Item 16

Consideration of Termination of
Memorandum of Understanding for
Onsite Wastewater Treatment Systems
for the City of Malibu

Resolution No. R4-2008-xxx

## Table of Contents


Agenda Item/Staff Report.....Tab 16.1

Revised Revised Tentative Resolution No. R4-2008-XXX.....Tab 16.2

Attachments.....Tab 16.3

| | |
|---|---|
| A. Memorandum of Understanding | Tab 16.3.A |
| B. Letter from the Regional Board to terminate the MOU | Tab 16.3.B |
| C. Figure 4-1 Study Area | Tab 16.3.C |
| D. Timeline of Activities | Tab 16.3.D |
| E. City of Malibu Integrated Water Management Concept Plan | Tab 16.3.E |
| F. Correspondence | Tab 16.3.F |
| G. Resolution 98-123 | Tab 16.3.G |

Comments/Letters and Response to Comments.....Tab 16.4

# AGENDA ITEM/STAFF REPORT

**California Regional Water Quality Control Board**
**Los Angeles Region**

**Metropolitan Water District, Council Chamber Room**
**November 13, 2008**
**520th Regular Board Meeting**

**ITEM:** 16

**SUBJECT:** Memorandum of Understanding Regarding Onsite Wastewater Treatment Systems for the City of Malibu. (See Attachment A)

**PURPOSE:** To allow the Los Angeles Regional Water Quality Control Board (Regional Board) to clarify a shared policy for wastewater disposal with the City of Malibu and future Dischargers. This action may include termination (see Attachment B), suspension, or renegotiation of the Memorandum of Understanding (MOU) for Onsite Wastewater Treatment Systems (OWTS) for the City of Malibu (City) without cause. Staff may be given direction to retain, modify or eliminate the delegation of permitting authority.

**SUMMARY OF RECOMMENDATION:**

Staff recommends that the Regional Board direct staff to do two things:

1. Renegotiate the MOU with the City of Malibu to address process concerns and to exclude commercial buildings from the new MOU; and
2. Begin a determination of a septic system prohibition for the Malibu Civic Center area [1] pursuant to Water Code section 13280 et seq.

**BACKGROUND:** California Water Code (CWC) section 13269 allows Regional Boards to waive the requirements for a Report Of Waste Discharge (ROWD) or the requirement to adopt Waste Discharge Requirements (WDRs) for specific types of discharges under their jurisdiction. This Regional Board issued waivers for residential OWTS in the early 1950's as Resolutions Nos. 52-4 and 53-6. Through these waivers, the Regional Board delegated its septic system permitting authority to Los Angeles and Ventura counties, among other local agencies with land use and planning powers. Recent legislation amended section 13269 of the CWC requiring that the Regional Board review its septic system waivers and either renew or terminate them by June 30, 2004. The Regional Board chose to rescind existing waivers, issue general or

[1] The 'Malibu Civic Center Area' was previously identified in the City of Malibu's April 28, 2005 Final Questa Engineering Report in Figure 4-1 as the study area and generally known as the Malibu Valley Groundwater Basin and including Malibu Colony, Winter Canyon and Serra Retreat. (see Attachment C)

individual WDRs for ongoing discharges, and grant new waivers for residential and some de minimus commercial septic systems within jurisdictions where an MOU had been created. The revised section also requires that the Regional Board enforce the new waivers and renew and/or terminate them every five years.

According to CWC section 13269 and the Basin Plan, the Regional Board must find that the discharges from the residential OWTSs pose a minimal threat to water quality in order for it to grant or renew the waivers such as those allowed under the MOUs. At the June 10, 2004 regular Board meeting, the Regional Board approved Resolution No. R4-008, adopting waivers and a template MOU for residential and certain de minimis commercial septic systems. The waivers were in effect for a period of 60 days in the unincorporated portions of the Los Angeles County and the City of Malibu and 120 days in the remaining areas of the region. Local agencies were required to enter into an MOU with the Regional Board based on the template MOU in order for the waivers to be extended beyond those deadlines. A memorandum dated December 22, 2004 from former Executive Officer Jonathan Bishop specifically stated that although Resolution R4-008 allowed the cities to negotiate MOUs until October 8, 2004, the waivers that expired could be negotiated after this deadline.

The Regional Board completed an MOU with the City of Malibu on September 17, 2004, delegating the Board's authority to the City to manage residential septic systems and certain de minimis commercial septic systems to improve the water quality in the Civic Center area, requiring that their discharge be "consistent with any applicable state or regional water quality control plans and is in the public interest."

**STATUS**

**Unique Resource Value and Challenge:** The Malibu Civic Center area is one of the most beautiful locations in our Region and an irreplaceable public and private resource. It is located adjacent to Malibu Creek, 1,000 feet inland of the Pacific Ocean and one half mile east of the coastal area designated by the State Water Resource Control Board (SWRCB) Area of Special Biological Interest number 24[2]. Furthermore, the site is located near the popular Surfrider Beach.

Malibu is the only city in our Region which is entirely reliant on individual subsurface disposal systems for wastewater disposal, having no centralized sewer system. Since 1993, the Regional Board has worked with the City to identify good policy and technical requirements to manage Malibu's estimated 6000 residential and 580 commercial systems. The adjacent high

[2] Mugu Lagoon to Latigo Point

quality beaches, such as those near the Civic Center area and Paradise Cove/Ramirez Creek, are periodically posted as impaired for water quality or closed to public use due to effluent discharge from these septic systems. These conditions remain despite Regional Board efforts including (a) the adoption with USEPA of Total Maximum Daily Loads for bacteria and nutrients, (b) the Regional Board's leadership in developing residential waivers within the jurisdiction of the MOU's and General Waste Discharge Requirements for commercial facilities at a time when other Regional Boards continue to allow un-permitted septic disposal where water quality impacts are present, and (c) Regional Board staff effort to achieve discharge compliance through permitting about 100 of the largest existing commercial septic systems in Malibu.

A time line of actions, taken by the Regional Board, Cities, Counties, environmental groups and stakeholders, to improve water quality can be found in Attachment D. Between 1991 and 1998, the City sought to assess the operation of septic systems within the City and identify the causes of high nitrogen and bacteria in adjacent waterbodies. Between 1998 and 2004, the State rescinded a waiver for septic systems, the City committed to and designed a wastewater treatment plant, and Total Maximum Daily Loads (TMDLs) were written for bacteria and nutrients giving compliance deadlines for meeting Regional Board standards. Between 2004 and 2008, City residents and businesses and numerous taskforces contributed money, grants and expertise to design and build water quality control mechanisms in Malibu.

**Impairments:** The SWRCB and the Regional Board designated Malibu Creek, Malibu Lagoon and Malibu Lagoon (Surfrider's) Beach as impaired for coliform, nutrients (algae), scum/foam-unnatural; viruses, eutrophication, coliform and swimming restrictions; and beach closures and coliform, respectively, on the 2002 303(d) list[3]. The 2006 303(d) list included the same impairments, except that Malibu Creek, Malibu Lagoon and Surfrider's Beach were placed on the List of Water Quality Limited Segments Being Addressed by USEPA Approved TMDLs. Heal the Bay's 'Beach Quality Report Card' documents changes in bacteria ocean pollution, except for specific locations such as the Civic Center area and Paradise Cove/Ramirez Creek where pathogens continue to impact public use.

**TMDL Compliance:** On January 24, 2002 and on December 12, 2002, the Regional Board adopted a TMDL for bacteria during dry and wet weather, respectively, into Santa Monica Bay. On

[3] Federal Clean Water Act section 303(d) list of national water bodies with impaired water quality.

December 13, 2004, the Regional Board also adopted a TMDL for bacteria in Malibu Creek and Lagoon. On March 21, 2003, the United States Environmental Protection Agency (USEPA) promulgated a nutrient TMDL for Malibu Creek Watershed. A notice of Violation was issued in 2007 to the City of Malibu and Los Angeles County for failure to meet the Santa Monica Bay bacteria dry weather limits. Compliance with reduced bacteria loads in dry and wet weather is required by January 2012 for the City of Malibu.

**Malibu MOU Compliance:** Substantial progress has been made on protecting these resources since the City incorporated in 1991.

*Residential Permitting:* About 1,000 of the 6,000 small residential septic systems in the City of Malibu have been permitted under the MOU. The address list is available on the City's website.

*Interim Measures:* Under the MOU's Designation and Agreement section, the City of Malibu agreed to take interim measures listed below. Key among these was the City's commitment to implement the MOU permitting in support of a long term water resource management plan.

1. Point of Sale Ordinance: Required in 2005 and completed in 2008, it requires new systems to use advanced onsite wastewater treatment systems (AOWTS).

2. IWMS (Integrated Wastewater Information Management System): The system would have allowed tracking of all inventoried septic systems, but the inventory is not completed.

3. Malibu Lagoon and Beach contributory Areas: The City agreed to upgrade or remove septic systems which their "Risk Assessment"[4] predicted could cause surface water bacteria impairments. This was not completed and some businesses are awaiting City approval of the upgraded plans.

4. Malibu Lagoon Nitrogen Contributory Areas: The City agreed to upgrade or remove septic systems which their "Risk Assessment" predicted could cause surface water nitrogen impairments. This was not completed and some businesses are awaiting City approval of the upgraded plans.

[4] Final Report Risk Assessment of Decentralized Wastewater Treatment Systems in Priority Areas in the City of Malibu for the Santa Monica Bay Restoration Commission by Stone Environmental August 30, 2004.

5. Water Resource Management: The City agreed to complete a long-term plan to manage wastewater and ensure that MOU permitting complied with these goals. Regional Board staff is seeking clarification on the water resource management goals being implemented by the City of Malibu and shared with the Regional Board.

6. Onsite Wastewater Treatment System Information Manuals: This task was completed.

**PROBLEM**

**(1) Civic Center disposal capacity is largely or completely committed**

In the fall of 2008, the City committed the remaining disposal capacity in the Civic Center to new developments, exacerbating any existing water imbalance without ensuring that existing septic discharges will be treated to meet TMDL bacteria limits and despite ongoing City authorization of new residential septic systems. The potential for a water imbalance in the Civic Center was discussed in the Questa Report of July 2003 (page 17).

The range of documented Civic Center assimilative capacities is 35,000 gallons per day (gpd) (Questa April 28, 2005, for Legacy Park) to 165,000 gpd (Questa 2005 for Civic Center), depending on professional interpretations of the seasonal effects, the elevation of the water table elevation, and the water quality parameters protected and the area included.

Wet weather assimilative capacity (how much groundwater can the soil hold without leaking to the surface) has already been quantified by the City of Malibu for the Civic Center as 58-62,000 gpd (Questa 2005 for Total Civic Center during wet weather with mounding). The City of Malibu's existing septic discharge in the Civic Center was estimated at 25,172 gpd (Questa 2005 and including Malibu Colony). Recent City approvals of new subsurface discharges from about 180,000 square feet (Malibu Lumber and Malibu La Paz), are proposed to add up to a maximum of 27,000 gpd discharge for a total of 52,172 gpd, to largely utilize the existing wet weather assimilative capacity. The approvals may preclude additional disposal.

The City's documentation of assimilative capacity estimates assumes discharges will be allowed up to 10 mg/L of total nitrogen and the bottom of the leach fields can be separated from the water table by two feet. Because these assumptions are less stringent than existing water quality requirements and future applicable TMDL limits, these assimilative capacity estimates must be viewed as overly optimistic.

In January 2008, Regional Board staff proposed that the City complete a Civic Center groundwater study which would quantify cumulative and critical effects. In January 2008 the City funded and is executing a groundwater modeling study which, as designed, cannot assess limitations arising from critical effects.

New development could take place if no new shallow subsurface discharge was allowed or if discharge was designed as part of a centralized system. While the City continues to include a centralized wastewater collection, treatment and disposal system in its plans, even including a conceptual discussion in the Legacy Park Draft Environmental Impact Report of May 2008, no legal commitment has been made to build a centralized system. Without this commitment from the City, pre-existing businesses with leachfields in the Civic Center area, where no upgrades have been approved by the City since 2004, may be penalized if the water table rises, their systems fail, and no alternative centralized system is available.

**(2) The City is permitting its own facilities in the Civic Center.**

The City will use the MOU to permit its first new Civic Center commercial discharge (since 1991). Regional Board staff does not believe that the City's permit will meet State and Regional Board water quality standards.

**(3) The City did not apply for a General Waste Discharge Requirement (WDR) for the first new and largest commercial Civic Center development since 1991.**

On August 8, 2008, the City suggested permitting Malibu Lumber under its MOU authority. Regional Board staff responded on August 11, 2008, offering to immediately initiate the General WDR process for the smaller flow, and stating that the MOU was not the appropriate permit process. On August 27, 2008, the City submitted additional technical information. Regional Board staff asked for clarification on September 3, 2008. On September 12, 2008, the City stated their intention to use the MOU to permit this project. On September 17, 2008, Regional Board staff stated the MOU should not be used in this manner and requested additional information to process the General WDR. Regional Board staff also stated its intention to enforce any violations if the project was permitted pursuant to the MOU. On September 12, 2008, the City stated its intent to open the facility (see Attachment F). On September 19, 2008, the Regional Board Executive Officer sent a 30-day notice stating that the Regional Board intended to terminate the MOU on November 13, 2008 (see Attachment B).

**(4) The City and Regional Board are due to review the MOU**

In 2004, the City of Malibu and the Regional Board stated in the MOU that either party could assess progress under the agreement and re-open negotiations in July 2009. The MOU language provides a structure for reporting and commenting over an estimated 6 months.

Clarification on a shared policy for wastewater disposal with the City of Malibu and future Dischargers is necessary. The Regional Board's action may include termination or renegotiation of the MOU or other actions as the Regional Board shall deem appropriate.

Additional individual septic systems, allowed under an MOU in the absence of a long term wastewater management policy, may not be the best policy. In 1990, the County of Los Angeles determined that a centralized sewer system was the optimal solution for wastewater disposal in Malibu. In 1993, litigation between the County and the City was settled with the stipulation that the Regional Board would protect water quality and beneficial uses while Malibu adopted, implemented, and enforced necessary ordinances and regulations to meet Regional Board requirements. In 1998, the Regional Board issued Resolution 98-123 directing the Executive Officer to issue an Administrative Civil Liabilities (ACL) complaint to the City for failure to prevent septic systems from contributing to impairments (see Attachment G) and to allow for the provision of an alternative wastewater disposal system.

(5) **There is a Need for a Long-Term Solution.**

The existing Onsite Wastewater Treatment commercial systems in the Civic Center area have subsurface discharges which fail to treat the entire volume of wastes generated and which do not maintain the minimum 5 feet of separation.

The City has already completed sufficient studies to select a long term solution. The Malibu's Civic Center Integrated Water Management Concept Plan, dated July 11, 2003, cited a detailed analysis of wastewater collection, reclamation and reuse alternatives (Fuog, 1997). The 2003 Questa study said, in part that;

> "the Chili Cook-off property [Legacy Park] is a suitable area to provide capacity for the treatment, reuse and dispersal of wastewater effluent produced in the study area when combined with recycling of treated wastewater to the greatest extent feasible, groundwater

> recharge/percolation systems in the study area and irrigation of landscape/open space area....(pg 2)."

The Malibu City Council voted unanimously in 2004 to proceed with the design and construction of a wastewater treatment plant at the Chili Cook-off area (Legacy Park).

In 2007, City consultants found that the percolation capacity at Legacy Park was less than anticipated. In 2008, the City proposed that additional effluent from a commercial development, Malibu Lumber, be discharged through irrigation and subsurface disposal in Legacy Park. These factors diminish the remaining assimilative capacity at Legacy Park.

The Wastewater Treatment Plant (WWTP) design capacity is not given in the City's uncertified September 2008 Final Environmental Impact Report (EIR) for Legacy Park. It lists storm water and park benefits and offers a future EIR for the WWTP. In addition, it lists 10 residential projects and 5 commercial and municipal projects in the Civic Center area which are proposed, in the planning stage, under construction, or recently completed. These projects will create additional discharges.

In the Legacy Draft Environmental Impact Report, the City further states that the impacts from all of these projects impacts are to be mitigated through Malibu's Legacy Park Project because "the proposed project would have an overall beneficial impact on cumulative water quality by increasing the City of Malibu's storm water treatment capacity (Legacy Park DEIR pg 4-10)." It does not quantify the water quality effects which may result if groundwater levels rise and flood existing leach fields or if the volume of wastewater generated continues to increase without the construction of a WWTP or other long term remedy.

(6) **Malibu's Existing Advanced Onsite Wastewater Treatment Systems (AOWTS) Have Compliance Problems.**

Since 2000, Regional Board staff has been permitting existing AOWTS in Malibu. Out of 78 Malibu permitting actions (Active Non15-WDRs) taken by staff to implement commercial AOWTS for the City since that date, 54 or 70% have had compliance problems. Some locations, like Paradise Cove/Ramirez Canyon and the Civic Center, are so desirable that building and development applications continue despite evidence that septic discharge and subsurface conditions continue to cause impairments.

In addition, existing Civic Center area businesses, the Malibu Country Mart (MCM) I, II, and III have demonstrated that the Civic Center has reached its disposal capacity and MCM has to pump 10-12% of its effluent offsite in order to maintain the septic system. The Regional Board has issued Notices of Violation to all three MCMs.

A minimum of five feet of separation between the base of the leach field and the water table is a standard contained in General Waste Discharge Requirements used for permitting subsurface flows at the Regional Board since 1991. Its use as a minimum value in the Civic Center area is especially important because the most recently upgraded plant in the Civic Center area, at Cross Creek Plaza, may already be violating future TMDL water quality standards. The leach field has as little as 2 feet of separation between the base of the leach field and the groundwater. While the Cross Creek discharge of 3.6 mg./L of total nitrogen is low, the site is adjacent to Malibu Creek which has a summer TMDL numeric target of 1 mg/L. If five feet of separation had been designed and maintained during the construction of the leach field, the additional dry subsurface material could be expected to oxidize 2-4 mg/L of total nitrogen and allow compliance with the more stringent standard.

**OPTIONS:**

**The Regional Board staff has identified four options:**

**(1) Take no action**

The City will continue to permit residential and small commercial facilities without meeting the following Regional Board requirements for (a) public notice, (b) evaluation of impacts to adjacent properties, (c) maintaining the minimum 5 feet of separation and (d) meeting future TMDL water quality requirements. Further, they have not completed the required interim requirements including progress on coordinated long-term water resource management. Existing procedures for Waste Discharge Requirements which are not currently met by the City of Malibu are as follows:

- The City does not require a 30 day public notice and notification of neighbors within 500 feet is required before modifying or permitting any residential facility.

- Before permitting in an impaired area, the City does not require a hydrology study to demonstrate that the proposed discharge will not elevate the groundwater

beneath adjacent properties to less than 5 feet below the bottom of the leach field under any conditions.

- The City does not require a minimum of five feet of separation at all times between the base of leach fields and the groundwater. Future permits should include water quality numeric targets and load allocations for developments included in the TMDLs for local waterbodies. Also, monitoring wells are required to document water quality and separation.

**(2) Terminate the MOU**

Dischargers will be subject to enforcement action if their effluent does not meet water quality objectives, or if the dischargers did not receive a Regional Board permit. However, the Regional Board will be able to ensure consistency with the water quality standards in the Basin Plan. If the MOU is terminated, City residents may experience difficulty in modifying their method of wastewater disposal or adding capacity.

**(3) Septic System Prohibition**

On December 14, 1999, Regional Board Resolution No. 98-023 directed the Executive Officer to (a) ensure AOWTS meet highest practical standards, (b) discharges do not contribute to impairments, (c) issue a complaint for civil liability against the City of Malibu, (d) require ROWDs from multi-family and commercial septics in the Malibu Creek watershed, (e) require such applicants to conduct all necessary studies required to evaluate cumulative effects on receiving waters and to require upgrades to meet Basin Plan objectives, and (f) to prepare a prohibition of all future discharges from septic systems and the termination of discharges from existing systems and following an adequate period of time to allow for the provision of an alternative wastewater disposal system. The ACL was sent to the City, but rescinded. The septic prohibition was never completed.

A recent Regional Board septic prohibition in El Rio has led to extensive compliance with standards in the Oxnard Forebay. Regional Board staff believes that a similar prohibition should be developed in this case.

The Regional Board may direct staff to develop a septic system prohibition consistent with Water Code section 13280 et seq.

**(4) Direct Staff to negotiate specific modifications to the MOU with the City.**

The Regional Board may direct staff to address process concerns and exclude commercial buildings from the new MOU. Additional topics for renegotiation are: (a) public notice, (b) evaluation of impacts to adjacent properties, (c) maintaining the minimum 5 feet of separation and (d) meeting future TMDL water quality requirements.

**RECOMMENDATION:** Staff recommends that:

1. The Regional Board direct staff to renegotiate the MOU with the City to address the issues listed in Option 4 above; and

2. The Regional Board direct staff to prepare a determination for a septic system prohibition pursuant to Water Code section 13280 et seq. as set forth in Option 3 above.

State of California
California Regional Water Quality Control Board, Los Angeles Region

RESOLUTION NO. R4-2008-XXX

Consideration of Termination of the Memorandum of Understanding for Onsite Wastewater Treatment Systems for the City of Malibu

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## Background

1. The Regional Board completed a Memorandum of Understanding (MOU) with the City of Malibu (City) on September 17, 2004, delegating the Board's authority to the City as a Qualified Local Agency (QLA) to manage residential and small commercial septic systems to improve water quality in the Civic Center area, requiring that their discharge be "consistent with any applicable state or regional water quality control plans and in the public interest."

2. On September 19, 2008, the Regional Board issued a 30-day notice letter informing the City of Malibu of the Regional Board's intent to terminate the MOU with the City of Malibu at its November 13, 2008 Board meeting.

## History

3. After 2001, existing businesses in the Civic Center area, near Legacy Park and Malibu Lumber Plaza, were enrolled by the Regional Board in General Waste Discharge Requirements (GWDR) Order No. 01-031 with the expectation that a centralized wastewater treatment plant or long-term remedy would be constructed and/or the businesses' substandard septic systems would be upgraded to meet future TMDL water quality requirements.

4. A letter to interested parties from the Malibu City Manager dated July 11, 2003, states in part that "the Malibu City Council voted unanimously to embark on a course that will resolve sewage treatment issues in the Civic Center by installing a City operated clean water facility...The concept involves the installation of a wastewater treatment facility along with storm water retention facilities near the Civic Center on the area currently known as the Chili Cook-off site. . . ." The Malibu's Civic Center Integrated Water Management Concept Plan of that date further defines the City's plans. The document cites a detailed analysis of wastewater collection, reclamation and reuse alternatives (Fuog, 1997). It further quotes the findings of the 2003 draft Questa study stating in part: "the Chili Cook-off property [Legacy Park] is a suitable area to provide capacity for the treatment, reuse and dispersal of wastewater effluent produced in the study area when combined with recycling of treated wastewater to the greatest extent feasible, groundwater recharge/percolation systems in the study area and irrigation of landscape/open space area...." (Page 2.) The MOU was signed by the City in September 2004. In 2005, Questa completed a final study quantifying options for sewage disposal in the Civic Center area.

5. In 2007, City consultants found that the percolation capacity at Legacy Park was less than anticipated. In 2008, the City proposed that additional effluent from the commercial development, Malibu Lumber, be discharged through irrigation and subsurface disposal in Legacy Park. These factors diminish the subsurface assimilative capacity in the Civic Center area. The subsurface capacity estimated in the City's final 2005 Questa report, when mounding is considered, is 58,000 to 67,000 gallons per day (gpd) and even without the reduced capacity at Legacy Park these flows are less than Questa's predicted wastewater treatment flows of 120,000 to 200,000 gpd.

6. Recycling and Wastewater Treatment Plan (WWTP) capacities were again investigated by the Legacy Park contractor, but not quantified in the Legacy Park, September 2008, Final Environmental Impact Report (FEIR), uncertified at the September 23, 2008 Malibu Planning Commission meeting. Instead, the FEIR offers a programmatic review of an unspecified future wastewater treatment system. The Legacy Park FEIR states that "a final decision has not been made regarding the type of technology or size of the wastewater system....the wastewater treatment system is addressed at a programmatic level." (page S-16.) This statement contrasts with the City's integrated water management plan, completed at the time of adoption of two Santa Monica Bay Bacteria Total Maximum Daily Loads.

7. The Legacy Park FEIR lists 10 residential projects and 4 commercial and municipal projects in the Civic Center area which are proposed, in the planning stage, under construction, or recently completed. These projects create additional subsurface discharges that are or will be permitted by the City, or have pending Reports of Waste Discharge (ROWD) with the Regional Board. The City further states that the cumulative effects of these projects are to be mitigated through Malibu's Legacy Park Project because "the proposed project would have an overall beneficial impact on cumulative water quality by increasing the City of Malibu's storm water treatment capacity." (Page 4-10.) It does not quantify the water quality effects which may result if groundwater levels rise and flood existing leach fields or if the volume of wastewater generated continues to increase without the construction of a WWTP or other long term remedy.

