps

The following implementation steps are necessary to result in a constructed project.

1. Complete this Sewering Feasibility Study.
2. Form a Citizens Advisory Committee.
3. Hold a series of public meetings to present the results of this study to the Community.
4. Determine if a majority of the property owners in the Ocean Ridge Drive area desire to annex to GCSD and receive sewer service.
5. Conduct preliminary income survey of the area to be sewered.
6. Submit Preliminary Grant Funding applications to the following agencies:
   - Community Development Block Grant (HUD)
   - RUS
   - SWRCB
7. Complete Environmental Document. The project will need to go through the California Environmental Quality Act (CEQA) requirements. Please refer to section 9.3 below.
8. Complete the design.
9. Complete construction.

9.3 Environmental

A previously completed Environmental Impact Report (EIR) covered only the existing GCSD sewer zones 1 & 2. This document did not cover zones 3 or 4, or Ocean Ridge Drive. Therefore, the CEQA process will need to be followed before this project can move to the design phase. An "initial study" could first be prepared under CEQA to determine whether an EIR or Negative Declaration (Neg Dec) is required. For the sewering of GCSD zones 3 & 4, an EIR is going to likely be needed because of the development potential in the "residential reserve" area. To reduce time, the District may want to begin with a Notice of Preparation if it feels an EIR will be necessary.

For the addition of the area north of Pacific Woods Road (Ocean Ridge Drive area), annexation would be needed as this area is not part of the original LAFCO approved GCSD service area. Thus, the GCSD would need to apply for annexation from LAFCO should a majority of the property owners want this to occur. The CEQA document for the annexation could be combined

with the CEQA document for the sewer system to save time and money. Please refer to Appendix C for an inter-office memo from Winzler & Kelly's CEQA specialist.

9.4 Administrative

9.4.1 Funding and Cost Sharing

The preceding chapter described some of the possible funding mechanisms. As correspondence with funding agencies takes place during the intervening months, Gualala Community Services District will need to make the decision regarding the amount of loan funding that can be afforded by the residents of the community.

9.4.2 Relative Income Status of Gualala Residents

Federal agencies are more favorable to grants for public facilities depending upon the relative income of the residents. To determine this a survey of the residents will be required that will show typical annual income for families in Gualala, along with the number of children within the family as the poverty level varies with the size of a family. It is expected that this will be done on a numbered basis so that the income level of residents is not known to anyone in the region. A special representative of the County can make summaries. This survey should be started and completed as soon as possible.

9.4.3 Local Funding

To the extent local funding is required, a decision must be made as to type. While a number of different methods of financing were discussed in Chapter 8 the requirements for funding the local share of the project will likely be decided by the agency providing grant and loan monies. In particular, RUS will likely require an assessment district to secure the loan that accompanies their grant. That method will be a special assessment district with assessments levied in a manner that distributes the assessment in relationship to the benefit received. Considerations include parcel size, whether vacant or occupied, or the number of equivalent dwellings located thereon, frontage served, a combination of these factors, or some other agreed method of assessing.

9.4.4 Community Support

While no projects ever have 100% community support, we believe it is important for the residents of Gualala to understand the benefits of the project and for the District to try and address their concerns.

In addition to solving pollution problems, this projects will add value to the properties that participate in this system. In essence, the District will be making an improvement to each parcel of around $9,300 (i.e., total project cost divided by number of potential residential dwellings).

The District should coordinate the distribution of information to the residents so that they are informed. Opportunities, in the form of informational public meetings, should be held to address concerns that might be raised.

9.5 Engineering

9.5.1 Preliminary Design

This Sewer Feasibility Study includes most of what would be included in preliminary design. However, the final site layout is still to be determined and the final design will vary depending upon the actual site topography and the availability of easements.

9.5.2 Preliminary Layout

The preliminary layout of the collection system was based upon a 40 foot contour USGS map with no spot elevations. The final design will require more detail topographic mapping. This will be needed for the final design and for the easements required over private property or private roads.