8. On May 7, 2007, the Regional Board received a ROWD or application for Waste Discharge Requirements (WDRs) for Malibu Lumber. On July 27, August 17, and September 27 of 2007, Regional Board staff provided written comments on the Final Environmental Impact Report for Malibu Lumber, noting that it did not assess the cumulative or critical effects from the project and other projects in the Civic Center area.

9. In January 2008, the Malibu City Council approved funding for a groundwater study. The Request for Proposal (RFP) was released in April 2008. Despite a meeting between Regional Board staff and the City and a March 3, 2008 letter from the Regional Board on deficiencies in the RFP concerning the absence of transient tests to assess short term critical effects, the RFP was limited to an expansion of a previous steady state model based on existing Malibu well coverage and future collection of data from those wells. The ongoing groundwater modeling study, as designed, cannot assess limitations arising from critical effects.

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10. A conditional approval of the ROWD was sent on May 16, 2008, signaling the Regional Board's readiness to prepare the first new commercial WDR in the Civic Center area since the City of Malibu was incorporated. The letter specified the commitments and additional technical documentation to be provided by the City and Malibu Lumber, specifically (a) engineering design for an upgraded treatment system to provide disinfection at the highest level of Title 22 standards, (b) locations for monitoring wells to continuously measure elevation of the water-table to ensure a minimum of five feet of separation is maintained from the base of the leach field to groundwater and specifying modifications to facility operations sufficient to postpone discharge if five feet of separation was not maintained, (c) design ensuring the leach field is constructed to maintain a water quality of 1 milligrams per liter (mg/L) for total nitrogen in the summer in the underlying groundwater, (d) use of the highest recorded groundwater levels and conservative percolation values in the final design of the leach field, and (e) documentation showing that the operation of Malibu Lumber would not preclude the operation of Legacy Park, adjacent properties and/or a WWTP. The documents provided by August 27, 2008, did not include these materials.

11. On September 12, 2008, the City affirmed its intent to issue a permit for Malibu Lumber under the MOU.

12. On September 19, 2008, the Regional Board issued a 30-day notice letter informing the City of their intent to terminate the MOU for the City of Malibu.

13. Despite the City's implementation of the MOU and Regional Board permitting activities since 2001, water quality impairments of local water bodies continue to be measured. A Notice of Violation was issued in 2007 to the City of Malibu and Los Angeles County for failure to meet the Santa Monica Bay bacteria TMDL dry weather limits.

14. Regional Board staff is concerned because existing Civic Center businesses, the Malibu Country Marts (MCMs) I, II, and III projects, appear to demonstrate that the area has reached its disposal capacity under some conditions. The MCMs have to pump and dispose of approximately 12% of their wastewater offsite in order to maintain their septic system. The Regional Board has issued Notices of Violation to all three MCMs for failure to comply with Time Schedule Orders. The City has not approved the construction of the advanced treatment systems required by the WDRs.

15. Regional Board staff believes that the assimilative capacity of the Civic Center area will be exceeded when the proposed projects begin operation, under certain conditions. Some existing Onsite Wastewater Treatment (OWTS) commercial systems in the Civic Center fail to adequately treat the entire volume of waste generated and do not maintain the minimum 5 feet of separation between the water table and the base of the leach field. Existing mounding studies completed as part of WDR applications demonstrate that additional technical analysis will better characterize, but not eliminate, evidence that discharge may not be assimilated into the groundwater during periods of 30 days to 6 months during wet weather conditions creating unacceptable separation between the water table and the surface. Groundwater discharge during these periods violates State

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Board Resolution 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters of California. " Continued residential permitting, and pending requests for waste discharge applications to the Regional Board are predicted to largely or completely utilize the remaining disposal capacity in the Civic Center area for uses other than a wastewater treatment systems.

**Memorandum of Understanding**

16. The 2004 GWDR Order No. 04-008, grants waivers for residential, and some small commercial facilities in jurisdictions where an MOU exists with the Regional Board.

17. The City of Malibu MOU states that sections 13290 and 13291 of the California Water Code (CWC) "authorize the Regional Board to delegate implementation of these standards [state and regional water quality control plans] to a Qualified Local Agency (QLA)." Between 2007 and 2008, Regional Board staff clearly and repeatedly described the standards which the City should use in the oversight of Civic Center area projects.

18. Section IX of the MOU is titled "Enforcement" and states that "Either party may terminate this MOU without cause upon thirty days written notice to the other part. . . . The Regional Board shall make any determination to terminate the MOU at a publicly noticed hearing."

19. The City has failed to comply with State and Regional Board regulations and policies in the regulation of Civic Center area projects. At a minimum, the City did not impose and enforce Regional Board requirements for (a) public notice, (b) evaluation of impacts to adjacent properties, and (c) ensuring and maintaining a minimum of 5 feet of separation between the water table and the base of leach fields, despite Regional Board staff collaboration. Specifically, for sufficient public notice, the City should provide a minimum of 30 day public notice and notify neighbors within 500 feet of the discharge before modifying or permitting any residential facility. To evaluate impacts to adjacent properties and before permitting a commercial or residential facility, the City should require a hydrological evaluation demonstrating that the additional discharge will not elevate the groundwater beneath the leach fields of the adjacent properties to less than 5 feet under any conditions. Finally, a minimum of five feet of separation should be maintained at all times between the base of any leach or disposal field and the groundwater. Monitoring wells should be used or installed to document the performance of all septic systems.

**WHEREAS, the California Regional Water Quality Control Board, Los Angeles, finds that:**

1. Pursuant to the language of the MOU, the MOU may be terminated with the City of Malibu without cause.

2. The Regional Board has ultimate jurisdiction over all of the on-site wastewater treatment systems in the City of Malibu.

3. There are historic, existing and continuing violations of State law and Regional Board water quality standards in the City of Malibu that must be addressed.

**THEREFORE, be it resolved that:**

1. The Regional Board directs staff to renegotiate the MOU with the City of Malibu to address process concerns and exclude commercial buildings from the new MOU. At a minimum, additional topics for renegotiation shall be: (a) public notice, (b) evaluation of impacts to adjacent properties, (c) maintaining and monitoring a minimum of 5 feet of separation and (d) meeting future TMDL water quality requirements. The renegotiated MOU shall be brought back to the Regional Board within twelve months of this date.

2. The Regional Board directs staff to develop a septic system prohibition consistent with Water Code section 13280 et seq. and to bring a proposal to the Regional Board within twelve months of this date for consideration and possible adoption.

I, Tracy J. Egoscue, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on November 13, 2008.

_____
Tracy J. Egoscue
Executive Office

REVISED REVISED TENTATIVE

Item 16

Memorandum of Understanding Regarding
Onsite Wastewater Treatment Systems
For the City of Malibu

**List of Attachments**

A. Memorandum of Understanding between the California Regional Water Quality Control Board Los Angeles Region and City of Malibu Regarding Onsite Wastewater Treatment Systems, Sept. 19, 2004.

B. Letter from the Regional Board information the City of Malibu of the Regional Board's intent to terminate the MOU at its November 13, 2008 Board meeting dated September 19, 2008.

C. Figure 4-1 Study Area in April 28, 2005, Final Report, Questa Engineering Corporation, Civic Center Water Quality Management Feasibility Study, City of Malibu.

D. Timeline of Activities Regarding City of Malibu Wastewater Treatment.

E. City of Malibu Integrated Water Management Concept Plan July 2003 including Questa Engineering Corporation Civic Center Draft Study and Malibu Civic Center May 1996 Specific Plan Background Information and Existing Conditions.

F. Letters and email train concerning the use of the MOU for the Malibu Lumber facility.

G. Resolution 98-123: Malibu Creek Watershed.

Effective Date: _____

# MEMORANDUM OF UNDERSTANDING BETWEEN CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD LOS ANGELES REGION AND CITY OF MALIBU

## REGARDING ONSITE WASTEWATER TREATMENT SYSTEMS

## I. BACKGROUND

Section 13260 of the California Water Code (CWC) requires any person discharging waste or proposing to discharge waste that may affect waters of the State, except to a community sewer system, to file a report of waste discharge with the local California regional water quality control board which has jurisdiction over the discharge. In accordance with section 13260 of the CWC, the California Regional Water Quality Control Board, Los Angeles Region, hereafter referred to as the Regional Board, issues waste discharge requirements (WDRs) to dischargers covering specific waste discharges or types of waste discharge, including discharges from onsite wastewater treatment systems.

Section 13269 of the CWC authorizes a regional board to waive the requirement for a report of waste discharge or waive the need for the regional board to issue WDRs where such waiver is consistent with any applicable state or regional water quality control plans and is in the public interest.

Sections 13290 and 13291 of the CWC require the State Water Resources Control Board to establish statewide standards for the regulation of onsite wastewater treatment systems and authorize the Regional Board to delegate implementation of these standards to a Qualified Local Agency (QLA).

In 1952, the Regional Board adopted Order 52-4, which waived the requirement of homeowners to obtain WDRs for residential septic systems in the Region. According to section 13269 of the CWC, the Regional Board must review and renew these waivers by June 30, 2004. The waivers may not exceed five years in duration and may be terminated by the State Board or Regional Board at any time.

Onsite wastewater treatment systems have been used as a form of wastewater disposal for many decades. Currently, the number of individual residential systems in the Region (Ventura and Los Angeles Counties) exceeds 100,000. In many instances, the discharge from these systems does not adversely affect the beneficial uses of groundwater or surface water quality.

In some areas, the distance between the leach field or seepage pit and the groundwater may not be sufficient to provide adequate treatment of wastes discharged to onsite wastewater treatment systems. In some cases, the proximity of these systems to surface water bodies may result in surface water contamination from inadequately treated wastes. In other instances, the areal density and cumulative effects of numerous systems may result in inadequate waste treatment. Additional factors may also impede the effectiveness of these systems and create conditions that adversely affect water quality.

## II. DESIGNATION AND AGREEMENT

The Regional Board designates the City of Malibu as the QLA for the implementation of applicable siting, permitting, construction, inspection, monitoring, and performance requirements for certain onsite wastewater treatment systems within the City of Malibu's jurisdiction as detailed in section I.V. of this MOU. This MOU establishes *City of Malibu Ordinance No. 242* hereafter referred to as the Code, as the legal document governing applicable siting, permitting, construction, inspection, monitoring, and performance requirements for certain onsite wastewater treatment systems within the City of Malibu's jurisdiction as detailed in section IV. of this MOU. The City of Malibu as QLA, agrees to enforce all applicable provisions of the Code pursuant to the provisions of this MOU. The City of Malibu agrees to amend the Code within the timeframe established in this MOU to revise provisions for the siting, permitting, construction, inspection, monitoring, and performance requirements for onsite wastewater treatment systems to be substantially equivalent to any statewide standards adopted pursuant to CWC sections 13290 and 13291. Additionally, until statewide standards are adopted pursuant to CWC sections 13290 and 13291, the City of Malibu agrees to take interim measures as noted below to increase the effectiveness of its permitting program to address water quality concerns.

## III. PURPOSE

It is the joint goal of the City of Malibu and the Regional Board to protect water quality and public health. This MOU is intended to assist in the creation of a partnership between the City of Malibu and the Regional Board to provide protection of water quality and public health in areas where onsite wastewater treatment systems are utilized. This MOU satisfies the requirements of section 13269 of the CWC and enables the Regional Board to issue waivers of WDRs for those onsite sewage treatment systems regulated by the City of Malibu as detailed in this document.

## IV. APPLICABILITY

1. This MOU is applicable for all onsite wastewater treatment systems within the City of Malibu's jurisdiction.

2. The City of Malibu shall have lead responsibility for onsite wastewater treatment systems that:
   a. generate 20,000 gallons per day or less, and
   b. generate domestic or similar waste that is disposed of below the ground surface, and
   c. discharge waste from single family residential structures not covered under item #3.b. below, or
   d. discharge waste from non-food related commercial facilities that generate 2000 gallons per day or less.

   Except that the Regional Board shall become lead agency on a specific project upon agreement by the City of Malibu and the Regional Board.

3. The Regional Board shall have lead responsibility for onsite wastewater treatment systems that:
   a. generate over 20,000 gallons per day, or

b. discharge wastes from residential developments of more than two homes, or
c. discharge wastes from multifamily residential facilities, or
d. discharge wastes from commercial facilities that generate over 2,000 gallons per day, or
e. dispose of sewage containing any industrial waste, or
f. are proposed to utilize above ground dispersal or storage of sewage effluent.

## V. GENERAL PROVISIONS

**City of Malibu Responsibility:**

1. The City of Malibu shall enforce all applicable Code requirements for the siting, design, approval, installation, operation, maintenance, and monitoring of onsite wastewater treatment systems within the City of Malibu's jurisdiction.

2. The City of Malibu shall amend the Code within six months of the effective date of any statewide standards adopted pursuant to sections 13290 and 13291 of the CWC, if necessary, in order to retain lead agency status over onsite wastewater treatment systems identified in section IV.2.

3. The City of Malibu shall immediately begin an inventory of all onsite residential wastewater treatment systems within the City of Malibu's jurisdiction[1]. The inventory shall be completed in one (1) year, unless extended by the Executive Officer.

   The inventory shall include:

   - The total number of existing onsite wastewater treatment systems under the City of Malibu's jurisdiction.
   - The location of each existing onsite wastewater treatment system, by street address, by parcel number, GPS location, or intersection.
   - The estimated depth to groundwater from each existing onsite wastewater treatment system. Regional groundwater data may be used to estimate depth to groundwater for individual onsite wastewater treatment systems.
   - The distance of the nearest point of any part of the onsite wastewater treatment system to any stream, channel, or other watercourse or water body. If exact location of the onsite wastewater treatment system is unknown, the City of Malibu shall provide the distance between the nearest point of the property boundary to any stream, channel, or other watercourse or water body.

4. The City of Malibu shall ensure that there is a local mechanism in place to notify the Regional Board within 30 days of receiving proposals to use onsite wastewater treatment systems that fall under the Regional Board's responsibility as outlined in Section IV. Item #3.

[1] The City of Malibu shall obtain the required information based on a review of City of Malibu permitting records, Assessor records, through point of sale transactions, and by other means that do not require the City of Malibu to gain access to private property.

5. The City of Malibu may review and act upon requests for exceptions to the Code requirements provided such exceptions will not violate any statewide standards adopted pursuant to CWC sections 13290-13291.7 and are consistent with the protocol for exceptions detailed in the Code. The City of Malibu shall forward any exceptions requested to the Code requirements that would violate any statewide standards adopted pursuant to CWC sections 13290-13291.7 to the Regional Board for Regional Board action.

6. The City of Malibu shall issue permits for the commercial systems specified in section IV.2.d. in accordance with Regional Board Order No. 01-031 in order to retain lead agency status for these systems.

**Regional Board Responsibility:**

1. The Regional Board shall conduct an evaluation of the City of Malibu at least once every five years to ensure the onsite wastewater treatment system program is in conformance with any statewide standards adopted pursuant to CWC sections 13290-13291.7 based upon the information submitted by the City of Malibu as indicated in Appendix A.

2. The Regional Board shall provide adequate assistance to the City of Malibu upon request from the City of Malibu. This assistance may be in the form of technical guidance, training opportunities, and/or review of onsite wastewater treatment systems.

3. The Regional Board shall provide notice to the City of Malibu at the earliest point in the development of regulations, of any proposed or Basin Plan amendments, Regional Board Orders or policies that regulate onsite wastewater treatment systems.

4. The Regional Board shall invite input from the City of Malibu and other stakeholders during the review of any statewide standards adopted pursuant to CWC, sections 13290-13291.7, or during the Basin Plan amendment process or the development of Regional Board Orders or policies that regulate onsite wastewater treatment systems.

5. On projects requiring WDRs, the Regional Board shall ensure that the operator has obtained any additional required permits from the City of Malibu.

6. The Regional Board shall provide the City of Malibu copies of waste discharge requirements, notices of violation, and any other permitting and enforcement actions related to onsite wastewater treatment systems within the City of Malibu.

## VI. INTERIM MEASURES

1. Point of Sale Ordinance:
The City of Malibu proposes to adopt a Point of Sale ordinance within one (1) year. Owners of commercial and residential properties, including single family, multiple family, duplexes, apartments, and condominium occupancies, shall be required to obtain a Certificate of Inspection from a City registered Onsite Wastewater Treatment System Inspector prior to entering into an agreement to sell or convey an interest in such property. The inspection report shall be submitted to the City on a standard form developed by the City. Upon determination

of compliance of the OWTS, a renewable Operating Permit shall be granted for the system. The permit shall be valid for a period of five (5) years for conventional systems, and three (3) years for advanced treatment systems when issued for a single-family residence. The permit shall be valid for a period of two (2) years for commercial and multifamily occupancies. Inspections shall be required prior to permit renewal. "Compliance of the OWTS" shall indicate that the OWTS has been inspected by a registered City of Malibu inspector and has conditionally passed all requirements established within the Official Inspection Form for Onsite Wastewater Treatment Systems. Single-family residences, condominium occupancies and duplexes that cannot demonstrate compliance through inspection shall provide adequate vertical separation to demonstrate compliance. If such facilities cannot provide adequate vertical separation, they shall require secondary treatment with disinfection. All commercial and multifamily occupancies shall require secondary treatment with disinfection. In addition, denitrification shall be required as indicated by applicable total maximum daily loads (TMDLs).

2. IWIMS:
The City of Malibu shall implement all facets of the Integrated Wastewater Information Management System. All data from the LA County Assessors records will be imported into the database. The inventory of all OWTS will be uploaded into the system. The system will be used to facilitate the day-to-day OWTS management and track the effectiveness of the Wastewater Management Plan. The City shall require all commercial and multifamily systems required to obtain a WDR from the Regional Board to submit all Groundwater Monitoring results required by the WDR to the City for inclusion into the IWIMS database. The database shall be utilized to further evaluate the need for additional code amendments to address any specific impacts indicated.

3. Malibu Lagoon and Beaches Bacterial Contributory Areas:
Ordinances shall be drafted by staff, and recommend for adoption by City Council, within two (2) years requiring all OWTS within the six - month time-of-travel zone, as identified in the Risk Assessment Report, to provide advanced treatment and disinfection. The six-month time-of-travel zone shall include all areas contributing to Malibu Creek and Lagoon, and beaches between Sweetwater Canyon outfall and Winter Canyon outfall. OWTS located outside of the six-moth time-of-travel zone that cannot demonstrate compliance through inspection or that are identified as impacting groundwater by any other means shall provide adequate vertical separation and/or advanced treatment with disinfection. "Compliance" shall indicate that the OWTS has been inspected by a registered City of Malibu inspector and has conditionally passed all requirements established within the Official Inspection Form for Onsite Wastewater Treatment System.

4. Malibu Lagoon Nitrogen Contributory Areas:
Ordinances shall be drafted by staff, and recommend for adoption by City Council, requiring property owners within the contributory area to obtain an Operating Permit within one (1) year. An ordinance shall be drafted within three (3) years requiring all commercial and multifamily occupancies within the lagoon contributory area to provide secondary treatment with disinfection and denitrification. Within two (2) years, the City shall establish denitrification standards for residential OWTS to be implemented at the time of major repair, renovation or

replacement of OWTS within the contributory area and at point of sale. OWTS located outside of the contributory area that cannot demonstrate compliance through inspection or that have been identified as impacting groundwater by any other means shall provide adequate vertical separation and/or advanced treatment with denitrification. "Compliance" shall indicate that the OWTS has been inspected by a registered City of Malibu inspector and has conditionally passed all requirements established within the Official Inspection Form for Onsite Wastewater Treatment System.

5. Water Resource Management:
Develop programs to advance the sustainability of the City's and LARWQCB water quality management programs based on the findings of the Risk Assessment Report as an ongoing project. The City will continue to fulfill a leadership role in the development and implementation of the Santa Monica Bay bacterial TMDL. The City will continue the regional groundwater-quality sampling program in the Civic Center area utilizing the existing monitoring wells, contingent upon funding source allocation. The sampling shall be expanded to include nitrogen constituents and Microbial Source Tracking for bacteria, contingent upon funding source allocation. Data loggers within existing wells shall be maintained and data collected. All hydrogeology data associated with OWTS applications shall be submitted to the City as a condition of the Operating Permit, with such data entered into the IWIMS for cataloging and retention purposes.

6. Registration Programs:
Ordinances shall be drafted by staff, and recommended to City Council for adoption, establishing registration criteria and programs for all associated disciplines of OWTS installation and management within four (4) years. Registration shall be established for all OWTS designers, installers, pumper-haulers, and maintenance contractors. Programs shall be established for the training and testing of each discipline.

7. Onsite Wastewater Treatment System Information Manuals:
The City will develop and produce a comprehensive OWTS information manual applicable to all OWTS systems within the City. The manual shall provide guidelines for the acceptable design, siting, installation and maintenance of all OWTS's.

## VII. ALTERNATIVE SYSTEMS:

The City of Malibu agrees to evaluate and amend its Code, if appropriate, to allow enhanced onsite wastewater treatment technologies in order to reduce threats to water quality.

## VIII. EVALUATION:

This MOU shall be reviewed by June 10, 2009 and every five years thereafter, and re-negotiated if either party desires modification to the terms and conditions contained herein. If neither party requests re-negotiation of the MOU at the five-year review period, the MOU will remain in effect for another five years.

Evaluation of the City of Malibu's onsite wastewater treatment system program is a cooperative process between the City of Malibu and the Regional Board. The intent of the evaluation is to identify those aspects of the program that provide desired results, and those that need improvement.

The City of Malibu shall submit information to the Regional Board as indicated in Appendix A, attached hereto and incorporated herein by reference. The Regional Board may provide comment and recommendations based upon the information submitted by the City of Malibu. The Regional Board shall use this information to perform an evaluation of the City of Malibu's onsite wastewater treatment system regulatory program once every five years and provide constructive input. The Regional Board shall provide at least twenty-one days written notice to the City of Malibu prior to performance of the evaluation. The evaluation process shall be in conformance with Appendix A.

The Regional Board shall provide the City of Malibu for consideration a written summary of findings and recommended program modifications within thirty days of completion of the evaluation. Within thirty days of receipt of the report the City of Malibu shall provide a written response detailing action taken or proposed regarding the findings and recommendations contained in the reports.

## IX. ENFORCEMENT OF THE MOU:

The Regional Board and the City of Malibu shall be responsible for assuring that the terms of the MOU are enforced. If evaluation reveals that the Regional Board, or the City of Malibu is not performing its duties as required by this MOU, and the Regional Board or the City of Malibu does not amend its process per agreement, the Regional Board or the City of Malibu may terminate this MOU. This MOU may be renegotiated by request by the Regional Board or the City of Malibu. Either party may terminate this MOU without cause upon thirty day prior written notice to the other party. Termination of the MOU by the Regional Board or the City of Malibu may require that the Regional Board issue Order No. 01-031 or other Regional Board Order to each new or existing onsite wastewater treatment system within the boundaries of the City of Malibu. The Regional Board shall make any determination to terminate the MOU at a publicly noticed hearing.

In addition to the foregoing, in the event that statewide standards under CWC sections 13290-13291.7 are not adopted by July 1, 2005, the Regional Board staff shall provide information, at a public hearing, to the Regional Board as to the status of adoption of the statewide standards, whereupon the Regional Board shall, at its discretion, have the right to terminate the MOU, or direct staff to renegotiate the MOU, or to take other actions as the Regional Board shall deem appropriate.

X. ACCEPTANCE:

This Memorandum of Understanding is hereby approved by the parties on, and its effective date is,

_____.

[*Insert the last date of the signature dates below*]

**REGIONAL BOARD:**

I, Jonathan Bishop, Interim Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of a Memorandum of Understanding approved by the California Regional Water Quality Control Board, Los Angeles Region on August 5, 2004.

Jonathan Bishop, Interim Executive Officer,
Los Angeles Regional Water Quality Control Board

8/12/04
Date

**CITY OF MALIBU:**

9.17.04
Date

KATIE LICHTIG, City Manager

ATTEST:

LISA POPE, City Clerk
(seal)

APPROVED AS TO FORM:

CHRISTI HOGIN, City Attorney

DRAFT MEMORANDUM OF UNDERSTANDING
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
AND
THE CITY OF MALIBU

APPENDIX A

## INFORMATION REQUIRED FOR EVALUATION OF THE ONSITE WASTEWATER TREATMENT SYSTEM PROGRAM OF THE CITY OF MALIBU

1. The City of Malibu shall submit the following information to the Regional Board once every five years upon request:

   - The number of permits issued for new construction, repairs, additions, and destruction of standard onsite wastewater treatment systems.
   - The number of permits issued for alternative, and experimental onsite wastewater treatment systems including the type of enhanced treatment device permitted.
   - The results of any monitoring program for onsite wastewater treatment systems including the number of changes of ownership, the number of monitoring inspections, the type of system monitored, flows in gallons per day for each system, the number of properly functioning systems, and those in failure or needing repair.
   - The number and type of complaints pertaining to onsite wastewater treatment systems in the City of Malibu's jurisdiction.
   - The number of corrective actions taken in the City of Malibu's jurisdiction for failing onsite wastewater treatment systems.
   - The number of enforcement actions taken in the City of Malibu's jurisdiction and the status of compliance with those enforcement actions.

2. Once every five years the Regional Board shall evaluate the City of Malibu's implementation of the onsite wastewater treatment system program. This five-year evaluation by the Regional Board may include:

   - Office review of the Code, local ordinances, laws, standards, and policies relating to the regulation of onsite wastewater treatment systems.
   - Field review of staff activity pertaining to the siting, permitting, and monitoring of onsite wastewater treatment systems.
   - Field review of various types of onsite wastewater treatment systems installed within the city.
   - Office review of files, inspection records, monitoring results and reports, plans or other information pertaining to onsite wastewater treatment systems.
   - Review of onsite wastewater treatment system owner outreach, education, and compliance assistance programs.
   - Review of groundwater monitoring program implemented by the City of Malibu.
   - Review of the results of any pertinent water quality monitoring data.

# California Regional Water Quality Control Board
## Los Angeles Region

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.waterboards.ca.gov/losangeles

Linda S. Adams
*Cal/EPA Secretary*

Arnold Schwarzenegger
*Governor*


September 19, 2008

Mr. Jim Thorsen
Manager, City of Malibu
23815 Stuart Ranch Road
Malibu, CA 90265-4861

Dear Mr. Thorsen:

**NOTICE OF INTENT TO TERMINATE THE MEMORANDUM OF UNDERSTANDING BETWEEN THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION, AND THE CITY OF MALIBU REGARDING ONSITE WASTEWATER TREATMENT SYSTEMS**

Pursuant to the Memorandum of Understanding, Section IX, "Enforcement of the MOU," this is our thirty day notice to you that the Regional Board intends to terminate the above-referenced Memorandum of Understanding. Because the Regional Board must make a determination to terminate the MOU at a publicly noticed meeting, this matter will be on the November 13, 2008 Regional Board meeting agenda.

Sincerely,

David A Bacharski, AEO

Tracy J. Egoscue
Executive Officer

cc: Mr. Craig George, Mr. Granville Bowman, Mr. Andrew Sheldon, City of Malibu
Mr. J.J. O'Brien, Weintraub Financial
Dr. Mark Gold, Heal the Bay
Mr. Gordon Innes, Division of Water Quality, State Water Resources Control Board
Mr. Don Schmitz, Schmitz and Associates, Inc.
Mr. John Yaroslaski, Ensitu Engineering, Inc.
Mr. Carl Sjoberg, Department of Public Works, County of Los Angeles
Mr. Chi Diep, CA Dept. of Public Health Drinking Water Program
Ms. Tatiana Gaur, Santa Monica Baykeeper
Mr. Carlos Borja, Los Angeles County of Public Works, Cross Connections

# 2.0 Background

The City of Malibu is located between the Santa Monica Mountains and Santa Monica Bay. Santa Monica Bay is a regionally important water resource. The Civic Center area is located on an alluvial plain where Malibu Creek flows into Malibu Lagoon. Surfrider Beach is located along the lagoon's barrier beach. Surfrider Beach is occasionally posted because of high bacteria levels during winter months.

Water quality is important from the standpoint of the quality of life for Malibu residences and visitors, public health protection and ecological health of Malibu's water resources.

## *2.1 Wastewater Management*

The study area for the wastewater element of the study extends to the upland areas adjacent to this alluvial plain, as well as Winter Canyon.

The Risk Assessment project was funded by the Santa Monica Restoration Commission and completed by the City of Malibu in 2004. The Risk Assessment study area is essentially the same as the study are for this integrated water quality management feasibility study. Principal outcomes of the Risk Assessment project were definition of the boundaries of the areas that contribute groundwater to Malibu Creek Watershed, and times of travel in groundwater flowing toward Malibu Creek, Malibu Lagoon and the surfzone. Monthly roundwater quality sampling at 20 monitoring wells over a one-year period revealed: (1) a wide variability in groundwater quality within the study area; (2) an apparent variety of sources of elevated nitrogen and bacteria concentrations in the groundwater; and (3) the apparent need for enhanced management of both wastewater and stormwater. Field data and groundwater modeling also revealed a very slow rate of groundwater movement in the alluvial materials, and times of travel range from less than six months to greater than 50 years. Therefore, remedial actions will take a considerable length of time to be evident in surface waters due to this low rate of groundwater movement.

Independent of the City's efforts, many of the existing commercial and multi-residential properties in Malibu are in the process of planning upgrades to their existing onsite wastewater treatment systems needed to meet newly imposed requirements of the Los Angeles Regional Water Quality Control Board (RWQCB). Some of these existing facilities, as well as future commercial development projects in the Civic Center area, are necessarily having to consider the construction of tertiary treatment systems and, in some cases, wastewater reuse.

Wastewater reclamation and reuse is possible for some individual development projects; however, it is generally found to be more effective when it is implemented at a community system level.

Preliminary analysis of wastewater collection, reclamation and reuse alternatives for the Malibu Civic Center area were previously performed by Fuog Water Resources, Inc. (1996 & Crawford, Multari and Starr, *et al* (CMS, 1996) and Questa Engineering Corporation (2003). These prior works determined that a community wastewater reclamation system for the Civic Center area was feasible and could provide significant environmental benefits. A number of sites were considered as a possible reclamation plant location in the Fuog study; however, no study was

made of the sites in terms of their possible use for dispersal and reuse of the treated water. The Questa study focused on the feasibility of the Chili Cook-off property because it became available for purchase and the City needed to act quickly to characterize the suitability of that property for wastewater reclamation and reuse.

## *2.2 Stormwater Management Background Summary*

Urban stormwater runoff from a large portion of the Civic Center area drains into Malibu Creek and Lagoon and, along with wastewater discharges, represents a potentially significant source of bacteriological and nutrient loading to the Creek and Lagoon that will be required to be addressed under the adopted (bacteria) and pending (nitrogen) TMDLs. Some of the same land areas considered for community wastewater treatment-reclamation in this study have also been identified in the past as potentially viable areas for creation of a "stormwater treatment wetland", or possibly a wetland that could provide combined wastewater and stormwater treatment (Ambrose and Orme, 2000). Additionally, the City of Malibu has received a grant for the design and construction of a stormwater treatment facility for dry season and "first flush" stormwater flows in the Civic Center area; it is possible that this facility could also be utilized to a greater degree for treatment of wet season runoff. Finally, individuals and groups in the community have expressed a high degree of interest in the preservation, restoration and creation of wetland habitats in the Civic Center area as part of an overall goal for comprehensive water resources management in the area.

## *2.3 Environmental Setting*

The environmental setting of the Civic Center area is described in detail in the Malibu Specific Plan – Background Conditions – Existing Information (Crawford, Multari and Starr, et al (CMS, 1996) and the Risk Assessment Report (Stone Environmental, 2004).

### 2.3.1 Civic Center Area

The Civic Center area is an approximately 150-acre area located in a coastal area, on an alluvial plain north of the Pacific Coast Highway on the west side of Lower Malibu Creek and Malibu Lagoon (Ambrose and Orme, 2000). The Santa Monica Mountains rise steeply to the north, west and east of the study area. There are single family residences in Malibu Colony and along Malibu Road to the south, in Serra Retreat to the east along Cross Creek Road, and on the highlands above the plain to the north. Multifamily condominiums, as well as commercial and institutional occupancies are located to the west and in the Winter Canyon area.

### 2.3.2 Topography

The elevation of the alluvial plain in the Civic Center area generally ranges from 6 to 35 feet above mean sea level (AMSL). The ground surface gently slopes southeastward toward Malibu Creek, Malibu Lagoon and the ocean. The natural topography has been significantly altered by fill associated with development and roads in the area (Ambrose and Orme, 2000). The developed uplands in the study area, north and east of the alluvial plain, are foothills of the Santa Monica Mountains and the local elevations range from 100 to 300 feet AMSL.

### 2.3.3 Hydrology

Malibu has a Mediterranean climate with dry summers and intermittent winter rains. The average annual precipitation is 14 inches per year. The hydrology has been altered by grading and development activities, irrigation of the landscape, and the recharge of groundwater by existing septic systems. The water balance for this area is described in the Risk Assessment Study report.

# 4.0 Wastewater Collection

## *4.1 Introduction*

Provided here is a comparative review of wastewater collection system alternatives for the Malibu Civic Center areas identified for possible sewer service. Collection system alternatives reviewed include:

- Conventional Gravity Sewers
- Pressure Sewers, with Individual Grinder Pumps
- Septic Tank Effluent Pump (STEP) Sewers

A preliminary layout of various collection system alternatives was done based on review of topographic mapping of the Study Area. This provided the information needed to define the expected routing of sewer lines and, where applicable, the probable location of sanitary lift stations. It also provided basic data needed for a preliminary hydraulic analysis of pumping requirements and to estimate pipe sizes and corresponding costs.

During our initial screening, we determined that a conventional gravity sewer system, while feasible, was poorly suited to the Malibu Civic Center area due to the flat terrain, high (shallow) groundwater in some areas, and other factors. For this reason, only a general discussion of this collection alternative is presented. For the Pressure Sewer and STEP Sewer alternatives, a map and schematic diagrams are provided, along with a description of key facilities, a review of advantages and disadvantages, an estimation of construction costs, and an overview of ongoing operation and maintenance requirements and costs.

## *4.2 Conventional Gravity Sewer Alternative*

### 4.2.1 General Description

In a conventional gravity sewer, untreated wastewater travels through a system of sewer pipes installed at a minimum grade to maintain gravity flow. Sewer pipes are usually six or eight-inch minimum diameter, with four-inch diameter lateral connections from buildings, and typically require a minimum of 4 to 5 feet of backfill cover. Pipe and fitting material can be PVC, ABS, high density polyethelyene (HDPE) or ductile iron. Conventional gravity sewers require manholes generally: (a) at all intersections of sewer lines other than side sewer connections less than six inches in diameter; (b) at all vertical or horizontal angle points; and (c) at intervals not greater than 400 feet. Manholes provide access for maintenance and cleaning. Since conventional gravity sewers require a constant downhill grade, gravity sewer mains need to be installed at considerable depths where the terrain is flat or undulating. The sewer becomes increasingly deep until a lift station is necessary.

### 4.2.2 Malibu Civic Center Application

The flat terrain and high groundwater conditions of the Malibu Civic Center service area do not favor gravity collection. Particularly along Cross Creek, portions of the Pacific Coast Highway, Malibu Colony, and Malibu Road, where the terrain is very flat and the depth from ground surface to groundwater is often less than 6 feet, downward sloping gravity sewers would be difficult or costly to construct. The sewer excavation would require extensive dewatering and shoring, and lift stations would have to be installed nearly every 500 feet along the road. In addition, further pumping facilities would be necessary to connect many lower lying beachside properties to the sewer main. Infiltration from groundwater leaking into the sewers would be unavoidable, as would the potential for exfiltration from the sewers into the groundwater. The only areas favoring the use of gravity sewers would be along the short, downhill stretches of Stuart Ranch and La Paz Roads at the north end of the service area, where properties have yet to be constructed. There is not enough high or hilly ground anywhere else within the service area that would favor gravity sewers over other alternatives.

## *4.3 Pressure Sewer Alternative*

### 4.3.1 General Description

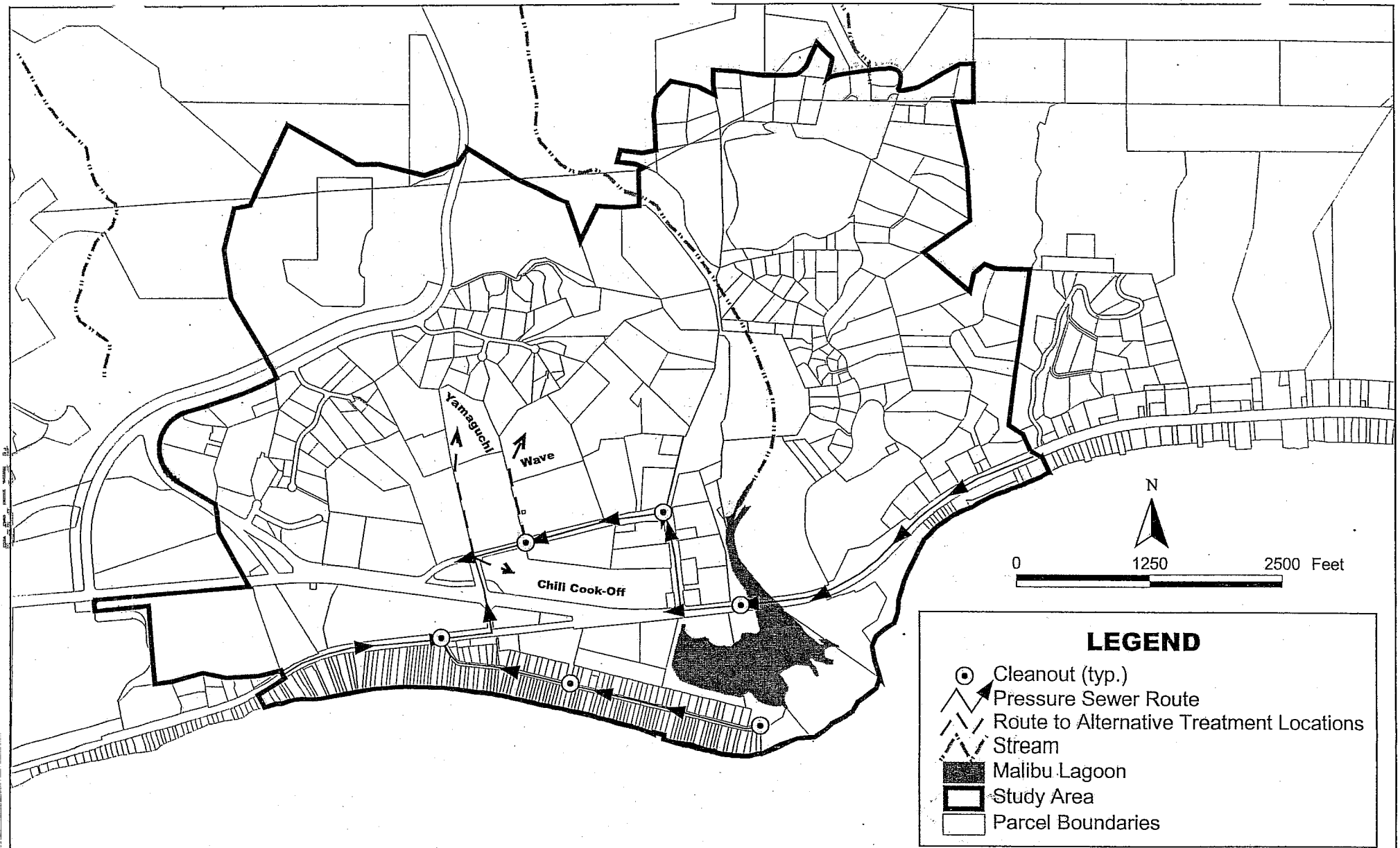
Pressure sewers are one of the most popular and successful alternatives to conventional gravity sewers. A pressure sewer is a small diameter pipeline, which is installed following the profile of the ground. Typical main diameters are 2 to 6 inches, and PVC and HDPE are the usual piping material. Burial depths usually have a 30-inch minimum cover.

In residential areas served by a pressure sewer, each home uses a small grinder pump to discharge to the main line. The pump grinds the solids in the wastewater into slurry in the manner of a kitchen sink garbage grinder. Grinder pumps to serve individual homes usually range from one to two-horsepower in size. Some installations may use three to five-horsepower motors, but these are usually used when serving several homes with one pumping unit. Multifamily and commercial properties may make use of duplex pump stations designed for larger flows.

The service line leading from the pumping unit to the main is usually 1.25-inch diameter PVC or HDPE. A check valve on the service line prevents backflow, which is insured with a redundant check valve at the pumping unit. If a malfunction occurs, a high liquid level alarm is activated. This alarm may be a light mounted on the outside wall of the home, or it may be an audible alarm that can be silenced by the resident. In the instance of an activated alarm, the resident would notify the sewer service district, which would respond to make the necessary repair.

### 4.3.2 Malibu Civic Center Application

**Figure 4-1** shows a tentative layout of a pressure sewer collection system for the Malibu Civic Center area, encompassing the high priority residential and commercial areas, identified as Service Alternatives 1 and 2. **Figure 4-2** shows the tentative layout for Service Alternative 3, which encompasses the commercial area only. As indicated in the title, **Figures 4-1** and **4-2** are




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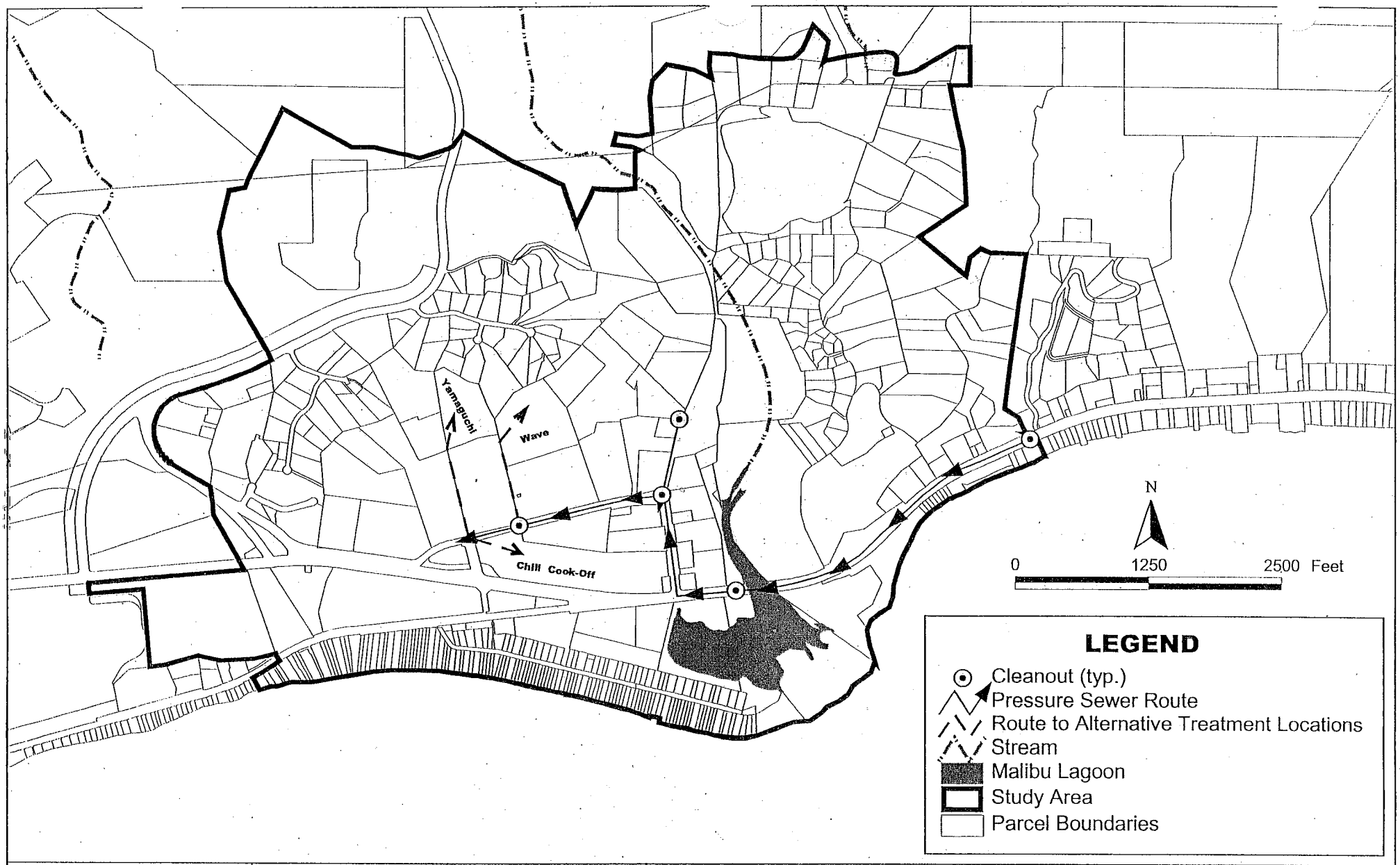
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# PRESSURE SEWER SYSTEM - ALTERNATIVES 1 AND 2

## Malibu Civic Center Intergrated Water Quality Management Feasibility Study

FIGURE

4-1




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# PRESSURE SEWER SYSTEM - ALTERNATIVE 3

## Malibu Civic Center Intergrated Water Quality Management Feasibility Study

FIGURE

4-2

equally applicable to the STEP system alternative. **Figure 4-3** shows a typical pressure sewer connection; **Figure 4-4** illustrates the details of a grinder pump unit. A preliminary branch analysis for pipe sizing is provided in **Appendix B.** The key features of this collection alternative are as follows:

- **Grinder Pump Units.** An individual grinder pump would be installed at each service connection. Commercial and multi-residential properties would be provided with duplex units and larger pump basins for added emergency storage capacity. Some of the grinder pumps could be provided with a remote monitoring unit, with access via modem connection and programming for automatic shut-off for emergency conditions. For Service Alternatives 1 and 2, we estimate the need for approximately 188 standard simplex grinder pump units and 37 duplex grinder pump units. For Service Alternative 3 approximately 19 simplex grinder pumps and 37 duplex grinder pumps would be needed.

- **Pressure Sewers.** Pressure sewers, ranging in size from two to five inches diameter, would be installed in a continuous collection network, leading to a force main for transmission of sewage to the treatment plant located at either the Wave, Yamaguchi or Chili Cook-off sites. Approximately 15,000 lineal feet of pressure sewers would be needed for Service Alternatives 1 and 2, and about 9,300 lineal feet would be needed for Service Alternative 3.

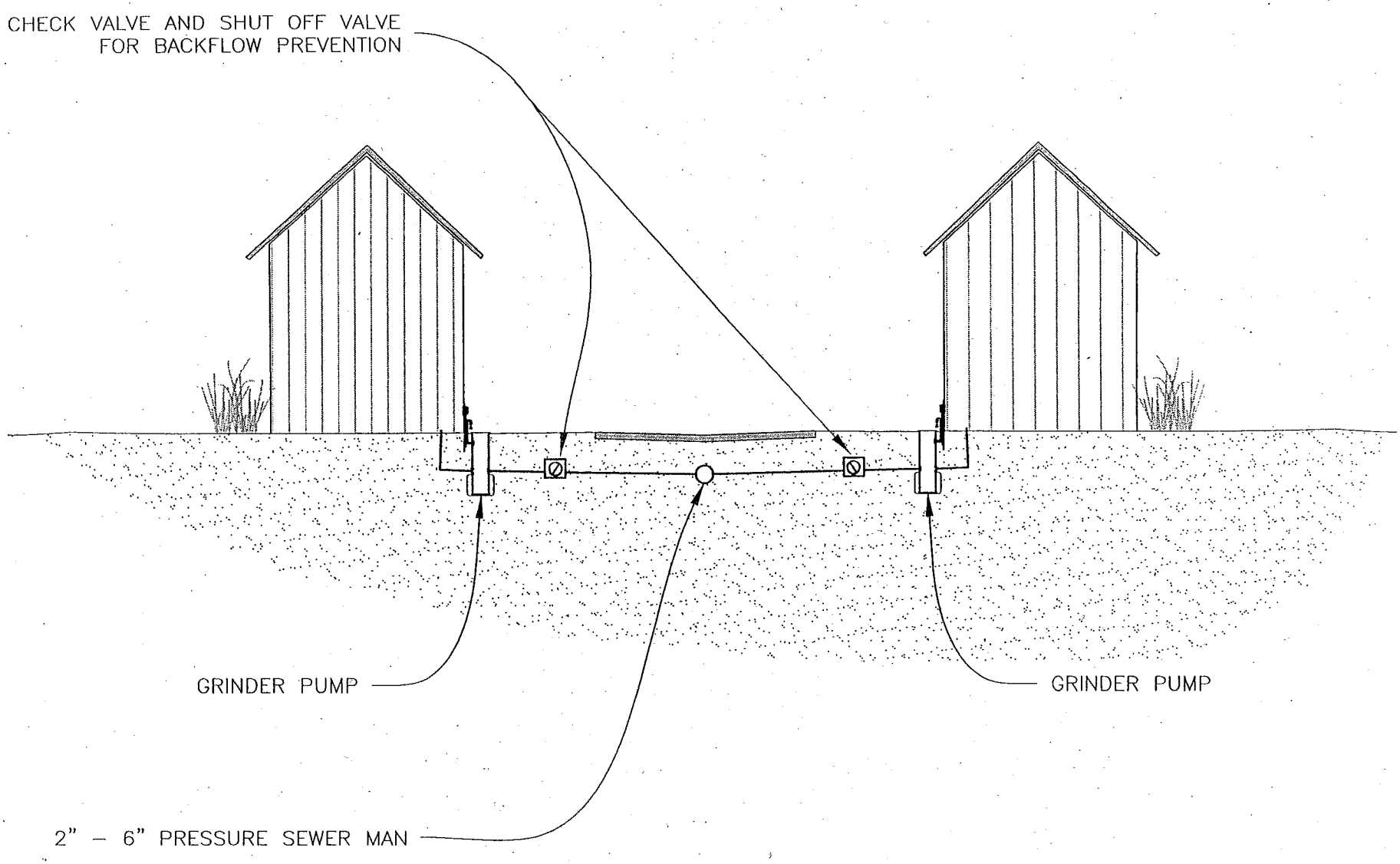
- **Cleanout and Flushing Stations.** Cleanouts would be placed at the beginning of pressure sewer branches, at intersections, and at every 1,000 to 1,500 feet along straight runs of pipe.