9.5.3 Contract Documents

The contract documents includes the bidding requirements, conditions of the contract, the technical specifications and the construction plans. These generally take from 6 to 12 months to complete, depending upon the review requirements of the funding agencies.

9.6 Construction

9.6.1 Bid Phase

After completion of plans and specifications and approval by funding agencies, plans are typically advertised to bid for at least one month. Typically, Winzler & Kelly notifies all contractors performing this type of work in northern California and southern Oregon that projects will be coming out for bid and solicits their interest. During the bid phase we would include a pre-bid conference, with site inspections and issue clarifications to answer any questions. After receipt of bids, approval to award the project must be granted by the funding agencies.

9.6.2 Construction Management

For a project of this size, especially if rapid completion is desired, engineering construction personnel would include the following:

- A resident engineer
- Two or three inspectors. These inspectors monitor the contractor's work for compliance with the plans and specifications. A part-time secretary would be desirable, and if available, some use of the District secretary could be made and paid from such funds.

9.6.3 Start-up and Testing

As construction is proceeding, testing takes place to insure compliance with the contract documents. Before construction is completed, all of the facilities are tested and start up instructions provided to the District's personnel.

BAUER
associates
GEOTECHNICAL CONSULTANTS

November 18, 2005
Job No. 2278.0

Gualala Community Services District
Attention: Mr. Greg Girard
P.O. Box 14
Gualala, CA 95445

Report
Geotechnical Investigation
Planned Sewer Main Improvements
Old Stage Road
Gualala, California

This report presents the results of our geotechnical investigation of conditions at Old Stage Road, at about Mile Post 0.65. The purpose of our work has been to provide comments regarding the feasibility of constructing the planned sewer main improvements through the area of pavement distress at Mile Post 0.65 and provide recommendations for construction. We understand that the sewer main will consist of a 6-inch diameter, polyvinyl pipe emplaced with directional drilling equipment. A site plan showing the areas of investigation is presented on Plate 1.

The scope of our investigation as outlined in our agreement dated August 9, 2005, included reviewing selected published geologic information from our files, exploring subsurface conditions at the site, and performing laboratory testing on selected samples. Based upon our work, we have developed conclusions and recommendations concerning:

1. Proximity of the site to published active faults.
2. Soil/rock and ground water conditions observed.
3. Geotechnical engineering drainage.
4. Supplemental services.

Our scope of work did not include an evaluation of any potential hazardous waste contamination of the soil or groundwater at the site. Further, our work did not include

Westside Center
Post Office Box 460
Forestville, CA 95436
707.887.2505 (V)
707.887.9756 (F)

evaluation of other improvements beyond the paved portion of the study area (i.e. remainder of the planned pipe alignment, existing wall or existing pavement).

WORK PERFORMED

We reviewed the following selected geotechnical data:

> Chapman, R. H., et. al., 1975, Bouguer Gravity Map of California, Ukiah Sheet, Scale 1:250,000.
>
> Davenport, C.W., 1984, Geology and Geomorphic Features Related to Landsliding, Gualala 7.5-Minute Quadrangle, Mendocino County, California: California Division of Mines and Geology 84-48SF, Scale 1:24,000.
>
> Hart, E.W., and Bryant, W.A., 1997, Fault-Rupture Hazard Zones in California: California Division of Mines and Geology, Special Publication 42, 38pp.

On August 29, 2005, our engineering geologist performed a site visit to observe the surface features exposed in the planned development area. Our site visit included observing the cutslope at the inboard edge of the road and the areas downslope of the retaining wall at the outboard edge of the road. We subsequently discussed the history of the area with Mr. George Rau (engineer and former employee of Mendocino County) and Mr. Bob Parker of the Department of Transportation (DOT), Mendocino County. We also reviewed repair plans of the area, dated May 18, 1976, as supplied by Mr. Parker.