### 4.3.3 Advantages and Disadvantages

**Advantages.** With a typical pipe depth of about 36 inches, pressure sewers eliminate the need for the deep excavation, lift stations, and groundwater dewatering and shoring involved in the installation of conventional gravity sewers. The shallow depth, positive pressure, and tight-glued PVC joints or fused HDPE joints also prevent groundwater infiltration and exfiltration, and substantially reduce the potential for stormwater inflow.

**Disadvantages.** The main disadvantage of pressure sewers is the added complexity of the large number of pumps and controls that would have to be installed and maintained at the individual residences. Most modern grinder pump units are very reliable, have a relatively long service life, and include built-in alarms to alert the homeowner in the event of a pump failure. Nevertheless, the impact during extended power outages is much greater with pressure sewers due to limited reserve storage at individual pump units and lack of readily available back-up power. Grinder pump units normally provide emergency storage capacity of about 50 to 100 gallons, unless an additional storage tank is added. Some sanitary districts require grinder pumps to be installed with a transfer switch to allow pump operation using a portable generator. Larger commercial or multi-family complexes can be equipped with an automatic backup generator.

Another disadvantage of pressure sewers is the greater reliance upon on-lot facilities. The facilities located on private property require access easements for system maintenance or repair, and much more ongoing interaction with property owners and attention to public relations by the sewer district personnel.



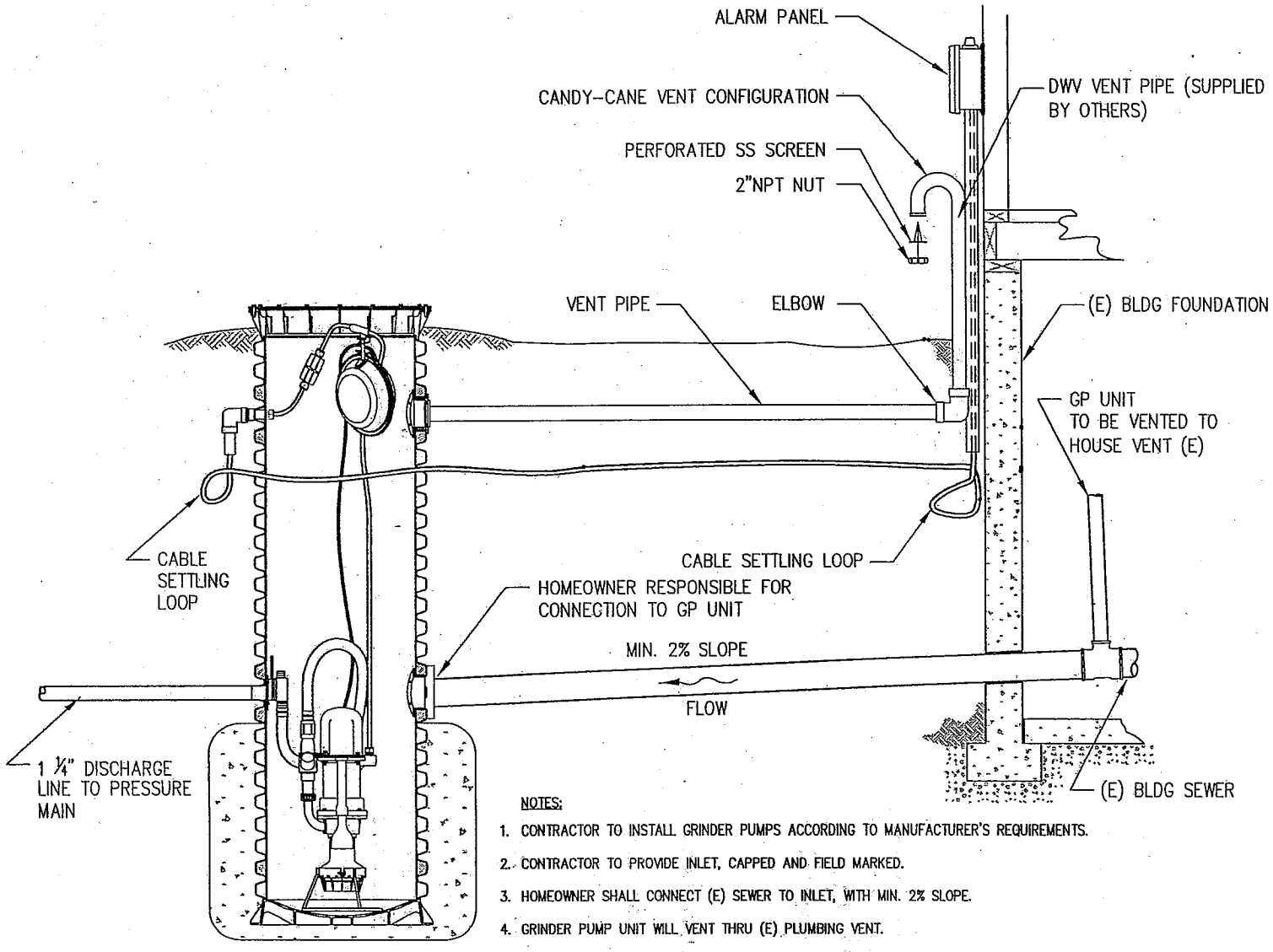

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**TYPICAL PRESSURE**
**SEWER CONNECTION**

FIGURE
4-3




NOTES:

1. CONTRACTOR TO INSTALL GRINDER PUMPS ACCORDING TO MANUFACTURER'S REQUIREMENTS.
2. CONTRACTOR TO PROVIDE INLET, CAPPED AND FIELD MARKED.
3. HOMEOWNER SHALL CONNECT (E) SEWER TO INLET, WITH MIN. 2% SLOPE.
4. GRINDER PUMP UNIT WILL VENT THRU (E) PLUMBING VENT.
5. IF (E) PLUMBING VENTILATION IS NOT PER 1997 UPC, CONTRACTOR SHALL CONNECT OPTIONAL 2" VENT PIPE TO EXTERIOR OF BUILDING.

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**MALIBU CIVIC CENTER INTEGRATED WATER QUALITY MANAGEMENT FEASIBILITY STUDY**

**GRINDER PUMP UNIT**

FIGURE 4-4

### 4.3.4 Estimated Construction Costs

Estimated construction costs for the pressure sewer alternative are summarized in **Table 4-1**. Supporting cost data are provided in **Appendix B**. Costs for on-lot facilities include the cost of materials and installation of grinder pump units, electrical service, and service laterals. The costs for abandoning existing septic tanks and connection of building plumbing to the grinder pump unit are not included. These costs vary from site to site and would be an individual property owner's responsibility and cost. Costs for the collection system include materials, installation of pressure sewer pipes, valves and appurtenances, trench excavation and backfilling, pavement restoration, and contractor mobilization. A 15-percent allowance is included for contractor overhead and profit. Not included in these estimates are planning, environmental, engineering and contingency costs, which are covered for the overall project in **Section 10** of this report.

**Table 4-1. Estimated Construction Costs for Pressure Sewer**

| Item | Total Cost ($) Alternatives 1 and 2 | Total Cost ($) Alternative 3 |
|---|---|---|
| On-Lot Facilities | 2,384,000 | 913,700 |
| Collection System | 636,000 | 361,300 |
| *SUBTOTAL* | *3,020,000* | *1,275,000* |
| Contractor Overhead & Profit @ 15% | 450,000 | 200,000 |
| *TOTAL* | **3,470,000** | **1,475,000** |

### 4.3.5 Operation and Maintenance

On-lot grinder pumps require periodic maintenance and cleaning, which are normally handled by the sewer district; the associated electrical energy costs are absorbed directly by the property owner.

## *4.4 Septic Tank Effluent Pump (STEP) Sewer*

### 4.4.1 General Description

Septic tank effluent pump (STEP) sewers are gaining popularity in unsewered areas where trench depth and development density are concerns. Unlike conventional sewers, primary treatment is provided at each connection by a septic tank, and only the settled wastewater is collected. Each connection includes one or more effluent pumps located either in the septic tank or in a separate pump chamber. The septic tank effluent is then pumped into a small diameter force main (2 to 6-inch PVC or HDPE). Grit, grease, and other troublesome solids which might cause obstructions in the pumps or collector mains are separated from the waste flow and retained in septic tanks installed upstream of each connection. With the solids removed, the collector main need not be designed to carry solids, unlike conventional sewers.

### 4.4.2 Malibu Civic Center Application

The tentative layout of a STEP system would be the same as that shown in **Figures 4-1** and **4-2** for the Pressure Sewer alternative. **Figure 4-5** illustrates typical STEP sewer construction aspects and **Figure 4-6** provides details of a typical STEP unit.

Under this collection alternative, each property would be connected to one or more septic tanks and pumps. Restaurants would also have a grease interceptor installed prior to the septic tank. The pump systems at each property would be sized to pump the clarified septic tank effluent all the way to the treatment/reclamation facility at either the Wave, Yamaguchi or Chili Cook-off site.

The key features of a STEP system alternative for the Malibu Civic Center service area are as follows:

- **Septic Tanks.** Watertight septic tanks would be required for each property (some residences could share a single tank). Based on experience in other similar communities, it estimated that no more than about 25 percent of existing septic tanks could be salvaged and utilized due to their age, size and condition. All tanks would require watertight access risers.

- **STEP Units.** The STEP unit includes a submersible effluent pump installed in a separate tank following the septic tank or in the second compartment of the septic tank (as illustrated in **Figure 4-6**), along with associated electrical control and float-activated switches programmed to operate on demand (i.e., in response to flow from the property). Power is supplied from the house or commercial building, where an audio and visual alarm is located. Emergency/reserve storage capacity of 150 to 200 gallons is normally provided in the septic tank for pump malfunction or power outages.

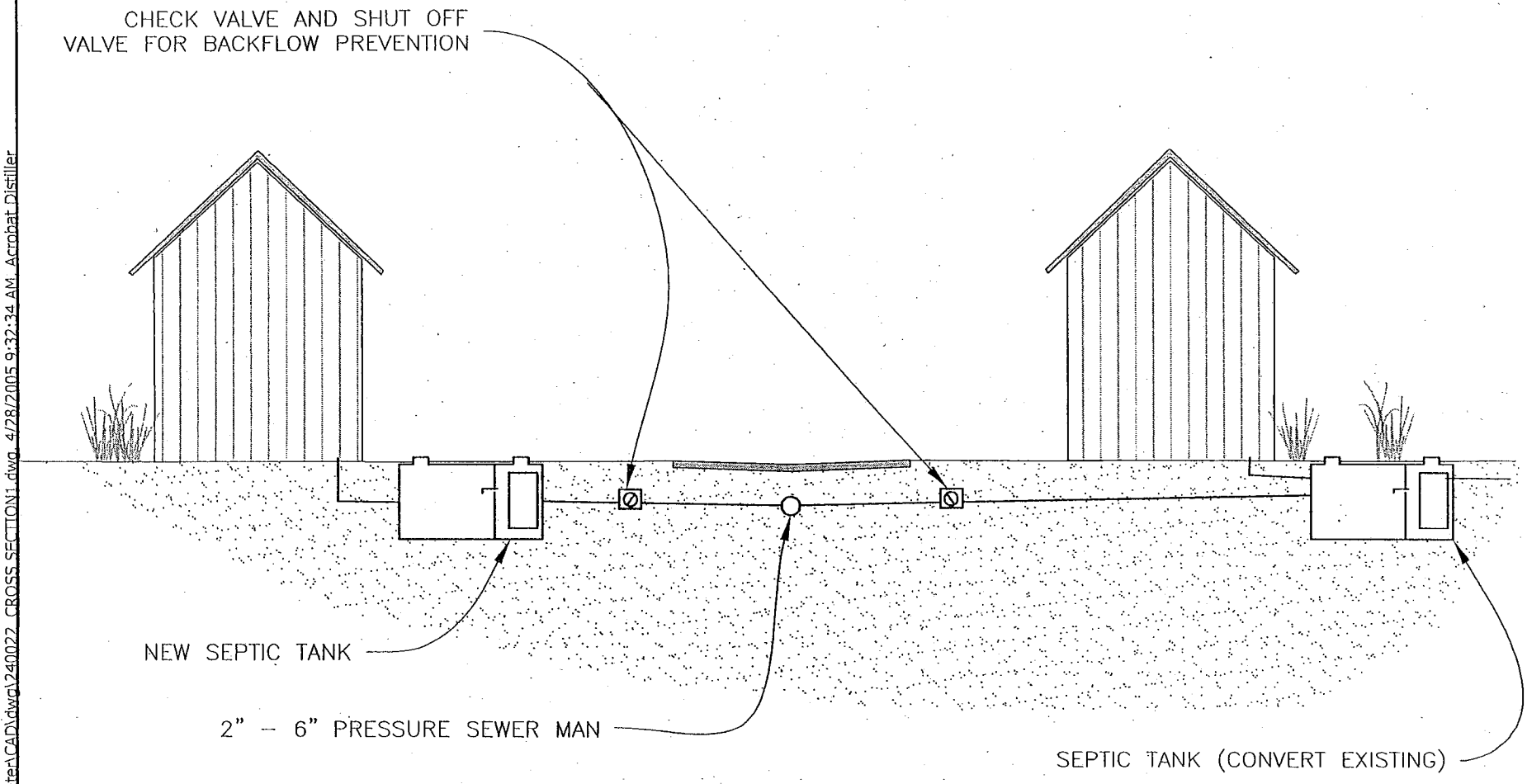
- **Service Laterals.** Service laterals connecting the STEP unit to the collection main are usually 1.25-inch for pressure lines for residences and 2-inch diameter for commercial and multi-family connections. All piping and valves are Schedule 40 PVC or HDPE.

- **STEP Pressure Mains.** STEP pressure mains consisting of PVC or HDPE pipe have typical diameters of 2 to 6 inches. The mains are installed at 36-inch minimum depth and follow road contours and curves. Based on preliminary hydraulic analysis the force main to the treatment site would be six-inch diameter. Approximately 15,000 lineal feet of pipeline would be needed for Service Alternatives 1 and 2, and approximately 9,300 lineal feet would be needed for Service Alternative 3.

- **Clean-Outs.** Manholes are not required in STEP sewers; clean-outs and isolation valves are included for maintenance purposes.

### 4.4.3 Advantages and Disadvantages

**Advantages.** STEP sewers have many of the same advantages cited for pressure sewers. An added advantage is the absence of solids in the sewer lines, since the solids are retained in septic tanks. This reduces the stress on pumping facilities and eases the passage of wastewater through



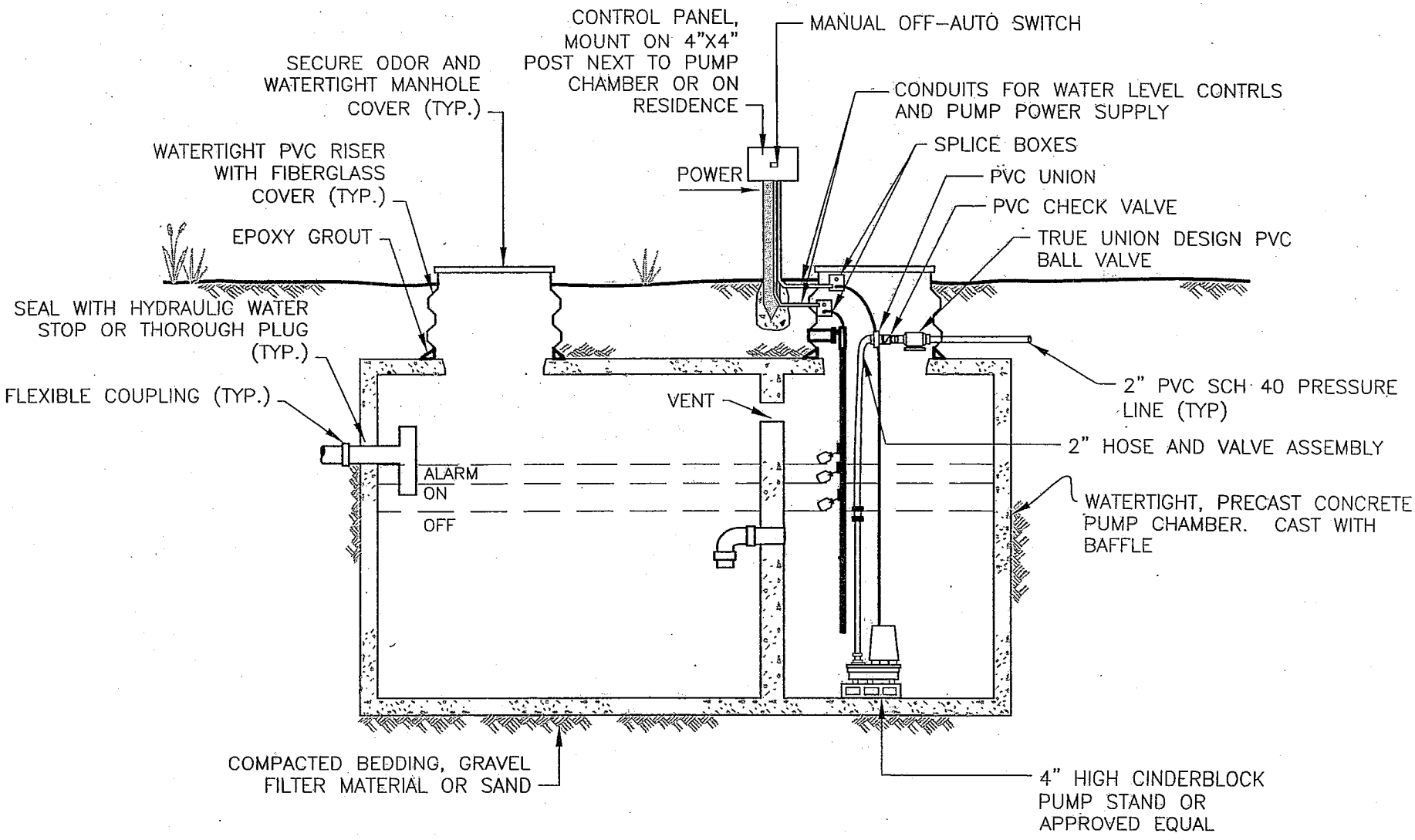

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**TYPICAL STEP SEWER CONNECTION**

FIGURE
4-5

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CROSS-SECTION

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**MALIBU CIVIC CENTER INTEGRATED WATER QUALITY MANAGEMENT FEASIBILITY STUDY**

**SEPTIC TANK WITH BAFFLE AND EFFLUENT PUMP**

FIGURE
4-6

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the system. The removal of solids from the waste flow also significantly reduces the load on the treatment plant.

Because of their smaller size, reduced gradients and lack of manholes, STEP systems can also have a distinct cost advantage over conventional gravity sewers where adverse conditions create excavation problems or where roadway restoration costs in developed areas can be excessive. However, in the case of the Malibu Civic Center area, the density of developed lots requires a large number of STEP pump units that tend to offset the cost savings in the collection lines. This is also influenced by the fact that less than 25 percent of existing septic tanks can be salvaged for use in the STEP system.

**Disadvantages.** STEP sewers usually are not well suited in high-density developments because of the cost of installing and maintaining the septic tanks. Since sewage is maintained in an anaerobic or septic state in STEP systems, nuisance gases are produced that may cause odor problems at individual connections. However, the venting of odors is no different from the current conditions with individual septic systems; odors are vented through the house plumbing stacks. Another disadvantage of STEP sewers is the reliance upon septic tank pump-outs and disposal of septage. Accumulated digested sludge and scum must be removed from the septic tank and disposed of on a periodic basis (every three to five years, on average). However, once again, this is no different from existing conditions. Finally, as noted previously under the discussion of pressure sewers, STEP sewers require easements for maintenance and repair of on-lot facilities along with greater attention to public relations and considerable interaction between the district personnel and property owners.

### 4.4.4 Estimated Construction Costs

Estimated construction costs for the STEP system alternative are summarized in **Table 4-2**. Supporting cost data are provided in **Appendix B**. Costs for on-lot facilities include materials and installation of STEP units, new septic tanks, electrical service, and service laterals. It is assumed that approximately 25 percent of the existing septic tanks are in satisfactory condition, are of sufficient size and would be retained. Costs for the collection system include materials and installation costs for sewer pipes, valves, and appurtenances, trench excavation and backfilling, pavement restoration, and contractor mobilization. A 15-percent allowance is included for contractor overhead and profit. Not included in these estimates are planning, environmental, engineering and contingency costs, which are covered for the overall project in **Section 10** of this report.

**Table 4-2. Estimated Construction Costs for STEP Alternative**

| Item | Total Cost ($) Service Alternatives 1 and 2 | Total Cost ($) Service Alternative 3 |
|---|---|---|
| On-Lot Facilities | 2,000,000 | 546,500 |
| Collection System | 680,000 | 349,500 |
| *SUBTOTAL* | *2,680,000* | *896,000* |
| Contractor Overhead & profit @ 15% | 400,000 | 135,000 |
| *TOTAL* | 3,080,000 | 1,031,000 |

### 4.4.5 Operation and Maintenance

Operation and maintenance activities for a STEP sewer system consist mainly of septic tank pump-outs and maintenance, annual inspection and repair, and cleaning out of individual on-lot pump facilities, as needed. Because STEP collection lines are pressurized and do not transport any solids, solids accumulation and associated cleaning of the sewer lines are not normally required.

The annual cost for labor and materials for these operation and maintenance items is estimated to range from approximately $80,000 for Service Alternative 3 to approximately $130,000 for Service Alternatives 1 and 2.

## *4.5 Summary*

The feasibility and approximate costs of providing a sewage collection for the high priority sub-areas was conducted. The evaluation considered: (a) conventional gravity sewers with several sanitary sewer lift stations; (b) small-diameter pressure sewers, using grinder pumps at individual properties; and (c) septic tank effluent pump (STEP) sewers, in which each property would have a septic tank for solids removal, with a collection piping network for the effluent. Preliminary piping routes were defined, along with estimates of the size and length of piping and other facilities required. Although feasible, conventional gravity sewers were found to be poorly suited to the conditions in the study area because of the generally flat terrain and high groundwater conditions in some areas. Pressure sewers and STEP sewers are very similar to one another and both are well-suited to the conditions and constraints in the Civic Center area. Preliminary cost estimates generally favor the STEP sewer option; however, this is dependent on how many existing septic tanks might be able to remain in service and how many would have to be replaced. It is also possible that more detailed evaluation may show that a "hybrid" system including a combination of grinder pumps and STEP units would be feasible and the most economical approach.

# 5.0 Wastewater Treatment And Reclamation

## *5.1 Introduction*

Various locations and technologies were evaluated for a community wastewater treatment-reclamation facility to determine an apparent best alternative for the Civic Center area. The study assumed that the treatment plant would be a state-of-the-art facility designed to produce tertiary quality water suitable for unrestricted recycling (reclamation) uses in accordance with Title 22, California Code of Regulations. It was also assumed that the treatment plant would be capable of providing a high level of nitrogen removal in order to meet the anticipated TMDL requirements for Malibu Creek and Lagoon. Different treatment capacities (120,000 gpd to 200,000 gpd) were considered to cover the expected range of wastewater flows generated by either (a) a project serving only the Civic Center commercial area or (b) a larger service area encompassing other properties judged by the Needs Assessment to be "high" priority.

## *5.2 Wastewater Treatment Requirements*

### 5.2.1 Title 22 - Water Recycling Criteria

In order to allow all or portions of the wastewater flow to be recycled for landscape irrigation, toilet flushing, laundry water or other approved recycling uses, the entire waste stream will be treated to a tertiary level, consistent with requirements contained in California Code of Regulations, Title 22 - Water Recycling Criteria (as adopted December 2000). According to Title 22, recycled water used for toilet flushing, laundry water, or unrestricted landscape irrigation, following secondary (biological) treatment, must be filtered and disinfected by an approved process and meet the following requirements:

- **Total Coliform.** *"The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed a most probable number (MPN) of 2.2 per 100 mL utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed a MPN of 23 per 100 mL in more than one sample in any 30 day period. No sample shall exceed a MPN of 240 total coliform bacteria per 100 mL."*

- **Turbidity.** *"... the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU at any time."*

Title 22 includes various provisions related to sampling and analysis to verify compliance with the above effluent quality requirements. The sampling requirements are established to assure protection of the public health because there is significant risk of human exposure to the recycled water. It is assumed that these sampling provisions (i.e., continuous turbidity monitoring and coliform sampling) would be incorporated into the design and operations plan for a reclamation facility to serve the Civic Center area. Title 22 also includes provisions for emergency storage (one day of design flow) and redundancy in various treatment processes to ensure continuous and

reliable operation. It is assumed that these provisions would also be incorporated into the system design.

### 5.2.2 Effluent Standards

Anticipated effluent quality standards for a tertiary recycled water treatment facility are listed in **Table 5-1**.

**Table 5-1. Anticipated Effluent Concentration Requirements for Malibu Civic Center Wastewater Reclamation Facility**

| *Constituent* | *Average* | *Daily Maximum* |
|---|---|---|
| Biochemical Oxygen Demand (mg/L) | 10 | 30 |
| Total Suspended Solids (mg/L) | 10 | 30 |
| Turbidity (NTU) | 2[1] | 5[2] |
| Total Coliform (MPN/100 ml) | 2.2[3] | 23[4] |
| Total Nitrogen (mg/L) | 5. | 10 |

[1] Daily Average
[2] Not to be exceeded more than 5% of the time; no samples > 10 NTU
[3] Median
[4] Not to be exceeded more than once in any 30-day period.

### 5.2.3 Wastewater Flows

Treatment system feasibility was studied for two different flow capacities:

- 120,000 gpd - average dry weather flow; with peak daily flow of 150,000 gpd;
- 200,000 gpd - average dry weather flow; with peak daily flow of 250,000 gpd.

The smaller capacity corresponds to a service area option that would encompass solely the "high" priority Civic Center commercial properties, i.e., those within the Lagoon contributing recharge area. The higher flow capacity corresponds to a larger service area that encompasses other "high" priority sub-areas, as defined in discussed in the Needs Assessment section of this report. The wastewater design flows for both levels include a 20- to 25-percent contingency above the estimated wastewater flows developed in the Needs Assessment (**Section 3**).

## *5.3 Alternative Treatment Plant Locations*

The locations considered for the construction of a community wastewater treatment-reclamation plant for the Civic Center area included the three large vacant properties - Chili Cook-off, Wave and Yamaguchi parcels - that were also evaluated as potential wastewater dispersal sites. A

comparative review was made of the feasibility of these sites for a wastewater treatment facility according to several criteria, including available land area, topography, depth to groundwater, proximity to water courses, drainage and flooding, vegetation and habitat, site access, adjacent land uses, proximity to public areas or private residences, visual considerations. **Table 5-2** summarizes the results of this comparative review.

While we found that any one of the three sites could adequately accommodate a wastewater treatment plant, the preference among the sites is in the following order:

1. Wave
2. Yamaguchi
3. Chili Cook-off

The Wave and Yamaguchi sites are very similar, and both are preferred over the Chili Cook-off site primarily due to: (a) greater depth to groundwater; (b) greater distance from water courses and flooding hazards; (c) more remote location relative to public use areas; and (d) reduced potential for visual impacts. The factor more strongly in favor of the Chili Cook-off site is the slightly lower elevation and flat topography that would result in lower energy costs (for pumping) and possibly lower construction costs. The Wave site is favored over the Yamaguchi site by a small amount due to the slightly greater distance to public areas, private residences, and water courses for storm drains.

## *5.4 Treatment Plant Technology Alternatives*

Based on the findings from the *"Preliminary Conceptual Plan for Wastewater Reclamation in the Civic Center of Malibu, California"* (Questa, 2003), along with input obtained from the community, two basic types of treatment approaches were considered: (1) activated sludge (aeration) process with a relatively small "footprint"; and (2) wetland treatment process with greater land area requirements, but lower energy costs. Other types of wastewater treatment systems are available, such as oxidation ponds, trickling filters, intermittent sand filters; however, initial screening eliminated other alternatives due to incompatibility with the size of system (i.e., wastewater flows) required for the project, or their inability to achieve one of two primary goals: (a) small land area requirement; or (b) incorporation of wetland treatment elements.

## Table 5-2. Alternative Treatment Plant Site Characteristics

| Treatment Plant Location Alternatives | Area (acres) | Topo-graphy | Depth to Ground-water | Proximity to Water Courses | Drainage and Flooding | Vegetation/ Habitat | Site Access | Land Uses and Proximity to Public Areas | Visual Impact |
|---|---|---|---|---|---|---|---|---|---|
| Chili Cook-off | 19.6[1] | Elevations 16 ft. to 20 ft. AMSL; relatively flat, minimal grading and soil disruption | 12 to 15 ft. | Remnant drainage channel crosses site | 100-year floodplain extends over most of the site, with estimated 2-ft. flood depths | Disturbed; grass-covered | No apparent limitation; accessible from Civic Center Way | Surrounded by existing commercial/institutional uses; 100 to 200 ft. away | Highly visible location in City Center; significant screening required to minimize visual impact |
| Wave | 8.5 | Elevation approximately 50 ft. AMSL; edge of alluvial plain; slopes <10% | >30 ft. | No streams or storm drains within 800 ft. | No flooding hazards | Partly graded, disturbed; grass and brush ground cover | Accessed from La Paz Lane; adjacent to Civic Center and future commercial | Several residences approx. 500 ft. away at >150 ft. higher elevation; Civic Center 300 ft. away | Remote location at base of hills (below Harbor View); partly screened by existing and future adjacent commercial uses and Civic Center buildings |
| Yamaguchi | 16 | Elevation approximately 60 ft. AMSL; Edge of alluvial plain; slopes <10% | >30 ft. | No streams on site; nearest storm drain approx. 100 ft. to the west | No flooding hazards | Partly graded, disturbed; grass and brush ground cover | Accessed from Stuart Ranch Rd.; adjacent to existing and future commercial | Several residences approx. 300 ft. away at 150 ft. higher elevation; existing commercial 200 ft. away | Remote location at base of hills (below Harbor View); partly screened by existing and future adjacent commercial uses and Civic Center buildings |

[1] The total area of the two Chili Cook-off parcels is 19.6 acres; however, approximately 2.6 acres in the southeast corner are currently developed.

**Activated Sludge (Aeration) Systems.** The two aeration treatment options considered for this feasibility study are a sequencing batch reactor (SBR) and a membrane biological reactor (MBR). Both systems are relatively compact, can be enclosed or screened easily, and have the proven ability to produce Title 22 tertiary recycled water and to meet stringent nitrogen removal requirements. A detailed review and comparison of facility requirements and estimated costs for these two treatment options is provided in **Appendix C1**; an overview is provided below.

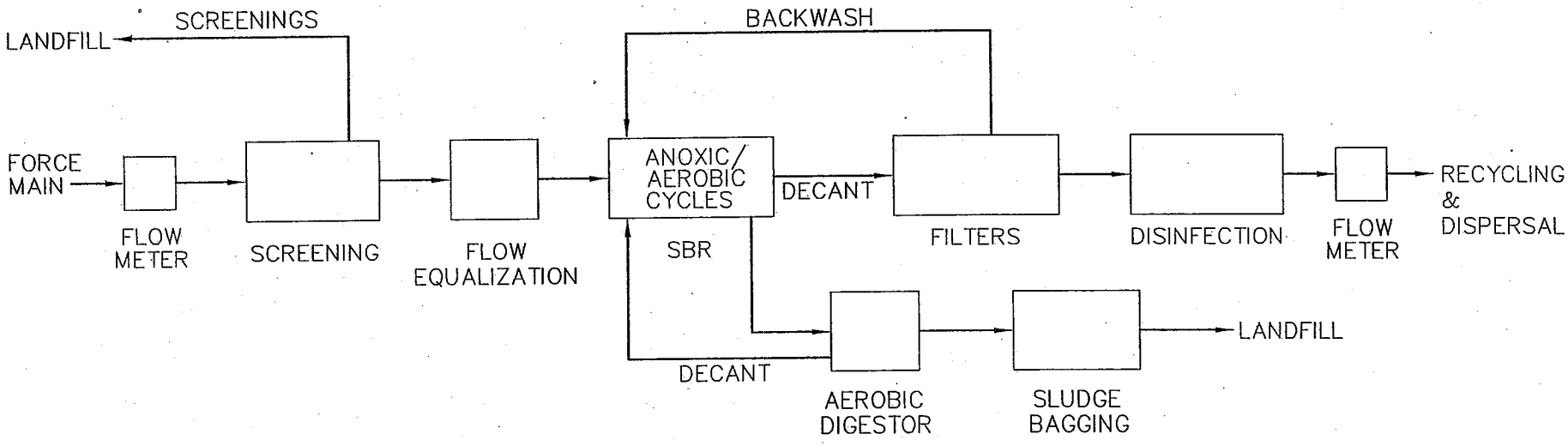
- **Sequencing Batch Reactor.** An SBR is a fill-and-draw reactor system that utilizes a single complete mix reactor in which all the steps of the activated sludge process occur. The fill-and-draw mode of operations utilizes four cycles: fill, react, settle, and decant. The activated sludge mixed liquor remains in the reactor during all cycles, thereby eliminating the need for separate secondary sedimentation tanks. To provide for nitrogen removal an anoxic sub-cycle is added during the react cycle for denitrification. The SBR system will provide an effluent suspended solids in the 20 to 30 mg/L range. However, to reliably meet the anticipated effluent total coliform limit of 2.2 MPN/100 ml, a very low turbidity effluent is required. Therefore, filtration is required to provide suspended solids at a range of 5 to 10 mg/L. An SBR treatment system will consist of influent flow metering, screening, flow equalization, the SBR system, filtration, disinfection, effluent flow metering, an aerated sludge tank, and sludge dewatering (see **Figure 5-1**). Dewatered sludge would be hauled regularly for disposal at an approved landfill site. The principal manufacturers of SBR systems are Fluidyne, Cass, and Aqua Aerobics.

  The facilities required for the SBR system are a concrete rectangular tank divided into five cells (an influent equalization cell, two SBR cells, an effluent equalization cell, and the sludge aeration cell), pumps, electrically actuated valves, blowers, level controls, two dissolved oxygen meters, two decanters, a programmable logic controller (PLC), and filtration. The screened raw wastewater is discharged to the influent equalization cell. The raw wastewater is aerated in the influent equalization cell and pumped to either SBR 1 or 2 via an electrically actuated valve. In either SBR, the wastewater is treated during aeration and anoxic cycles and a settle cycle. The treated wastewater is discharged to the effluent equalization cell during the decant cycle. The secondary treated water is pumped to the filters from the effluent equalization cell.

- **Membrane Bioreactor.** An MBR is a reactor system that utilizes a single complete mix reactor in which all the steps of the activated sludge process occur with a membrane filter system submerged in the reactor. The membrane filter system filters the water continuously from the reactor by either gravity or the suction from a pump. As with the SBR, the activated sludge mixed liquor remains in the reactor during all cycles, thereby eliminating the need for separate secondary sedimentation tanks. In addition, the filtration system is located within the reactor, thereby eliminating the extra space required for a filter system. To provide for nitrogen removal an anoxic stage is added for denitrification. An MBR treatment system will consist of influent flow metering, screening, flow equalization, the MBR system, disinfection, effluent flow metering, an aerated sludge tank, and sludge dewatering (see **Figure 5-2**). Dewatered sludge would be



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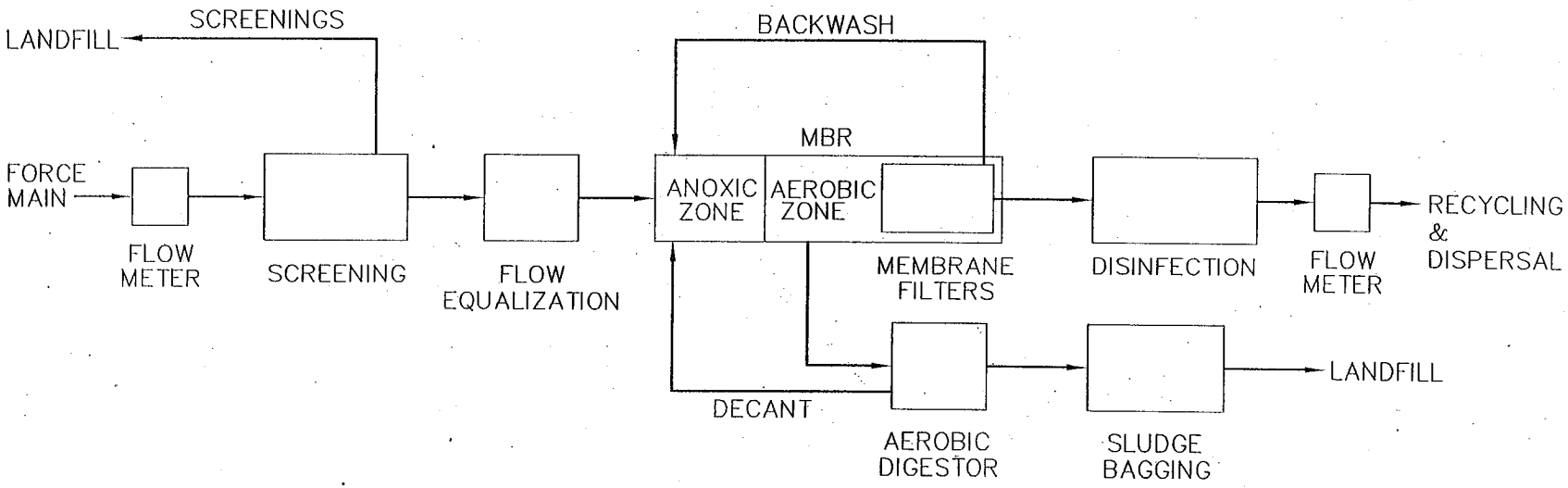



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**MALIBU CIVIC CENTER INTEGRATED WATER QUALITY MANAGEMENT FEASIBILITY STUDY**

**FLOW DIAGRAM FOR SBR WASTEWATER TREATMENT RECLAMATION SYSTEM**

FIGURE 5-1




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**MALIBU CIVIC CENTER INTEGRATED WATER QUALITY MANAGEMENT FEASIBILITY STUDY**

**FLOW DIAGRAM FOR MBR WASTEWATER TREATMENT RECLAMATION SYSTEM**

FIGURE
5-2

hauled regularly for disposal at an approved landfill site. The principal manufacturers of MBR systems are Zenon, Kubota, Mitsubishi, and Ionics.

The facilities required for the MBR system are a concrete rectangular tank divided into two cells (an anoxic zone and the aerated zone), pumps, electrically actuated valves, blowers, level controls, a programmable logic controller (PLC), and ultra-filtration membrane filter. The screened raw wastewater is discharged to the anoxic cell. The raw wastewater is mixed with recirculated mixed liquor in the anoxic cell and then flows to the aeration cell. In the aeration cell, the wastewater is aerated through a grid of fine bubble diffusers connected to positive displacement blowers. The ultra-filtration membranes are immersed directly in the aerated mixed liquor and are connected to the suction side of a centrifugal pump. The wastewater is biologically treated in the anoxic/aerobic bioreactor and the clean permeate is drawn through the membranes and discharge to the disinfection system. The MBR system will provide an effluent suspended solids in the less than 5 mg/L range and turbidity of <1 NTU.

**Wetland Treatment Systems.** Three types of constructed wetlands were identified and evaluated for wastewater treatment – (1) Subsurface Flow Constructed Wetland (SFCW); (2) Tidal Flow Constructed Wetland (TFCW); and (3) Free Surface Wetland (FWS). In general, wetland systems are viewed favorably because of the passive (low energy) treatment processes involved, low sludge production, and aesthetic attributes. The disadvantages stem from the significant amount of land area required, along with limited reliable nitrogen removal capabilities for some types of wetland systems. Wetland treatment systems can provide secondary or advanced secondary level of treatment; but in all cases must be followed by conventional filtration and disinfection processes in order for the water to meet standards for tertiary recycled water uses. Technical literature describing these types of wetland systems is provided in **Appendix C-2**.

- **Subsurface Flow Constructed Wetland.** The SFCW has limited applicability for this project due to the relatively low potential for nitrogen removal and high relative land use requirements. An SFCW (sometimes called a "vegetated submerged bed" filter) is commonly used for polishing sewage effluent prior to final disposal; but they have also been used as the principal biological treatment process, especially in small flow applications. They generally consist of beds or channels filled with gravel, sand or other permeable media planted with emergent wetland vegetation. Bullrush and cattail are the most common vegetation used in these systems. The system operates essentially as a horizontal trickling filter. The water flows by gravity through the bed substrate where organic solids are trapped and settle on the rock surfaces, and are then subject to biological degradation by a mixture of facultative (i.e., aerobic and anaerobic) microbes living within the rock-plant root complex. With a constant ponded water depth of typically about two feet, the SFCW has both anaerobic and aerobic zones. Oxygen enters the rock bed through direct atmospheric diffusion and through leakage from plant roots. In order to produce water suitable for recycling uses, the effluent from the SFCW would have to filtered and disinfected in a similar manner as for the SBR and MBR. Land area requirements are estimated to range from about 5 to 8 acres for wastewater flows considered for this project. Because of the limited ability for nitrogen removal and the large land area requirements, it is not recommended for further evaluation.

- **Tidal Flow Constructed Wetland.** The TFCW is a closed system, consisting of a series of planted rock beds or "cells", similar to the SFCW. The key difference is that the TFCW is modified to include flood and drain cycles to provide alternating saturated and unsaturated conditions. This feature allows for creation of alternating conditions amenable to nitrification and denitrification, promoting a higher level of nitrogen removal than can be obtained in an SFCW; this system is reported to be capable of achieving effluent nitrogen levels of 10 mg/L or better. This technology is relatively new and is not in widespread application. Therefore, performance data relative to meeting stringent nitrogen water quality objectives is limited; a decision to employ this technology for a community system to serve the Malibu Civic Center should await further research and testing. This system is more energy intensive than the SFCW, due to the pumping requirements for the flood and drain cycles. However, energy requirements are still only about 25 to 30 percent of that required for an activated sludge (aeration) system. The land area requirements for a TFCW are estimated to be in the range of about 2.0 to 3.0 acres for the range of flows considered for a treatment system for the Civic Center area. While there is insufficient operating data and experience to recommend this treatment technology, it may warrant consideration in any follow-up detailed facility planning study for this project.
- **Free Water Surface Wetland.** A free water surface wetland (FWS) is essentially an open water pond system that incorporates aquatic vegetation (submerged, floating, and emergent) to provide an advanced secondary level of wastewater treatment. It can be aesthetically attractive; however, it has large land area requirements. The land area requirements for an FWS wetland are estimated to range from a low of about 5 to 6 acres to a high of 11 to 12 acres for the range of potential flows in the Civic Center area. A FWS provides better treatment when constructed in a series of cells or zones, with floating and emergent vegetation in the first and last zones, and open water conditions in between. While the aesthetic and environmental attributes of this type of wetland treatment system are attractive, the large land requirement would significantly detract from the available land area that could be used for either treated wastewater irrigation/percolation, or for stormwater detention and treatment. Stormwater cannot be introduced into or commingled with the wastewater in an FWS for integrated treatment, unless approved as a surface water discharge under the National Pollutant Discharge Elimination System (NPDES). This alternative is not recommended for further consideration.

## 5.5 *Estimated Costs*

Estimated construction costs for a Title 22 water recycling facility utilizing an SBR and an MBR treatment process are presented in **Table 5-3** for the two treatment capacities considered for the Civic Center area. Supporting itemized cost data are included in **Appendix C-1**.

Annual operation and maintenance costs are estimated to be similar for both treatment systems, ranging from a low of about $270,000 for the 120,000-gpd option to a high of $318,000 for the 200,000-gpd option. A detailed breakdown of these cost estimates is provided in **Appendix C-1**.

Table 5-3. Estimated Wastewater Treatment Construction Cost Summary

| ITEM | 120,000-GPD Treatment Capacity | | 200,00-GPD Treatment Capacity | |
|---|---|---|---|---|
| | SBR | MBR | SBR | MBR |
| Headworks | $ 159,000 | $ 159,000 | $ 161,000 | $ 161,000 |
| Odor Control System | $ 37,000 | $ 37,000 | $ 46,000 | $ 37,000 |
| Treatment System | $ 592,000 | $ 987,000 | $ 768,000 | $ 1,447,000 |
| Filter System | $ 120,000 | $ - | $ 147,000 | $ - |
| Disinfection | $ 46,530 | $ 46,530 | $ 54,600 | $ 54,600 |
| Sludge Handling | $ 103,000 | $ 103,000 | $ 103,000 | $ 103,000 |
| Laboratory | $ 113,575 | $ 113,575 | $ 113,575 | $ 113,575 |
| Miscellaneous | $ 387,000 | $ 477,000 | $ 460,000 | $ 632,000 |
| Contingency | $ 233,716 | $ 288,466 | $ 277,976 | $ 382,226 |
| **TOTAL** | **$ 1,791,821** | **$ 2,211,571** | **$ 2,131,151** | **$ 2,930,401** |

## *5.6 Summary*

The results of the comparative analysis favors locating the treatment facility at either the Wave or Yamaguchi property, as compared with the Chili Cook-off site, because of the more remote proximity to public areas and the consequent reduction in the degree of potential visual, odor, noise or other nuisance impacts.

The analysis determined that either a sequencing batch reactor (SBR) or membrane bioreactor (MBR), including tertiary filtration and disinfection facilities, are well suited for the project needs. Our study did not determine a strong preference between the SBR and MBR treatment technologies for the two levels of capacity reviewed. The SBR is estimated to be less costly; however, because of the smaller land requirements, there would be greater design flexibility and perhaps lower cost to enclose the MBR, especially for the larger plant size. The overall land area required for a community treatment-reclamation facility would be on the order of 0.5 to 1.0 acre.

Three types of constructed wetlands were evaluated for wastewater treatment - Subsurface Flow Constructed Wetland (SFCW); Tidal Flow Constructed Wetland (TFCW); and Free Surface Wetland (FWS). Any of these alternatives would provide basic secondary treatment or advanced secondary treatment, and could produce tertiary recycled water with the addition of filtration and disinfection facilities. The SFCW is limited in the relatively low potential for nitrogen removal and not recommended for further consideration. The FWS would require a minimum of 5 to 6 acres, and possible as much as 11 to 12 acres, eliminating the use of this land area for other activities, such as stormwater detention-treatment or irrigated open space. The Tidal Flow Constructed Wetland requires the least amount of land area and has potentially high nitrogen removal capabilities; however, it is a relatively new innovation with limited verified performance history. The additional land area requirement for a TFCW system has been estimated to be approximately 1 to 2 acres more than for the more conventional SBR or MBR systems.

# 6.0 Reclaimed Water Reuse And Dispersion

Properties with open space that are potentially available for purchase were evaluated for their potential to assimilate reclaimed wastewater via landscape irrigation and groundwater percolation. The principal sites evaluated included the Chili Cook-off parcels, the Wave property, and the Yamaguchi properties (**Figure 6-1**). The Chili Cook-off parcels are currently owned by the Malibu Bay Company and are located north of PCH, west of Webb Way and south of Civic Center Way. The Wave property is currently owned by Pepperdine University and is located north of the County Courthouse on Civic Center Way. The Yamaguchi properties are located along Stuart Ranch Road. The lower Yamaguchi property is north of Civic Center Way, west of Stuart Ranch Road, and includes the abandoned greenhouses south of the current site of Malibu City Hall.