On October 14, 2005, our engineering geologist explored the subsurface conditions to the extent of four test borings. The test borings were drilled with an all-terrain drill rig equipped with 6-inch diameter, solid stem augers. The completed test borings ranged in depth to about 10-1/2 feet.

The test holes were located by our geologist by pacing or estimating distances from features indicated on the site plans. The approximate test hole locations are shown on Plate 1. The test boring locations should be considered accurate only to the degree implied

by the method used. Our geologist logged the conditions exposed and obtained bulk and relatively undisturbed samples at selected intervals for visual identification and laboratory testing. Relatively undisturbed samples were obtained with a 2.4-inch, inside-diameter, split-spoon sampler driven with a 140-pound hammer. The stroke during driving was about 30 inches. The blows required to drive the sampler were recorded and converted to equivalent Standard Penetration blow counts for correlation with other data. Logs of the test borings showing the materials encountered, sample depths, and converted blow counts are presented on Plates 2 through 5. The materials are classified in accordance with the Unified Soil Classification System and Rock Classification Criteria, presented on Plates 6 and 7, respectively.

The logs show our interpretation of the subsurface conditions on the date and locations indicated, and it is not warranted that they are representative of the subsurface conditions at other locations and times. Also, the stratification lines on the logs represent the approximate boundaries between material types; the transition may be gradual.

Upon completion of our subsurface exploration, we discussed our findings and preliminary comments regarding the development with Mssrs. Doug Donmon of Dimensions 4 Engineering, and Greg Girard. We transmitted a copy of the 1976 Mendocino DOT repair plans to Mr. Donmon.

SITE CONDITIONS

The site is located about 1/2 mile east of Highway 1 in Gualala, California. The road is located at the head of a relatively broad, southwest draining swale.

Slopes within the area are inclined relatively steep, on the order of 1-1/2: 1 (horizontal to vertical) to 2:1. The road appears to have been developed by cutting on the upslope (inboard) side of the road and placing the excavated material as fill on the downslope. The cutslope is estimated to range to about 9 feet high and is inclined on the order of 1:1. The outboard edge of the road is supported by a concrete sack wall ranging to about 7 feet high. The slopes typically support a dense growth of brush along with trees. The ground surface downslope of the wall also contains logging debris consisting of fallen trees, limbs, and brush.

We anticipate that Old Stage Road may have originated as a logging road and has been subsequently modified over the years. The early logging roads were typically graded without compaction and keying into firm materials as commonly required of public roads today. Therefore, distress of old fills is typical and occasionally the fills experience landsliding. We understand that the subject area was previously repaired to mitigate instability. The plans by Mendocino DOT indicate that the repair consisted of reconstructing the fill at the outboard edge of the road as a reinforced earth type of fill. The fill was to be placed on level benches extending into the slope and reportedly provided with galvanized chain link mat material placed flat on the fill lifts. The chain link material was then tied into a reinforced sacked concrete wall at the outboard edge of the road. The plans indicate that a 6 feet minimum depth subdrain was to be installed at the inboard edge of the road. We have no confirmation if the site work conformed to the DOT plans.

During our work, we noted asphalt cracking at the outboard portion of the road that forms a relatively continuous arc in the area of the previous repair. The approximate location of cracking is indicated on the plan prepared by Dimensions 4 Engineering, presented on Plate 1. Displacements along the cracking are estimated to range up to about 1/4-inch wide (vertically and horizontally). We did not observe obvious distress of the sacked concrete wall.

The published geologic map by Davenport, 1984, shows that the site is underlain by bedrock of the Anchor Bay Formation which is regionally composed of marine sandstone and mudstone. The bedrock is locally blanketed by younger marine terrace deposits consisting of silts, sands and pea size gravels.

Siltstone bedrock is exposed along much of the cutslope at the inboard edge of the road. The siltstone is generally poorly lithified and typically friable, weak, and deeply weathered. Bedding of the bedrock was not apparent. The bedrock is typically intensely fractured with variable orientations. The results of our exploration, summarized on Plates 2 through 5 indicates that the bedrock includes units of shale and sandstone of similar strength, hardness, and fracturing. The bedrock was typically excavated with low to moderate difficulty.

The bedrock in the area is generally blanketed with medium dense clayey gravel colluvial soils. Colluvial soils are gradual accumulations of weathered rock and soils transported downslope by gravity. Colluvial soils are prone to continued downslope creep. Conditions encountered within our test borings indicate that no colluvium was encountered at Test

Borings 1 and 4, and that a remnant of colluvial soils was encountered at Test Boring 3 (ranging to about 2-1/2 feet deep).

As previously discussed, the outboard portion of the road had been repaired with a reinforced earth system. Test Boring 2 was drilled inboard of the road centerline and encountered stiff sandy clay fill soils to about 5 feet deep. The fill soils are anticipated to be beyond the area of previous repair, and are therefore, considered to be non-engineered. The fills are shown as 'weak' on the boring log since old, non-engineered fill will be subject to unpredictable horizontal and vertical movements.

Based on our visual classification and laboratory test results, the surface soils are generally of low expansive potential. Expansive soils will experience volume changes with seasonal moisture variations.

Groundwater seepage was not encountered in our test borings and we did not observe any springs at the site. Groundwater conditions are expected to vary seasonally and at different locations.

Davenport, 1984, indicates that the site is within a "debris slide slope" area, (generally a geomorphic feature that appears to have been sculpted by numerous debris slide events). Our exploration did not encounter landslide debris within the area of investigation, although the steeper slopes below the wall appear to be prone to debris flow landsliding as proposed by Davenport.

The property is not within an Alquist-Priolo Earthquake Fault Zone, which could require a detailed investigation to evaluate the hazard of fault surface rupture for certain developments. The nearest fault considered seismically active (experiencing surface rupture within about the last 11,000 years) is the San Andreas fault, located about 1 mile to the northeast. Other faults, not considered active, are located nearer the site but are typically considered less prone to renewed movement.

DISCUSSION AND CONCLUSIONS

The results of our work indicate that construction of the planned sewer main is feasible from a geotechnical engineering viewpoint. The most significant geotechnical factors that must be considered in design and construction are: 1) the presence of weak soils overlying

the bedrock that will be subject to variable horizontal and vertical movements; and 2) the potential for continued distress at the outboard portion of the road.

In order to mitigate the concerns regarding the weak surface soils, it will be necessary to locate the planned sewer main well within the firm bedrock. Excavation of the bedrock is not anticipated to be a significant concern since our test borings were drilled with low to moderate difficulty.

The pavement cracking at the outboard portion of the road indicates distress. The specific cause of distress is not known and was not evaluated by this investigation. Potential causes could consists of many factors (i.e. settlement of the fill soils, insufficient depth for keying the wall and fill into firm bedrock, inadequate reinforcing, etc.). Considering the evidence for distress, it will be necessary to locate the planned sewer main well within the inboard portion of the road to avoid the potential for soil movements to disrupt the utility. Construction of the utility at the inboard portion of the road will also be necessary to avoid encountering the previous repair (i.e. soil reinforcing mats).

As previously noted, a subdrain is located at the inboard edge of the road. To avoid construction problems, the planned sewer main should be located well below the bottom of the subdrain. The DOT plans indicate that the subdrain would be a minimum of 6 feet deep. On this basis, and considering the depth to bedrock encountered in our test borings, it appears that it would be appropriate to locate the sewer main 8 to 10 feet deep. However, it may be prudent to physically confirm the depth of the subdrain prior to construction.

Proper functionality of the existing subdrain will be important to improving performance of the road area and buried utilities. On this basis, it would be prudent to frequently check the drain for proper working condition and provide maintenance, as required.