## *6.1 Estimated Capacities*

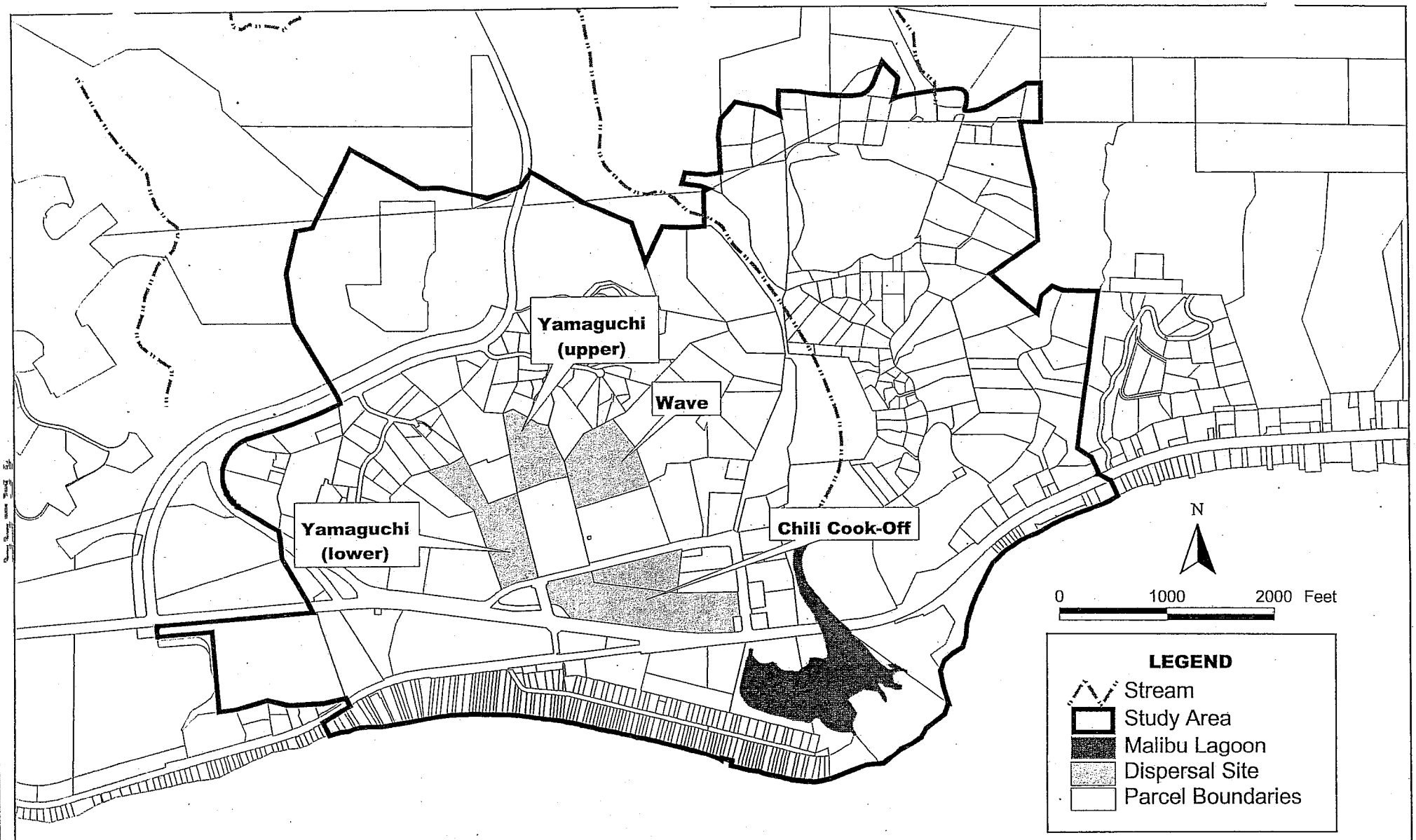
The capacity of each of the principal sites was evaluated for dispersal of reclaimed water via irrigation reuse and percolation to groundwater; the results are summarized in **Table 6-1**. These estimates are preliminary due to reliance on limited existing information and will need to be refined once site-specific data are obtained.

**Table 6.1. Dispersal Site Summary**

| Site Name | Total Area (acres) | Potentially Suitable Area for reclaimed water percolation (acres) | Estimated capacity for reclaimed water percolation (gpd) | Potentially suitable area for reclaimed water irrigation (acres) | Estimated capacity for reclaimed water irrigation (gpd) | Total Estimated Capacity (gpd) |
|---|---|---|---|---|---|---|
| Chili Cook-off | 19.6 | 14 | 35,000 | 15 | 27,000 | 62,000 |
| Wave/Pepperdine | 8.5 | 4 | 45,000 | 5 | 9,000 | 54,000 |
| Yamaguchi (lower) | 9.6 | 5.5 | 22,000 | 8 | 14,000 | 36,000 |
| Yamaguchi (upper) | 6.4 | 1.7 | 4,000 | 2.5 | 4,000 | 8,000 |
| *SUBTOTALS* | | | *106,000* | | *54,000* | *160,000* |

### 6.1.1 Landscape Irrigation Reuse

**Water Balance Methodology.** An irrigation soil moisture balance analysis, or "water balance," was completed to estimate the irrigation water use capacity of the Malibu Civic Center area in general. A further refinement of the method used in the Preliminary Conceptual evaluation (Questa, 2003) was used. This gives an approximation of the amount of water lost to evapotranspiration as well as the net amount of water lost to percolation past the root zone. We conducted the analysis for pre- and post-development conditions; i.e., existing unimproved or




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Project No.:
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8 March 2005
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## DEDICATED DISPERSAL SITES

**Malibu Civic Center Integrated Water Quality Management Feasibility Study**

FIGURE

6-1

natural open space and irrigated landscape conditions. The analysis involves the construction of a water balance accounting model that centers on the effective soil moisture reservoir – "water holding capacity" or Available Water Capacity, AWC – of the project area, which is estimated from soil properties. The soil moisture reservoir provides a moisture bank for the vegetation, which minimizes infiltration past the root zone. The model equates the outflows to the inflows plus the change in storage over a period of time. Inflow includes precipitation and applied irrigation water. Outflow includes evapotranspiration, deep percolation (i.e. recharge) to the underlying soil strata when the water holding capacity is reached, and surface runoff. In the analysis, it is assumed that water is stored in the soil column within the limits of the AWC, and is assumed to be available for vegetative uptake. When the AWC is reached, excess water is considered lost to deep percolation.

Generally, the available water holding capacity is exceeded in the height of the rainy season and decreases to zero during the summer months.

The analysis utilizes an established methodology that dates back to the 1950s ("The Water Balance", Thornthwaite and Mather, Drexel Institute of Technology, 1955), and is widely accepted and relied upon extensively for irrigation planning, design, and operations throughout California. The analysis relies on reference evapotranspiration data that have been developed and are periodically updated from time-to-time by the U.C. Cooperative Extension from special studies, improved climatic information, and other advances in irrigation science.

**Analysis and Results**. The water balance analysis was completed using available daily rainfall data for "average" and "wet" year conditions, using recorded rainfall data for Santa Monica obtained and managed by the California Department of Water Resources. The data for Water Year 1999-2000 were representative of near average conditions (approximately 12 inches of rainfall); the data for the 1994-95 Water Year (24.85 inches of rainfall) were selected to represent a typical wet year. Daily rainfall records for 1997-98 (El Niño) were incomplete and could not be used.

The results of the water balance analysis are summarized in **Tables 6-2** and **6-3**, for average and wet year conditions, respectively. The tables show the monthly accounting of water in volumes and rates (i.e., gallons per day) that would result from an assumed supply of 2,000 gpd of recycled irrigation water per acre. The tables show: (a) the amount of actual water that could be applied for irrigation; (b) the amount (from the assumed 2,000 gpd supply) that would need to diverted elsewhere (i.e., to percolation system) during wet weather periods; and (c) the resultant amount that would infiltrate to the groundwater system as "irrigation seepage losses" during the wet season. As indicated, the water balance results show the following:

> **Average Year**. In average rainfall years, an irrigation rate of 2,000 gpd per acre could be used in all but a few winter months, when up to about 800 gpd may need to be diverted to an alternate percolation system for dispersal. In contrast, in the summer months, the irrigation demand would increase to as much as 3,000 to 4,000 gpd. On an annual basis, the average amount of water used for irrigation is estimated from this analysis to be approximately 2,760 gpd. The water balance also shows projected "irrigation seepage losses" to groundwater of about 315 gpd, which equates to 11% of the average irrigation flow (2,750 gpd).

## Table 6-2. Water Balance Analysis Summary for Average Conditions

| WATER YEAR 1999-2000<br>Daily Wastewater Flow = 2,000 gpd | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Rainfall | Existing Infiltration to Groundwater | | Total WW Applied to Irrigation | | Total WW Diverted to Leachfield Area | | Total Infiltration to Groundwater | | Net Infiltration to Groundwater | |
| | Total (in) | Total (gal) | gpd (gal) | Total (gal) | gpd (gal) | Total (gal) | gpd (gal) | Total (gal) | gpd (gal) | Total (gal) | gpd (gal) |
| October | 0.14 | 0 | 0 | 62,000 | 2,000 | 0 | 0 | 0 | 0 | 0 | 0 |
| November | 0.54 | 0 | 0 | 60,000 | 2,000 | 0 | 0 | 0 | 0 | 0 | 0 |
| December | 0.08 | 0 | 0 | 62,000 | 2,000 | 0 | 0 | 0 | 0 | 0 | 0 |
| January | 1.09 | 0 | 0 | 47,231 | 1,524 | 14,769 | 476 | 23,491 | 758 | 23,491 | 758 |
| February | 5.95 | 61,545 | 2,198 | 32,965 | 1,177 | 23,035 | 823 | 138,427 | 4,944 | 76,881 | 2,746 |
| March | 2.30 | 43,002 | 1,387 | 50,836 | 1,640 | 11,164 | 360 | 49,907 | 1,610 | 6,906 | 223 |
| April | 1.47 | 0 | 0 | 70,081 | 2,336 | 2,000 | 67 | 1,727 | 58 | 1,727 | 58 |
| May | 0.04 | 0 | 0 | 119,874 | 3,867 | 0 | 0 | 0 | 0 | 0 | 0 |
| June | 0.10 | 0 | 0 | 133,691 | 4,456 | 0 | 0 | 0 | 0 | 0 | 0 |
| July | 0.11 | 0 | 0 | 140,117 | 4,520 | 0 | 0 | 0 | 0 | 0 | 0 |
| August | 0.11 | 0 | 0 | 129,280 | 4,170 | 0 | 0 | 0 | 0 | 0 | 0 |
| September | 0.06 | 0 | 0 | 102,225 | 3,407 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 11.99 | 104,547 | - | 1,010,301 | - | 50,968 | - | 213,552 | - | 109,005 | - |
| Average | - | 8,712 | 299 | 84,192 | 2,758 | 4,247 | 144 | 17,796 | 614 | 9,084 | 315 |

## Table 6-3. Water Balance Analysis Summary for Wet Year Conditions

| WATER YEAR 1994-1995<br>Daily Wastewater Flow = 2,000 gpd | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Rainfall | Existing Infiltration to Groundwater | | Total WW Applied to Irrigation | | Total WW Diverted to Leachfield Area | | Total Infiltration to Groundwater | | Net Infiltration to Groundwater | |
| | Total (in) | Total (gal) | gpd (gal) | Total (gal) | gpd (gal) | Total (gal) | gpd (gal) | Total (gal) | gpd (gal) | Total (gal) | gpd (gal) |
| October | 0.20 | 0 | 0 | 58,911 | 1,900 | 3,089 | 100 | 255 | 8 | 255 | 8 |
| November | 0.82 | 0 | 0 | 50,567 | 1,686 | 9,433 | 314 | 0 | 0 | 0 | 0 |
| December | 0.01 | 0 | 0 | 54,154 | 1,747 | 7,846 | 253 | 0 | 0 | 0 | 0 |
| January | 11.16 | 153,343 | 4,947 | 28,251 | 911 | 33,749 | 1,089 | 224,062 | 7,228 | 70,719 | 2,281 |
| February | 2.22 | 24,018 | 858 | 33,200 | 1,186 | 22,800 | 814 | 41,810 | 1,493 | 17,792 | 635 |
| March | 8.08 | 85,672 | 2,764 | 42,333 | 1,366 | 19,667 | 634 | 135,763 | 4,379 | 50,091 | 1,616 |
| April | 1.19 | 0 | 0 | 58,000 | 1,933 | 2,000 | 67 | 7,207 | 240 | 7,207 | 240 |
| May | 0.39 | 0 | 0 | 89,306 | 2,881 | 0 | 0 | 0 | 0 | 0 | 0 |
| June | 0.47 | 0 | 0 | 97,744 | 3,258 | 0 | 0 | 0 | 0 | 0 | 0 |
| July | 0.00 | 0 | 0 | 115,624 | 3,730 | 0 | 0 | 0 | 0 | 0 | 0 |
| August | 0.01 | 0 | 0 | 122,940 | 3,966 | 0 | 0 | 0 | 0 | 0 | 0 |
| September | 0.30 | 0 | 0 | 74,582 | 2,486 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 24.85 | 263,033 | - | 825,612 | - | 98,584 | - | 409,097 | - | 146,065 | 4,781 |
| Average | - | - | 714 | - | 2,254 | - | 273 | - | 1,112 | - | 398 |

**Wet Year**. In a wet rainfall year, a flow of 2,000 gpd per acre could also be used for irrigation in five months, 1,900 gpd per acre in two months, and lesser amount during the remaining winter months. As much as 1,100 gpd would need to be diverted for percolation during the height of the wet season. In the summer months, the irrigation demand would be as much as 3,000 to 4,000 gpd, but slightly less than for average year conditions. On an annual basis, the average amount of water used for irrigation is estimated from this analysis to be approximately 2,254 gpd for a wet rainfall year. The water balance also shows projected "irrigation seepage losses" to groundwater of nearly 400 gpd, which equates to 18% of the average irrigation flow (2,254 gpd).

To be conservative, we relied upon the results from the "wet" rainfall year analysis to estimate the irrigation dispersal capacity and the associated groundwater recharge amounts that would occur from wastewater irrigation-recycling in the Civic Center area. Specifically, we adopted the following assumptions:

- Average annual wastewater irrigation demand – 2,250 gpd/acre
- Average annual irrigation seepage losses to groundwater – 450 gpd/acre (20%)
- Net annual irrigation capacity – 1,800 gpd/acre

Based on climatic and soil similarities, the above assumptions were considered applicable to all of the irrigation reuse sites under consideration in the Civic Center area. They would not necessarily be applicable to upland sites with significantly different soil conditions. The net irrigation rate of 1,800 gpd per acre was used to develop the overall recycled water irrigation capacity estimates for each of the potential dispersal sites, as presented in **Table 6-1**.

### 6.1.2 Groundwater Percolation

The hydrogeologic site conditions were used to predict the potential rise in the water table from onsite groundwater recharge; commonly referred to as "groundwater mounding". This prediction was made by using an analytical method developed at Colorado State University (Molden and Sunada, 1988). Utilizing hydraulic conductivities, depths to groundwater and saturated thicknesses from the Risk Assessment study, the groundwater mounding was estimated. A vertical separation of two feet between the bottom of a dispersal system and the mounded water table was used as the criterion for acceptable groundwater mounding. This is considerably less than the five to ten feet required by the Los Angeles RWQCB for secondary treated wastewater, because wastewater reclamation to Title 22 tertiary recycled water treatment standards were assumed to allow dispersal to be proposed with this minimum level of groundwater separation. The mounding analysis revealed that the potential dispersal sites have an estimated capacity for approximately 4,000 to 13,000 gallons per day (gpd) of groundwater recharge on a year-round basis per acre. The variability is primarily due to the hydrogeologic factors from the Risk Assessment study.

The Wave property has a relatively high hydraulic conductivity, moderate depth to groundwater, but limited saturated thickness. The Chili Cook-off parcels have moderate hydraulic conductivity, shallower depths to groundwater, but significant saturated thickness. The Yamaguchi parcels has relatively low hydraulic conductivity, variable depths to groundwater

(deep at upper parcel and upslope end of lower parcel) and variable saturated thickness (thin at upper end of both parcels and thicker at downslope ends. Overall, the Wave property was found to have the highest percolation capacity; followed by the Chili Cook-off parcels; with the lowest apparent percolation capacity at the upper and lower Yamaguchi parcels.

Since there has been no site specific testing at either the Wave or Yamaguchi properties and minimal subsurface data collection at the Chili Cook-off site, these estimates should be considered preliminary estimates only. Additional site specific testing may reveal a higher or lower capacity. A more detailed analysis and refined estimate of the recharge/percolation capacity of the site would require the following types of site specific information: (a) thickness and the hydraulic properties of the fill material; (b) additional borings, observation wells and hydraulic conductivity testing; and (c) additional groundwater modeling incorporating new field data.

### 6.1.3 Total Assimilative Capacity of Potential Reuse/Dispersal Sites

The potential reuse/dispersal sites were evaluated for recycling treated wastewater by two means: (a) irrigation of landscape/open space areas to maximize evapotranspiration; and (b) groundwater recharge/percolation systems. The outcome of this feasibility evaluation are shown in **Table 6-1**. With a total of approximately 35 acres of the area potentially available for irrigation-disposal uses, this would translate into a total combined dispersal capacity of approximately 160,000 gallons per day for the three sites. Since, each site has limited potential as a standalone location for treatment and dispersal of wastewater for the commercial service area, our study considered how each site could be developed in conjunction with other potential wastewater dispersal sites elsewhere in the Civic Center area.

## *6.2 Distributed Wastewater Reuse & Dispersal Capacities*

Following is a feasibility level review and evaluation of various options and capacities for wastewater reuse and dispersal within the Malibu Civic Center area on sites other than the Chili Cook-off, Wave and Yamaguchi.

### 6.2.1 Distributed Reuse

Since there is limited capacity within the potential reuse/dispersal sites to meet the disposal needs of the existing major commercial properties, other existing and future dispersal and reuse capacity in the service area needs to be considered and maximized. Under this approach, the wastewater can be collected from the various commercial properties, and conveyed to a wastewater reclamation facility on one of the reuse/dispersal sites. Once treated to Title 22 reclaimed water standards with denitrification, the recycled water would be distributed in a separate piping network back to the commercial complex for dispersal in leachfields, or reuse via irrigation or toilet flushing, as applicable. This is similar to an approach considered in the 1997 Draft Specific Plan for the Civic Center area. The assumptions under this scenario include the following:

a) Existing commercial development would provide onsite or existing dispersal capacity for existing and future flows.

b) The potential for reuse of wastewater via irrigation will be maximized at the reuse/dispersal site(s).

d) All new development would also be required to provide onsite reuse/dispersal capacity via irrigation, indoor reuse, or groundwater recharge/percolation for individual project design flows.

e) Existing sites without capacity to reuse their currently permitted onsite wastewater generation capacity could potentially utilize excess capacity on designated reuse/dispersal sites or other commercial properties.

f) Water features can be incorporated into the reuse/dispersal sites for storage and evapotranspiration (irrigation) of reclaimed water.

g) Further analysis may identify expanded opportunities for reuse.

Wastewater dispersal capacity (via percolation systems and potential recycling activities) on individual commercial properties would generally be assumed to be at least equal to the wastewater flows generated by the development. However, it is recognized that some commercial properties may be found to be better served by offsite disposal facilities. Alternatively, some existing and future development projects may be able to supply surplus dispersal capacity either through percolation systems or reuse activities, including irrigation and/or toilet flushing. Some existing commercial properties are known to have very little, if any, potential for water recycling. No reasonable estimate of the surplus dispersal capacity available within the service area was possible within the limits of this study. However, it is safe to assume that the potential capacity will be significant. A preliminary review of the open space areas for several of the larger future commercial development projects indicates significant potential irrigation areas that could utilize recycled water for irrigation. Also, there are a number of existing developed irrigation uses within the Civic Center area that currently use potable water, and could potentially be converted to allow use of recycled water if it became available. A rough estimate of the acreages and potential landscape irrigation uses at existing developed properties is provided in **Table 6-4**). Taking into account the potential integrated uses of these future open space areas for storm water management, there appears to be substantial capacity for wastewater reuse and dispersal at both the undeveloped commercial properties and some existing developed properties in the Civic Center area.

Table 6-4. Estimated Potential Recycled Irrigation Capacities at Existing Developed Properties[1]

| SITE | IRRIGATION AREA (sq. ft.) | IRRIGATION POTENTIAL (gpd) |
|---|---|---|
| Malibu Country Mart (west parcels) and 23440 Civic Center Way | 17,932 | 897 |
| Charter Communications | 22,642 | 1,132 |
| County Offices | 49,407 | 2,470 |
| Perenchio Golf Course | 360,828 | 18,041 |
| Lagoon Visitors Area | 16,423 | 821 |
| Adamson House | 46,986 | 2,349 |
| Allied Nursery | 243,933 | 8,521 |
| Malibu Colony Plaza | 48,501 | 2,425 |
| Condos next to the WW treatment plant and the strip between the plant & condos | 12,907 | 645 |
| Pacific Coast Highway right-of-way | 32,211 | 1,611 |
| Bluff's Park | 251,110 | 12,556 |
| TOTAL | 1,102,880 | 51,468 |

[1] For commercial and public/institutional properties with >0.25 acres currently landscaped or potentially available.

### 6.2.2 Distributed Groundwater Percolation

Groundwater percolation is a method to return reclaimed wastewater to the hydrologic cycle using leachfields and dry wells. Existing onsite wastewater treatment systems are currently discharging of untreated effluent from the existing commercial and institutional buildings in the study area. There are exceptions throughout the study area, such as:

- The Malibu Bay Company's Malibu Colony Plaza is an exception as it discharges its septic tank effluent in to an existing leachfield in Winter Canyon;
- Los Angeles County Civic Center complex that discharges of septic tank effluent on the Wave property;
- The Maison de Ville wastewater treatment facilty that serves the condominiums in Winter Canyon.

It is likely that this existing capacity would continue to be available for dispersal of reclaimed wastewater. The actual capacity of each of these systems will have to be evaluated and

confirmed. If necessary, the onsite capacity of these systems could be enhanced by additional distribution systems or replaced by new leach fields. Distributed groundwater percolation needs to be available to handle existing wastewater flows beyond the evapotranspiration and groundwater percolation capacity of the dedicated dispersal/reuse properties. This would include existing percolation capacity and all new projects could be required to develop groundwater percolation capacity equal to the respective project's design flows.

# 7.0 Water Quality Impacts

The impacts of the wastewater alternatives were evaluated vis-à-vis benefits to nitrogen loading of surface water from groundwater in the study area and disinfection and removal of bacteria loads from the study area.

## *7.1 Nitrogen Modeling*

The three-dimensional groundwater flow and solute transport model developed for the Risk Assessment study was refined by McDonald Morrissey Associates to assess the potential water quality implications of various combinations of wastewater collection, treatment and dispersal options. A description of the modeling work and graphical presentation of results are provided in **Appendix D**. Nine options were evaluated along with a baseline condition. The analysis included existing wastewater flows as well as projected wastewater flows for future development in the Civic Center area*. A tenth option utilizing onsite systems with nitrogen removal with existing flows was analyzed in the Risk Assessment report and is presented here as an approximate comparison. The results of the nitrogen modeling analysis are summarized in **Tables 7-1** and **7-2**. The modeling alternatives are shown graphically in **Figures 7-1** through **7-8**.

The resulting nitrogen concentrations reveal that all of the options meet the 10 mg/L total nitrogen requirement of the current Basin Plan. The Regional Board is currently proposing to decrease the nitrogen objective in the Total Maximum Daily Load to 1.0 mg/L year-round (Collins, 2004). The community collection/reclamation/dispersal options all closely approach or exceed the 1 mg/L total nitrogen requirement. Due to the variability of the natural environment relative to the assumptions of the modeling, the results should be viewed as relative differences, not absolute numbers. The single site options, utilizing Chili Cook-off or Wave properties, provide a resultant groundwater concentration of 1.0 mg/L. The two highest levels of nitrogen removal (i.e., resultant groundwater concentrations) would be achieved with a community system serving only Sub-area 1, along with individual onsite nitrogen removal (50% reduction rate) in the Serra Retreat Sub-area. An equivalent reduction in nitrogen loading would be achieved by individual onsite removal of nitrogen (by 50%) for existing onsite systems in the Malibu Creek and Lagoon contributing area.

## *7.2 Bacteria Impacts*

Regarding bacteria impacts on surface water, all options assumed that the reclaimed wastewater would be disinfected. Therefore, all alternatives will virtually eliminate potential bacterial impacts from the commercial systems in Sub-area 1. Alternatives 1, 2, and 7 would also remove all OWTS from the ocean side parcels in the vicinity of Surfrider Beach.

Reclaimed water returned to groundwater via percolation would have less than 2.2 colonies per 100 mL—suitable for unrestricted recycling uses per Title 22 requirements.

---

* Projected future wastewater flows included in the model were as follows:
(1) Schultz - 4,600 gpd; (2) La Paz - 9,200 gpd; (3) Ioki - 12,605 gpd; (4) Wave - 6,500 gpd; (5) Yamaguchi - 8,000 gpd; plus a contingency of 20% to 25%.

## Table 7-1. Average Annual N Concentration in Groundwater Discharging to Malibu Creek and Lagoon

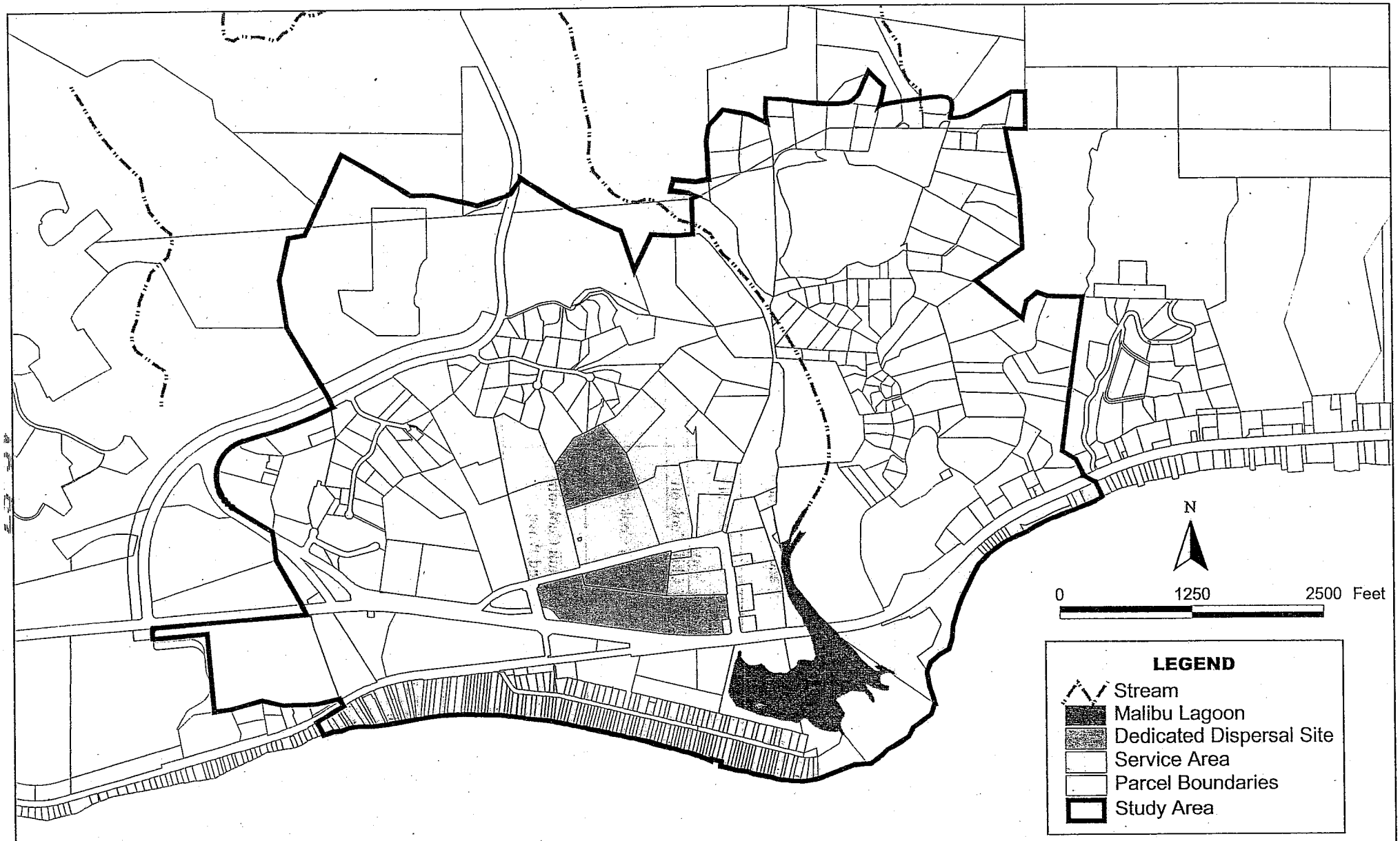
| Alternative | Service Area[1] | N Treatment Level (mg/L) | Cluster Dispersal and Recycling Sites | Average Annual N Concentration[2] (mg/L) | Comments |
|---|---|---|---|---|---|
| Baseline | Existing OWTS | None | None | **2.6** | Estimated existing flows |
| OWTS with Nitrogen Removal | Existing OWTS | 10 | None | **0.6** | All commercial and multifamily to 10 mg/L and 50% N reduction for residential systems in Malibu Creek and Lagoon Contributing Area |
| 1 | 1, 6, 9, 10, 11, 14 | 10 | Chili Cook-off and Wave | **1.2** | Includes future flows |
| 2 | 1, 6, 9, 10, 11, 14 | 10 | Chili Cook-off and Yamaguchi | **1.2** | Includes future flows |
| 3 | 1 | 10 | Chili Cook-off | **1.0** | Includes future flows |
| 4 | 1 | 5 | Wave | **1.0** | Includes future flows |
| 5 | 1 | 5 | Chili Cook-off | **1.0** | Includes future flows |
| 6 | 1 | 5 | Chili Cook-off | **0.8** | Includes future flows & 50% reduction of N via onsite systems in Serra Retreat area |
| 7 | 1, 6, 9, 10, 11, 14 | 5 | Chili Cook-off and Wave | **0.9** | Includes future flows & 50% reduction of N via onsite systems in Serra Retreat area[2] |
| 8 | 1 | 5 | Yamaguchi | **1.0** | Includes future flows[3] |
| 9 | 1 | 5 | Wave and Yamaguchi | **1.0** | Includes future flows[3] |

[1]Sub-area numbers are given in **Table 3-1**. Future flows are included in Sub-area 1 for Alternatives 1–9.
[2]Concentrations based on Table 1 in **Appendix D** Groundwater Modeling Report
[3]Alternatives 7,8 & 9 include additional future flows from Wave and Yamaguchi.

## Table 7-2. Water Quality Modeling Overall Reduction for Nitrogen (N)

| Alternative | Service Area[1] | N Treatment Level (mg/L) | Community Dispersal and Recycling Sites | Reduction in Average Daily N Discharged to Creek & Lagoon (%)[2] | Comments |
|---|---|---|---|---|---|
| Baseline | Existing OWTS | None | None | 69 | Estimated existing flows |
| OWTS with Nitrogen Removal | Existing OWTS | 10 | None | 92 | All commercial and multifamily to 10 mg/L and 50% N reduction for residential systems in Malibu Creek and Lagoon Contributing Area |
| 1 | 1, 6, 9, 10, 11, 14 | 10 | Chili Cook-off and Wave | 85 | Includes future flows |
| 2 | 1, 6, 9, 10, 11, 14 | 10 | Chili Cook-off and Yamaguchi | 86 | Includes future flows |
| 3 | 1 | 10 | Chili Cook-off | 88 | Includes future flows |
| 4 | 1 | 5 | Wave | 88 | Includes future flows |
| 5 | 1 | 5 | Chili Cook-off | 88 | Includes future flows |
| 6 | 1 | 5 | Chili Cook-off | 90 | Includes future flows & 50% reduction of N via onsite systems in Serra Retreat area |
| 7 | 1, 6, 9, 10, 11, 14 | 5 | Chili Cook-off and Wave | 88 | Includes future flows & 50% reduction of N via onsite systems in Serra Retreat area[2] |
| 8 | 1 | 5 | Yamaguchi | 87 | Includes future flows[3] |
| 9 | 1 | 5 | Wave and Yamaguchi | 88 | Includes future flows[3] |

[1]Sub-area numbers are given in **Table 3-1**. Future flows are included in Sub-area 1 for Alternatives 1–9.
[2]Percent Reduction from USEPA (2003b) estimated annual total N load from Malibu Lagoon Subwatershed (64 lb/day).
[3]Alternatives 7,8 & 9 include additional future flows from Wave and Yamaguchi, estimated to be 6,500 gpd and 8,000 gpd, respectively.




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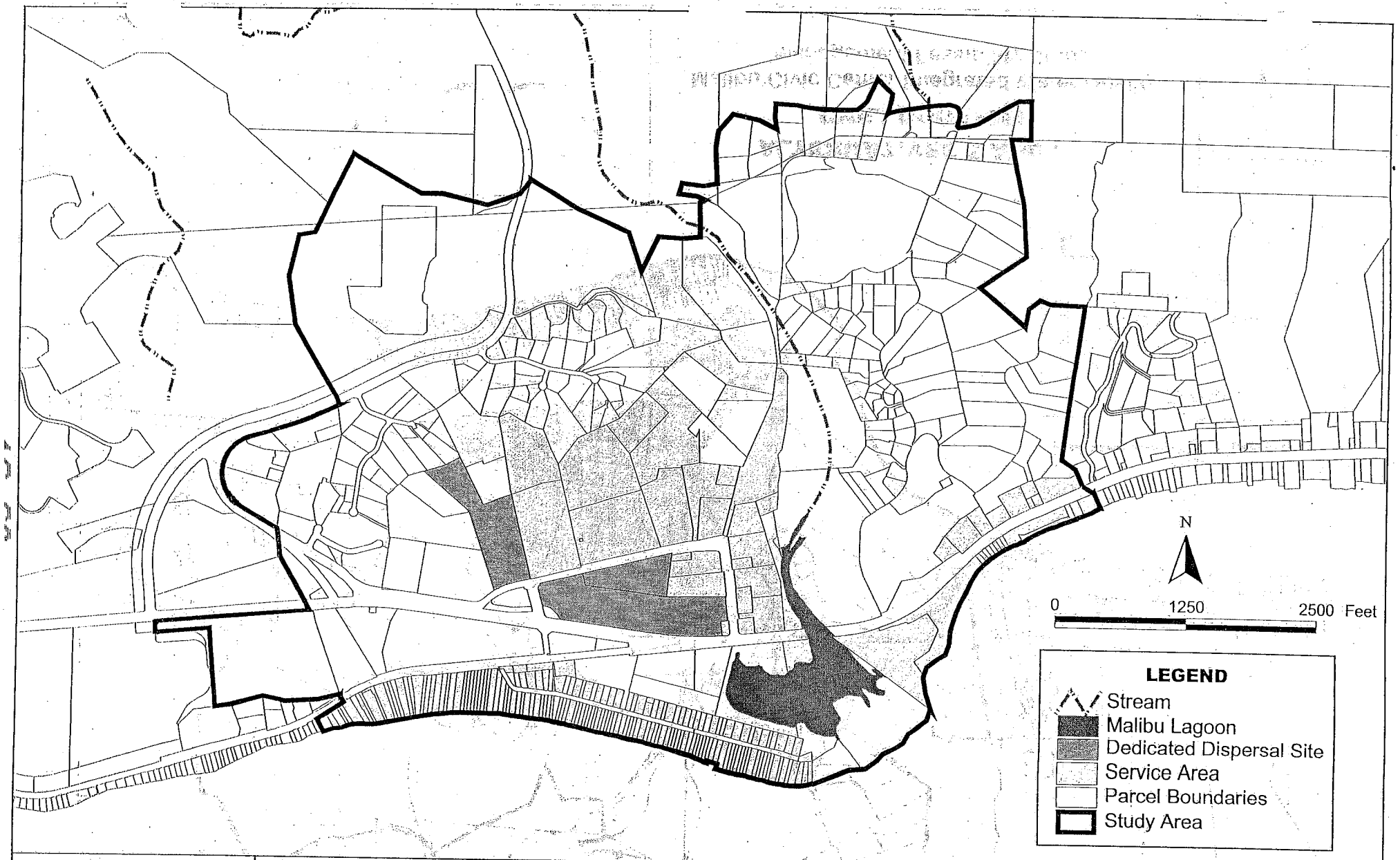
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# ALTERNATIVE 1 - WAVE AND CHILI COOK-OFF

## Malibu Civic Center Intergrated Wastewater Stormwater Management Study

FIGURE

7-1




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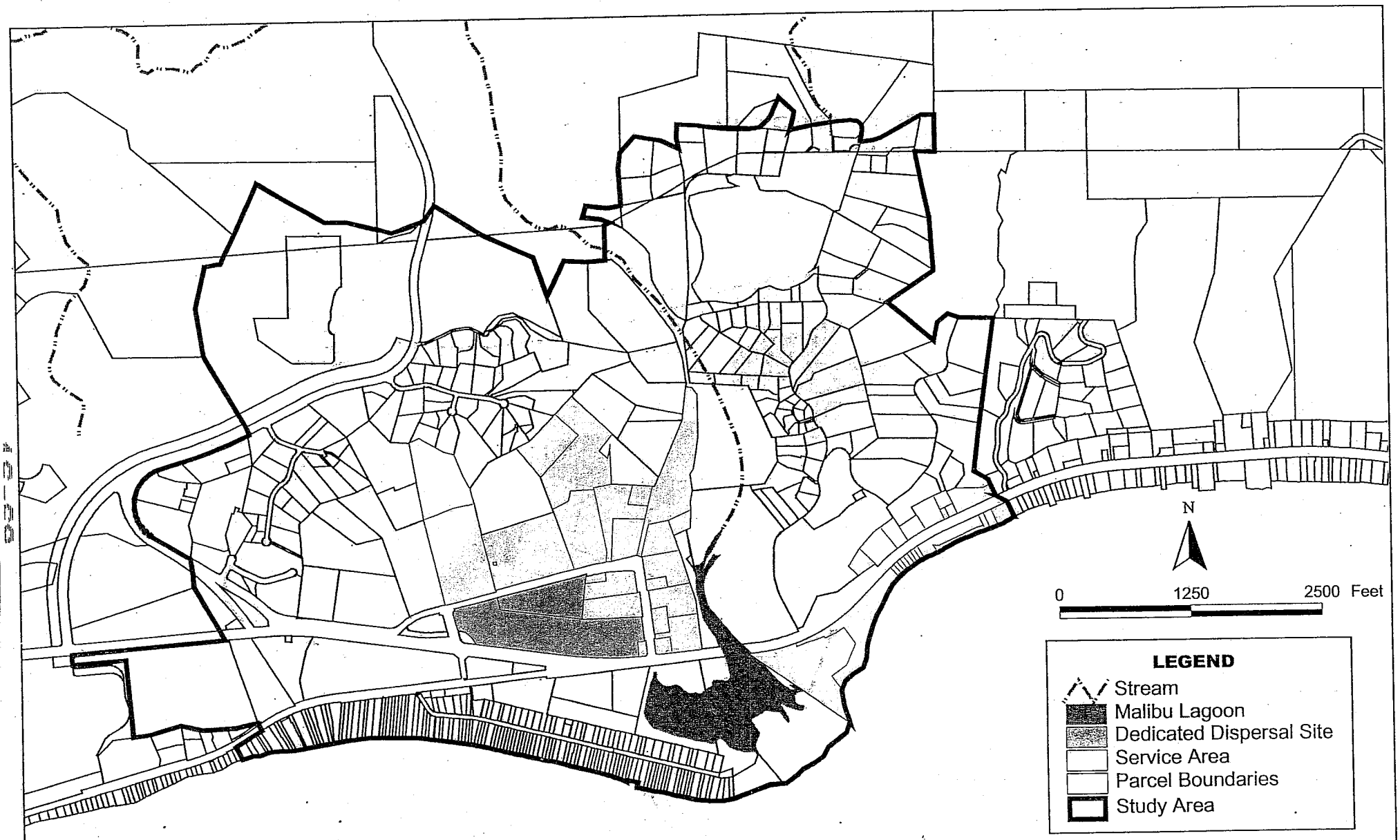
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# ALTERNATIVE 2 - LOWER YAMAGUCHI AND CHILI COOK-OFF

## Malibu Civic Center Integrated Wastewater Stormwater Management Study

FIGURE

7-2




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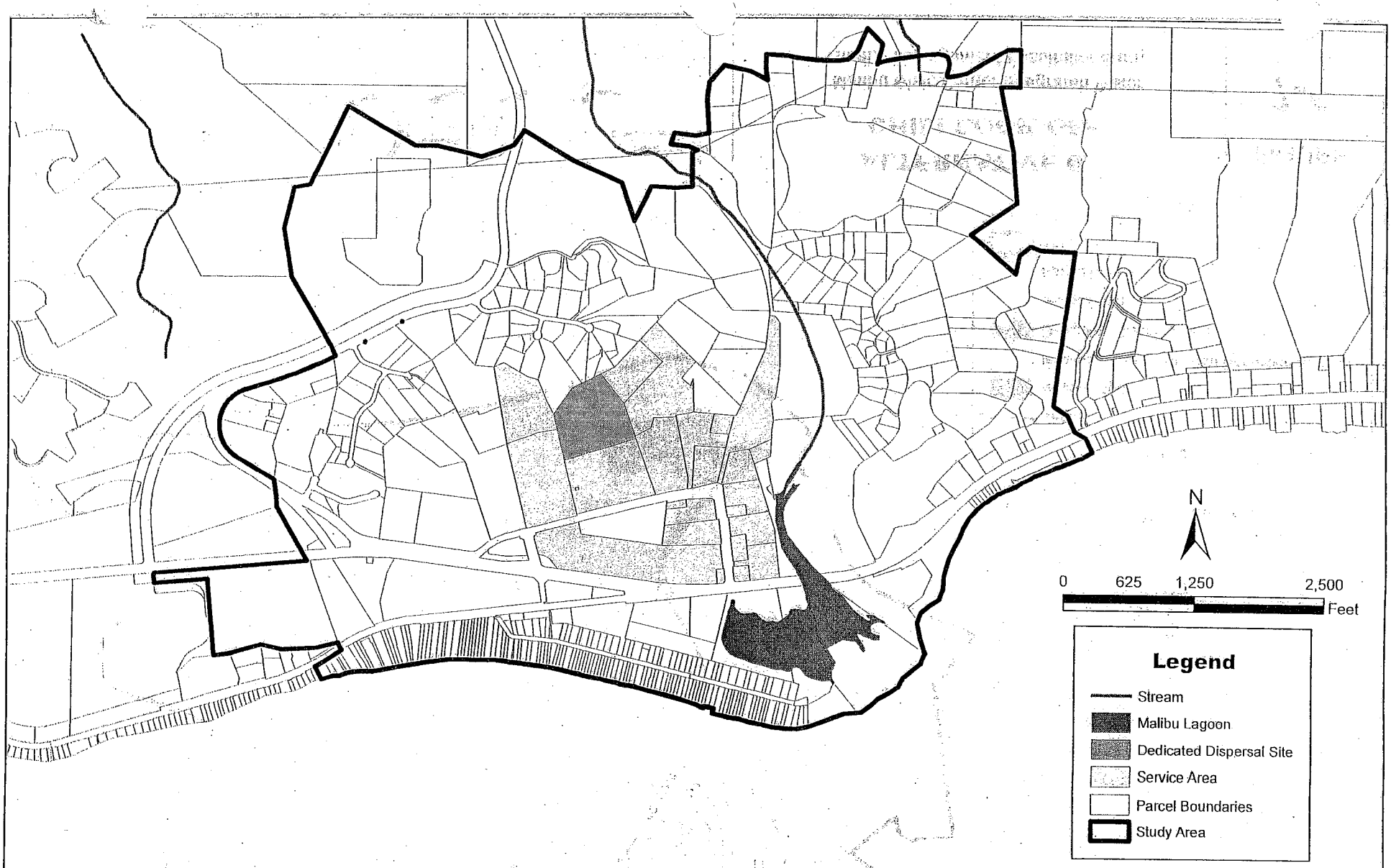
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# ALTERNATIVES 3 AND 5 - CHILI COOK-OFF

## Malibu Civic Center Integrated Water Quality Management Feasibility Study

FIGURE

7-3



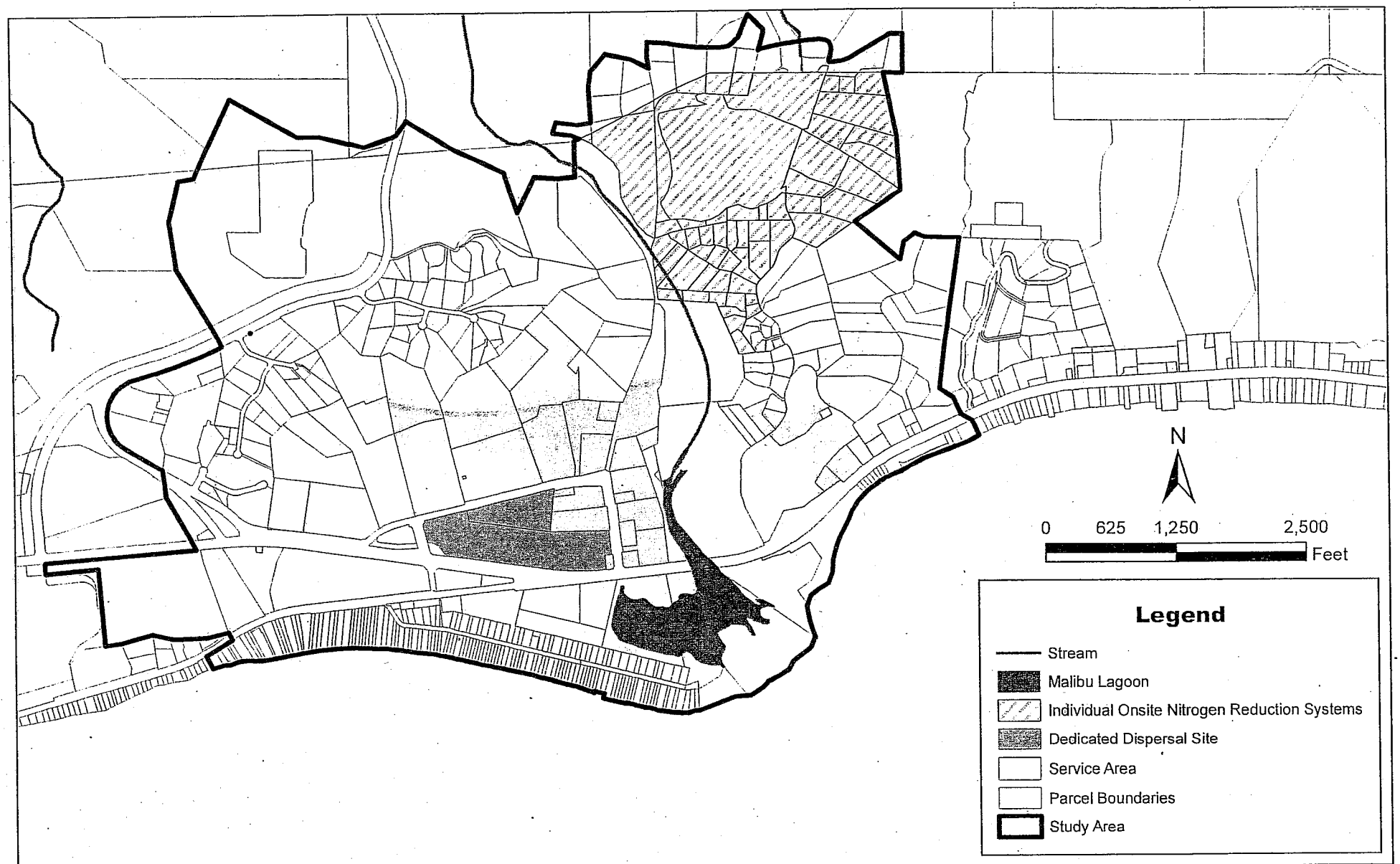

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# ALTERNATIVE 4 - WAVE

Malibu Civic Center Integrated Water Quality Management Feasibility Study

FIGURE
7-4



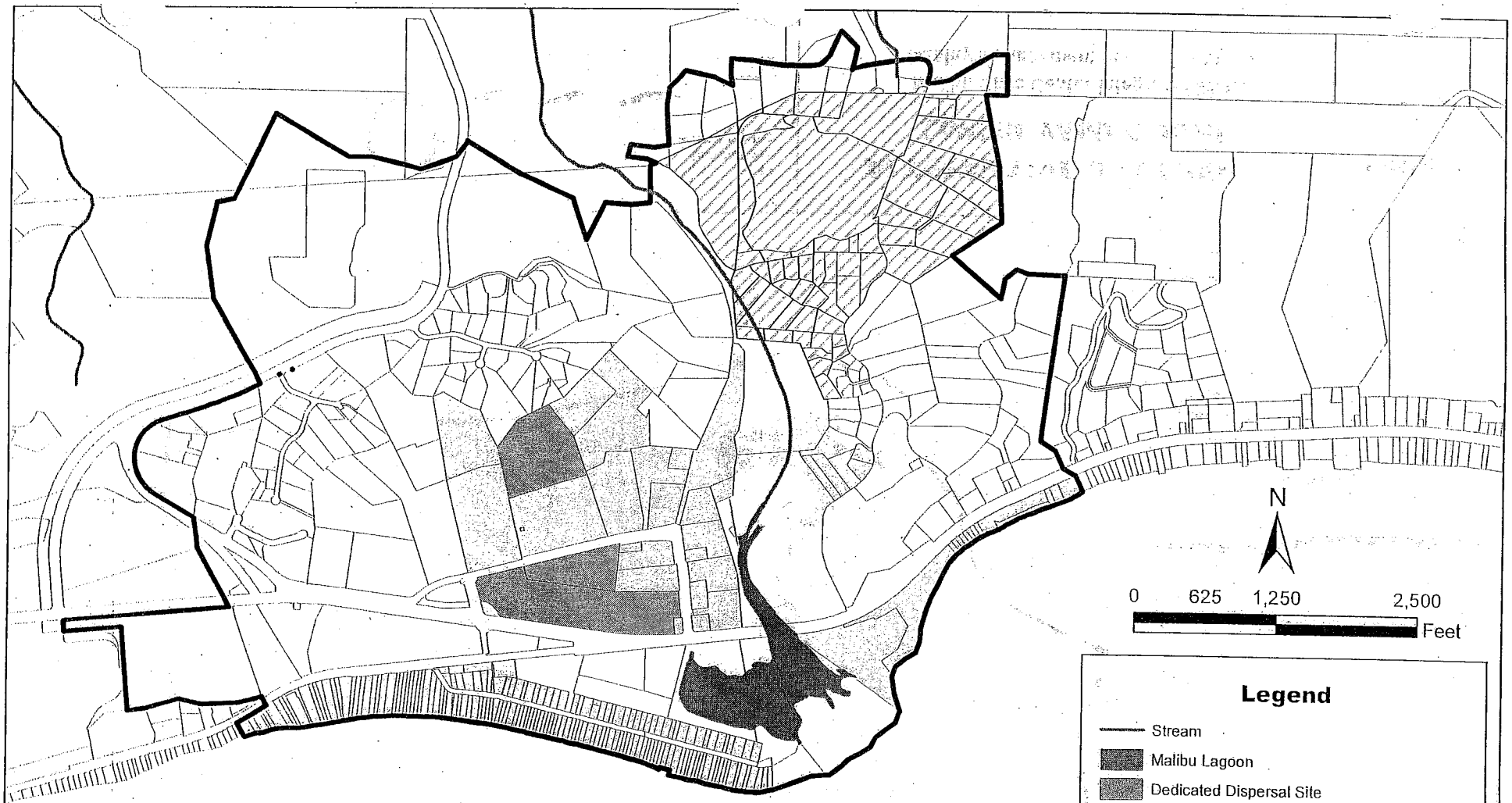

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# ALTERNATIVE 6 - CHILI COOK-OFF