Continued distress at the outboard portion of the road could lead to landsliding. We judge that construction of the sewer main at the inboard edge of the road and locating the line well into bedrock will generally mitigate the risk associated with landsliding of the roadway fill. However, severe landsliding could cause weak bedrock materials also to slide. On this basis, it may be appropriate to contact the county road department so that they may evaluate whether the road distress should be remediated.

We believe that there are no active faults on the site, and therefore the risk of fault-related ground rupture is relatively low. Like the entire Gualala area, the site is subject to severe ground shaking during earthquakes, generated by active faults in the region. It will be necessary to design and construct the project in strict accordance with current standards for earthquake-resistant construction.

Division V, Section 1636 of the 1997 Uniform Building Code (UBC) indicates that site categorization for seismic design should be based on the average soil values within the upper 100 feet of the site. Although the scope of our investigation was limited to relatively shallow test holes (ranging to about 10-1/2 feet deep), we estimate that a Soil Profile Type "S_C" will be appropriate for design. Upon request, we could perform supplemental exploration to determine the actual subsurface conditions ranging to 100 feet.

SUPPLEMENTAL SERVICES

We should be contacted during final design to provide additional comments and recommendations, as needed. We should review the final plans for conformance with the intent of our recommendations. During construction, we should provide intermittent geotechnical engineering observations as required. These observations and tests would allow us to check that the contractor's work conforms with the intent of our recommendations and the project plans and specifications. These observations also permit us to check that conditions encountered are as anticipated, and modify our recommendations, as necessary. Upon completion of the project, we should be contacted to perform a final observation. We should summarize the results of this work in a final report.

These supplemental services are performed on an as-requested basis, and we can accept absolutely no responsibility for items that we are not notified to observe. We must be provided with at least 48 hours notice for scheduling our initial site visit, and 24 hours thereafter. These supplemental services are in addition to this investigation, and are charged for on an hourly basis in accordance with our Schedule of Charges.

MAINTENANCE

Periodic land maintenance will be required. Surface and subsurface drains should be checked frequently, and cleaned and maintained as necessary. Sloughing, landsliding or erosion that occurs should be repaired before it can enlarge. A dense growth of deep-rooted ground cover should be maintained on all exposed slopes.

LIMITATIONS

We judge that construction in accordance with these recommendations will be generally stable, and that the risk of future instability is within the range generally associated with construction on hillsides in the project vicinity. However, there is an inherent risk of instability associated with all hillside construction.

Landsliding and erosion are continuing natural processes which gradually wear away existing topographic features. The surface soils and upper portion of the very highly weathered bedrock can be susceptible to landsliding and erosion, even on presently stable sites. In addition, subsurface conditions are complex, and may differ from those indicated by surface features and those encountered at the test hole locations. Therefore, it must be realized that the potential for slope instability is an irreducible risk and hazard of building upon slope areas in northern California. We are unable to guarantee the stability of any hillside construction. For houses constructed on hillsides, we recommend that mudflow and earthquake insurance be obtained.

We performed the investigation and prepared this report in accordance with generally accepted standards of the geotechnical engineering profession. No other warranty, either express or implied, is given.

If the project is revised, or if conditions different from those described in this report are encountered during construction, we should be notified immediately so that we can take timely action to modify our recommendations, if warranted. Site conditions and standards of practice change. Therefore, we should be notified to update this report if construction is not performed within 24 months of the submittal date.

We trust this provides the information you require at this time. If you have questions or wish to discuss this further, please call.

Very truly yours,

BAUER ASSOCIATES

Signature on File

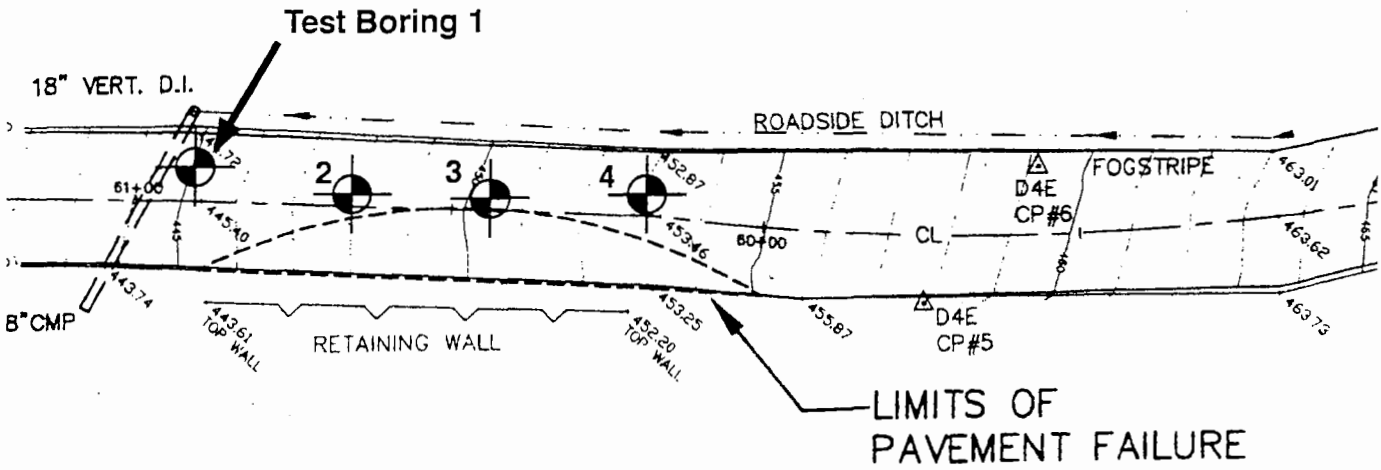
Christopher L. Kramer
Engineering Geologist 1231

Signature on File

Arthur H. Graff
Geotechnical Engineer

CLK/AHG (gi/old stage rd.)
Attachments: Plates 1 through 7
Copies submitted: 2

cc: Dimensions 4 Engineering (4)
Attention: Doug Donmon
2952 Mendocino Avenue
Santa Rosa, California 95403



0 10 20

Approximate Scale in Feet

N

Reference North

Reference: Sheet 1, Geotechnical Evaluation for Sewer Main Improvement Plans for Gualala Community Services District at Old Stage Road, Gualala, California; prepared by Dimensions 4 Engineering; dated August 2005.

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2278.0 Date: 11/05 By: CLK	**SITE PLAN** OLD STAGE ROAD Gualala, California	PLATE **1**

Equipment: 6" Flight Auger
Date: October 14, 2005
Elevation: 445' **

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth	
					AC PAVEMENT AND BASE ROCK
	31				GRAY BROWN SHALE WITH MINOR SANDSTONE crushed, low hardness, friable, deeply weathered
				3	
	35/6"				
				6	
				9	
	35/6"				No Free Water Encountered
				12	
				15	
				18	
				21	

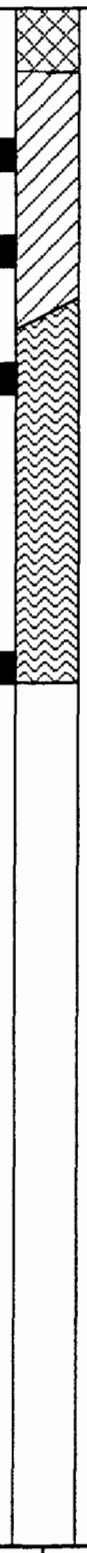
* Blows converted to Standard Penetration Reistance Values

** Elevations interpolated from plan provided

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2278.0 Date: 11/05 By: CLK	**LOG OF TEST BORING 1** OLD STAGE ROAD Gualala, California	PLATE **2**

Equipment: 6" Flight Auger
Date: October 14, 2005
Elevation: 448' **

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth
	27			3
	21			
	28			6
				9
	35/8"			
				12
				15
				18
				21



AC PAVEMENT AND BASE ROCK

BROWN GRAVELLY SANDY CLAY (CL)
stiff, moist (FILL)

GRAY BROWN SHALE
crushed, low hardness, friable,
deeply weathered

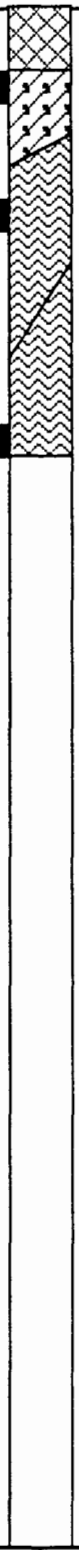
No Free Water Encountered

Weak Soils

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2278.0 Date: 11/05 By: CLK	**LOG OF TEST BORING 2** OLD STAGE ROAD Gualala, California	PLATE **3**

Equipment: 6" Flight Auger
Date: October 14, 2005
Elevation: 450' **

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth
	30			
	31/7"			3
	25/4"			6
				9
				12
				15
				18
				21



AC PAVEMENT AND BASE ROCK

BROWN CLAYEY SANDY GRAVEL (GC)
medium dense, moist

BROWN SILTSTONE
crushed, low hardness, friable, deeply weathered

GRAY BROWN SHALE
closely to intensely fractured, low to moderate hardness, weak, moderately to deeply weathered

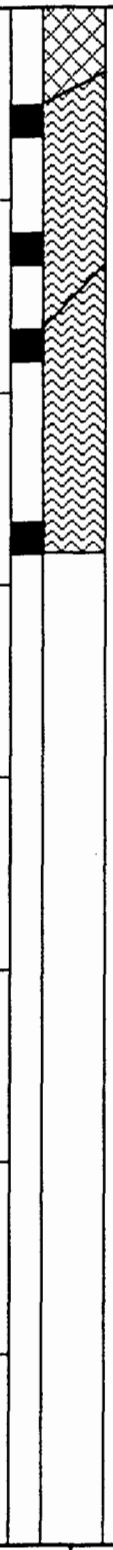
No Free Water Encountered

Weak Soils

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2278.0 Date: 11/05 By: CLK	LOG OF TEST BORING 3 OLD STAGE ROAD Gualala, California	PLATE 4

Equipment: 6" Flight Auger
Date: October 14, 2005
Elevation: 453' **

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth
	33			3
	30/10"			
	31/8"			6
	42/8"			9
				12
				15
				18
				21



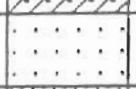
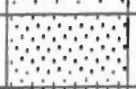
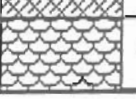
AC PAVEMENT AND BASE ROCK

BROWN SANDSTONE
low hardnesse, friable, deeply weathered, poorly to moderately well lithified

GRAY BROWN SHALE
intensely fractured to crushed, low hardness, friable, deeply weathered

No Free Water Encountered

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2278.0 Date: 11/05 By: CLK	**LOG OF TEST BORING 4** OLD STAGE ROAD Gualala, California	PLATE **5**

MAJOR DIVISIONS					TYPICAL NAMES
COARSE GRAINED SOILS MORE THAN HALF IS LARGER THAN #200 SIEVE	GRAVELS more than half coarse fraction is larger than no. 4 sieve size	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP		POORLY GRADED GRAVELS, GRAVEL-SAND MIXUTRES
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, POORLY GRADED GRAVEL-SAND MIXTURES
			GC		CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND MIXTURES
	SANDS more than half coarse fraction is smaller than no.4 sieve size	CLEAN SAND WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS, GRAVELLY SANDS
			SP		POORLY GRADED SANDS, GRAVEL-SAND MIXTURES
		SANDS WITH OVER 12% FINES	SM		SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC		CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN HALF IS SMALLER THAN #200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML		INORGANIC SILTS, SILTY OR CLAYEY FINE SANDS, VERY FINE SANDS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS OR LEAN CLAYS
			OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS

KEY TO TEST DATA

LL – Liquid Limit (in %)
PL – Plastic Limit (in %)
G – Specific Gravity
SA – Sieve Analysis
Consol – Consolidation
■ – "Undisturbed" Sample
☒ – Bulk or Disturbed Sample
☐ – No Sample Recovery

	Shear Strength, psf	Confining Pressure, psf	
*Tx	320	(2600)	Unconsolidated Undrained Triaxal
Tx CU	320	(2600)	Consolidated Undrained Triaxal
DS	2750	(2000)	Consolidated Drained Direct Shear
FVS	470		Field Vane Shear
*UC	2000		Unconfined Compression
LVS	700		Laboratory Vane Shear

Notes: (1) All strength tests on 2.8" or 2.4" diameter sample unless otherwise indicated.
(2) * Indicates 1.4" diameter sample.

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2278.0 Date: 11/05 By: CLK	SOIL CLASSIFICATION CHART & KEY TO TEST DATA OLD STAGE ROAD Gualala, California	PLATE 6

I. **CONSOLIDATION OF SEDIMENTARY ROCKS**; usually determined from unweathered samples.
Largely dependent on cementation.

U = Unconsolidated
P = Poorly consolidated
M = Moderately consolidated
W = Well consolidated

II. **BEDDING OF SEDIMENTARY ROCKS**

Splitting Property	Thickness	Stratification
Massive	Greater than 4.0 ft.	very thick bedded
Blocky	2.0 to 4.0 ft.	thick-bedded
Slabby	0.2 to 2.0 ft.	thin-bedded
Flaggy	0.05 to 0.2 ft.	very thin-bedded
Shaly or platy	0.01 to 0.05 ft.	laminated
Papery	less than 0.01 ft.	thinly laminated

III. **FRACTURING**

Intensity	Size of Pieces in Feet
1. Crushed	Less than 0.05
2. Intensely fractured	0.05 to 0.1
3. Closely fractured	0.1 to 0.5
4. Moderately fractured	0.5 to 1.0
5. Occasionally fractured	1.0 to 4.0
6. Very little fractured	Greater than 4.0

IV. **HARDNESS**

1. **Soft** - Reserved for plastic material alone
2. **Low Hardness** -Can be gouged deeply or carved easily with a knife blade
3. **Moderately hard** -Can be readily scratched by a knife blade; scratch leaves a heavy trace of dust and is readily visible after the powder has been blown away.
4. **Hard** -Can be scratched with difficulty ; scratch produces little powder and is often faintly visible.
5. **Very hard** -Cannot be scratched with knife blade; leaves a metallic streak.

V. **STRENGTH**

1. **Plastic** - Capable of being molded by hand
2. **Friable** - Crumbles easily by rubbing with fingers
3. **Weak** - An unfractured specimen of such material will crumble under light hammer blows.
4. **Moderately strong** - Specimen will withstand a few heavy hammer blows before breaking.
5. **Strong** - Specimen will withstand a few heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments.
6. **Very strong** - Specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments.

VI. **WEATHERING** - The physical and chemical disintegration and decomposition of rocks and minerals by natural processes such as oxidation, reduction, hydration, solution, carbonation, and freezing and thawing.

D. Deep - Moderate to complete mineral decomposition, extensive disintegration, deep and thorough discoloration; fractures all extensively coated or filled with oxides, carbonates and/or clay or silt.

M. Moderate - Slight change or partial decomposition of minerals, little disintegration, cementation little to unaffected. Moderate to occasionally intense discoloration. Moderately coated fractures.

L. Little - No megascopic decomposition of minerals; little or no effect on normal cementation. Slight and intermittent, or localized discoloration. Few stains on fracture surfaces.

F. Fresh - Unaffected by weathering agents. No disintegration or discoloration.

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2278.0 Date: 11/05 By: CLK	**ROCK CLASSIFICATION CRITERIA** OLD STAGE ROAD Gualala, California	PLATE **7**