Malibu Civic Center Integrated Water Quality Management Feasibility Study

FIGURE
7-5



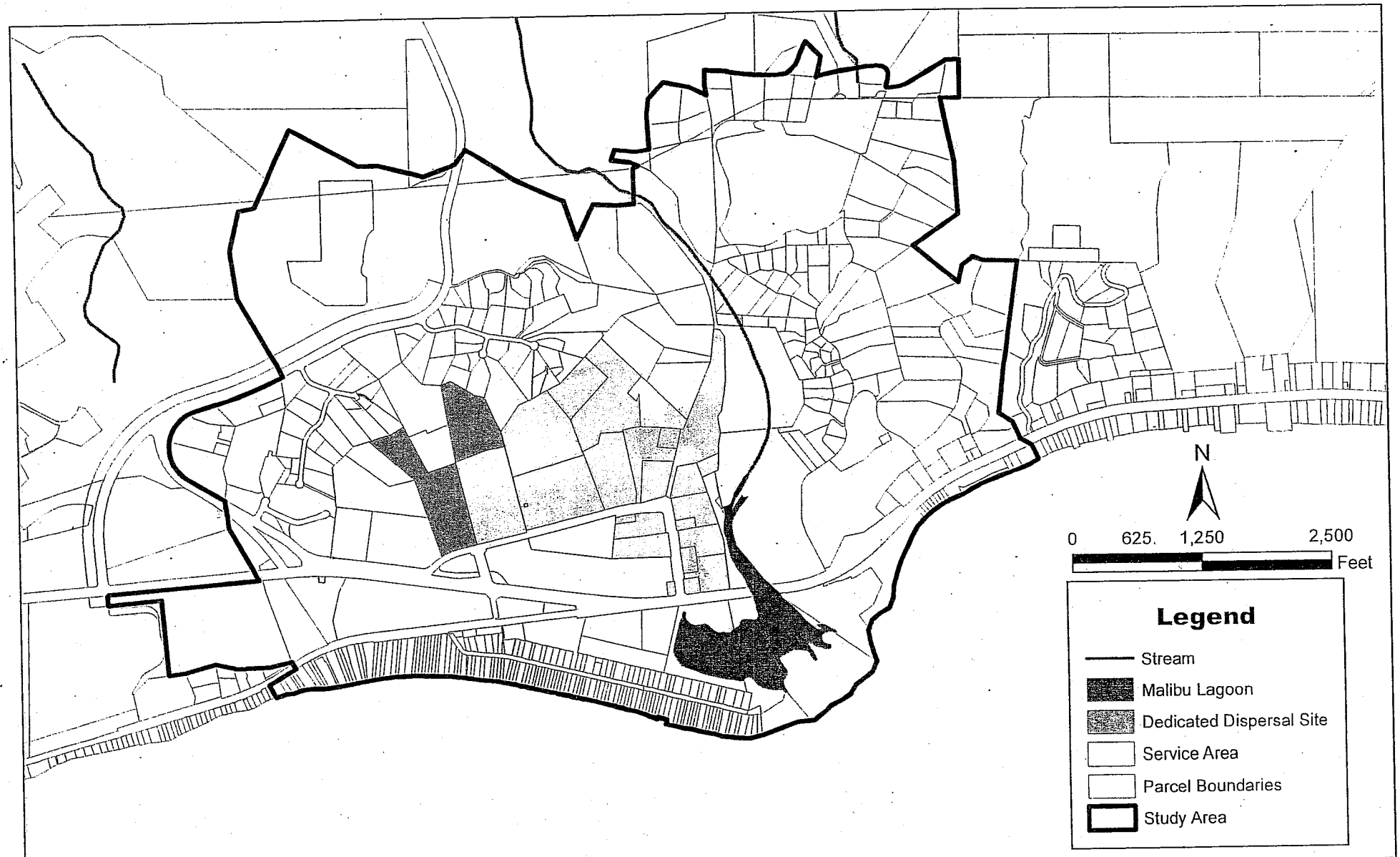

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# ALTERNATIVE 7 - CHILI COOK-OFF AND WAVE

Malibu Civic Center Integrated Water Quality Management Feasiblity Study

FIGURE
7-6



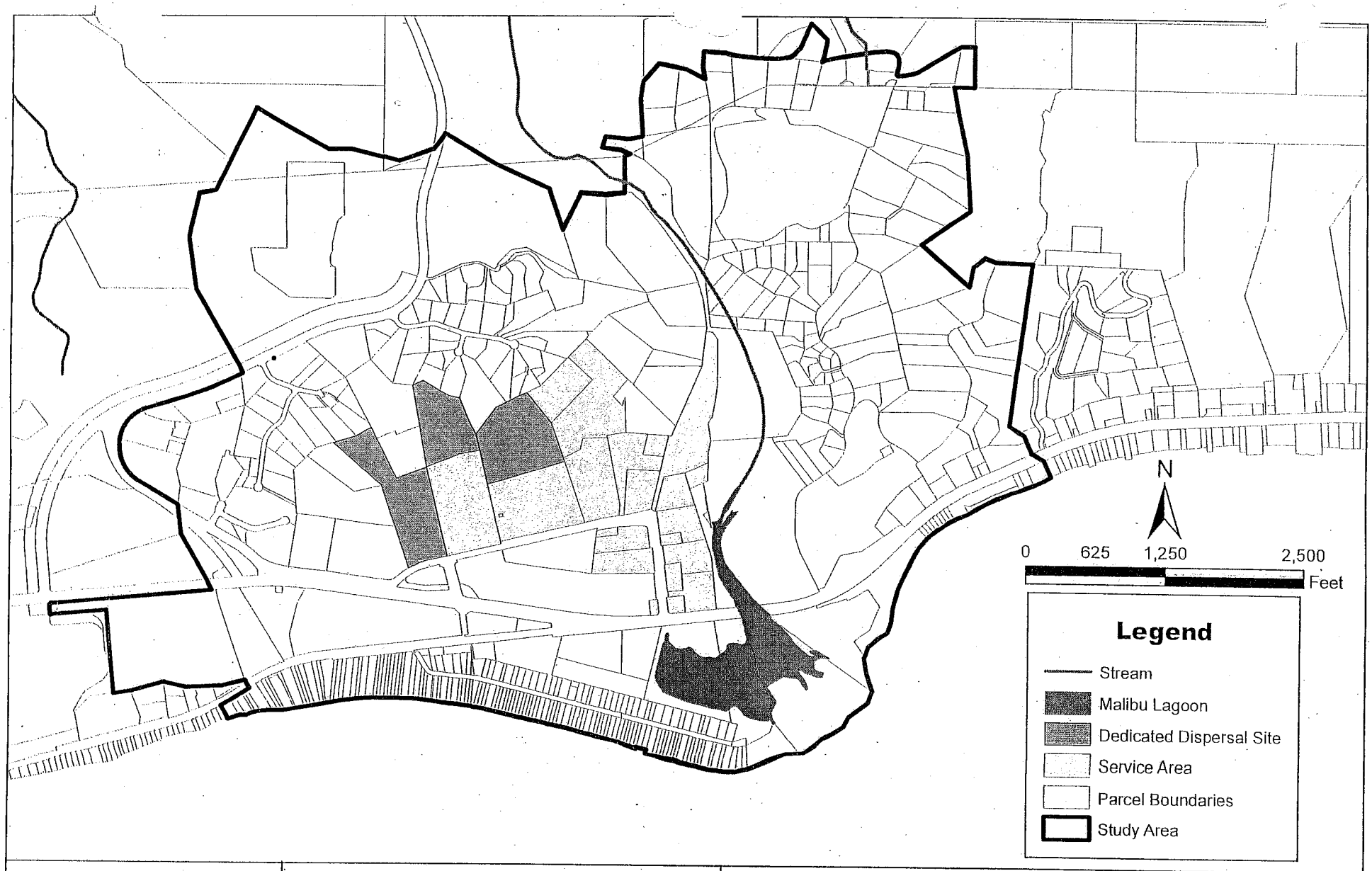

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# ALTERNATIVE 8 - UPPER & LOWER YAMAGUCHI

Malibu Civic Center Integrated Water Quality Management Feasibility Study

FIGURE
7-7




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# ALTERNATIVE 9 - WAVE AND UPPER & LOWER YAMAGUCHI

Malibu Civic Center Integrated Water Quality Management Feasibility Study

FIGURE

7-8

# 8.0 Stormwater Quality Management

## 8.1 *Introduction and Background*

In addition to addressing wastewater alternatives, another goal of this study was to evaluate potential ways of integrating stormwater quality management with wastewater facility planning efforts for the Civic Center area.

## 8.2 *Study Objectives and Assumptions*

Based on the above factors, an evaluation of stormwater quality management was included in the study with the following specific objectives and assumptions:

- The study area was limited to the Civic Center drainage area tributary to Malibu Creek, lying north of Pacific Coast Highway (PCH) and west of Malibu Creek. The study did not include the areas east of Malibu Creek, South of PCH, or the Winter Canyon watershed area that drains to the Ocean.

- Compliance with the water quality goals (TMDLs) for Malibu Creek and Lagoon and Santa Monica Bay Beaches are an overarching goal or "driver", and provide the basis for establishing the target levels for stormwater treatment.

- The study focused on the management and treatment of stormwater runoff from the Civic Center drainage area into Malibu Creek and Lagoon; it did not consider the concept of routing flows from Malibu Creek into and through the undeveloped lands in the Civic Center area as a means of cleansing pollutants from the Creek.

- The City's planned stormwater treatment system located near the intersection of Civic Center Way and Cross Creek Road is assumed to be a "given" element of a stormwater management plan for the area; incorporation of this facility, with possible improvements or expansion, was evaluated in the study.

- Creation of wetlands and other water features that can achieve stormwater quality management objectives, and possibly wastewater dispersal benefits, has been emphasized.

- Independent input and review from a knowledgeable wetland scientist, Dr. Richard Ambrose, was included to validate the appropriateness of any proposed wetlands, in terms of their location, values, functions or other factors.

## 8.3 *Study Approach*

A hydrological analysis was completed including the development of a rainfall-runoff model for the Civic Center area, and the use of the model to determine possible ways to detain and treat stormwater runoff in a way that would comply with bacteria TMDL requirements for Malibu Creek and Lagoon. Various wetland restoration sites identified in the Lower Malibu Creek and

Lagoon study (Ambrose and Orme, 2000) were evaluated as sites for the creation of a wetland-flood storage basin facility. The Chili Cook-off site was determined to be the most favorable site due to its central location, along with suitable elevations and sufficient land area to meet the projected wetland-flood storage/treatment needs. The study was conducted as follows:

1. **Background Data Review and Field Reconnaissance.** First, all available relevant hydrologic data for the study area were compiled and reviewed. This was followed by a field reconnaissance inspection to verify watershed conditions and existing drainage patterns and storm drain facilities. Background information included such items as topographic maps, air photos, the City's Master Drainage Plan, prior drainage studies by FEMA, L.A. County, the City and private parties, and other data provided directly by City staff.

2. **Develop HEC-HMS Watershed Model.** Next, we developed a watershed model for the study area. This is necessary to establish the basic hydrologic-runoff characteristics of the Civic Center area in terms of the volume and rate of runoff for various rainfall conditions. This model allowed us to determine how much stormwater (total storm volume) requires treatment in order to meet the TMDL goals. It was later used to model different conceptual stormwater storage-treatment options (e.g., wetland detention areas), to determine and compare different ways of achieving the required stormwater treatment volumes.

   For modeling purposes we used the U.S. Army Corps of Engineers' Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS) computer modeling package. This is an industry standard for applications such as this study. Once the basic model is created for existing conditions, it can then be easily adjusted to account for future changes in land development conditions and modifications in the drainage routing system, specifically to determine the effect of different sizes or combinations of detention basins (e.g., wetland areas), and different outflow assumptions for any range of rainfall conditions, including single or multiple storm events. Basic input data for the HEC-HMS model were obtained from available maps, air photo interpretation of land use conditions, and rainfall statistics from L. A. County, the National Weather Service (NWS), and the California Department of Water Resources. Additional technical description of the watershed model and the supporting data and assumptions are included in **Appendix E**.

3. **Formulate and Model Stormwater Treatment Scenarios.** Following the development of the model, we reviewed potential locations in the Civic Center area for stormwater-wetland treatment facilities, including sites identified by Ambrose and Orme (2000), and other vacant land areas under study for wastewater treatment. We formulated a range of stormwater detention-treatment scenarios for analysis, including different wetland configurations and sizes, and different "flow-through" treatment capacities. The hydrologic model was then run for various storm scenarios (i.e., rainfall depths and duration) to evaluate the effectiveness of each alternative in meeting the target treatment goal.

4. **Identify Recommended Approach and Estimated Costs.** Based on the modeling results and other implementation considerations, the apparent best alternative for integrated stormwater treatment for the Civic Center area was identified, and preliminary (planning-level) cost estimates were developed for construction and for ongoing operation and maintenance.

## *8.4 Existing Runoff Hydrograph Analysis*

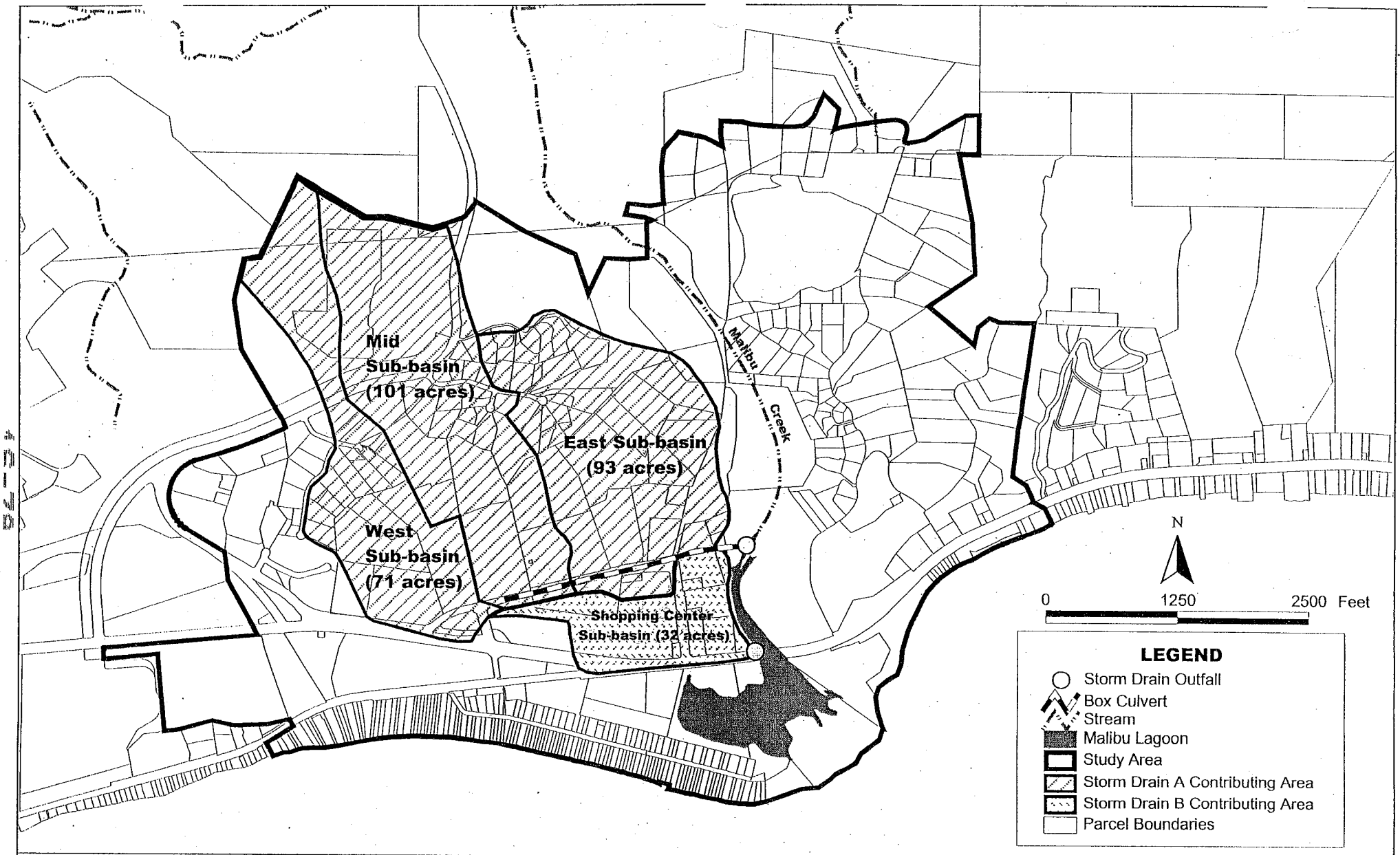
**Figure 8-1** provides a map of the Civic Center watershed area evaluated in this study. It encompasses approximately 258 acres, and includes all areas of the Civic Center draining to Malibu Creek and Lagoon on the west side of the Creek and north of PCH.

There are two principal storm drain systems in this area, previously identified by the City as "Storm Drain A" and "Storm Drain B".

- Storm Drain A is the larger of the two systems, with a contributing drainage area of 232 acres that includes runoff from upland areas and other areas north of Civic Center Drive. As shown in **Figure 8-1**, there are three main sub-areas that comprise this storm drain area. The runoff from various sub-areas collects in a box culvert beneath Civic Center Drive, which measures 5.5-feet high by 11-feet wide, and discharges to Malibu Creek immediately east of the intersection of Civic Center Dr. and Cross Creek Road.

- Storm Drain B has a drainage area of 26 acres that is comprised principally of the Chili Cook-off property, the Malibu Country Mart and the Malibu Creek Plaza. This storm drain system discharges to Malibu Creek adjacent to the PCH bridge near the southeast corner of the Malibu Creek Plaza shopping center.

The watershed runoff model was constructed to allow analysis of the runoff for each sub-area of Storm Drain A and Storm Drain B. Details of the model parameters, including lag time, curve number, etc., are provided in **Appendix E**. Once constructed, the model was then "run" for a series of hypothetical 24-hour storm events, with rainfall amounts of 1.0, 2.0 and 3.0 inches. The results of this analysis are displayed in **Table 8-1**. Shown in the table are the total volume of storm runoff as well as the peak discharge rate during the height of the "storm" event. The totals for the entire watershed area are also shown.




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## DRAINAGE SUB-BASINS

**Malibu Civic Center Intergrated Water Quality Management Feasibility Study**

FIGURE
8-1

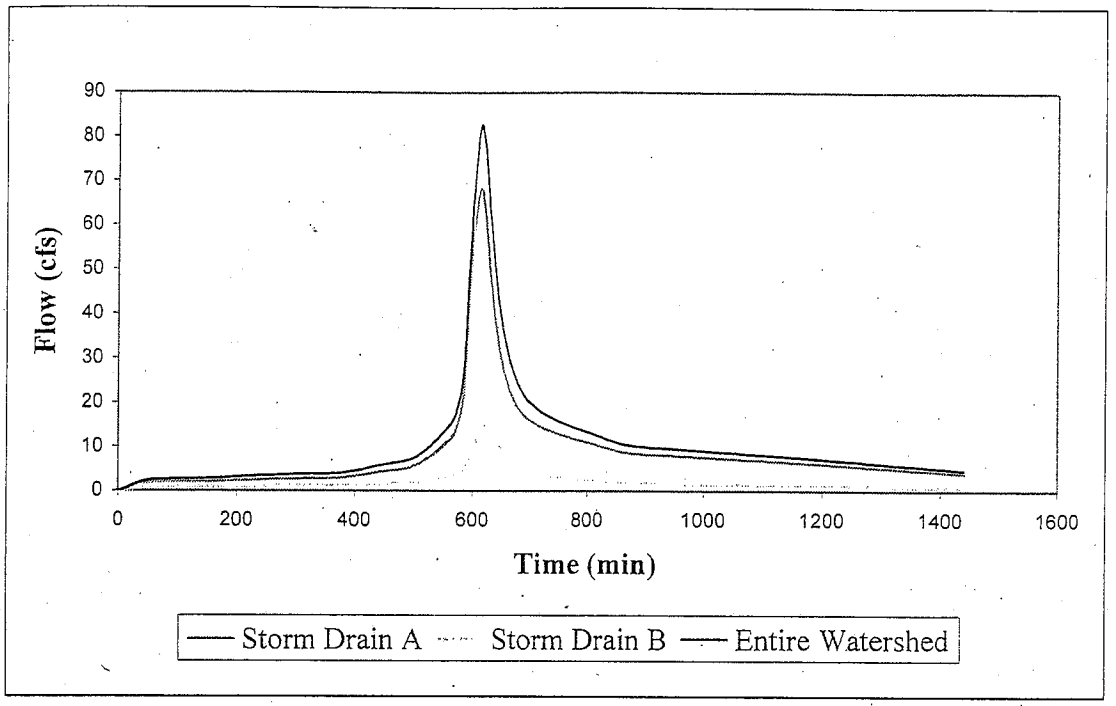
**Table 8-1. Stormwater Runoff Summary: 24-hour Storm**

| | Rainfall Depth | | |
|---|---|---|---|
| | 1" | 2" | 3" |
| **Storm Drain A** | | | |
| Peak Discharge Rate (cfs) | 24.33 | 68.12 | 124.46 |
| Total Outflow (ac-ft) | 6.21 | 16.57 | 29.45 |
| **Storm Drain B** | | | |
| Peak Discharge Rate (cfs) | 6.85 | 14.55 | 22.37 |
| Total Outflow (ac-ft) | 1.93 | 4.01 | 6.13 |
| **Entire Watershed** | | | |
| Peak Discharge Rate (cfs) | 31.18 | 82.67 | 146.83 |
| Total Outflow (ac-ft) | 8.14 | 20.58 | 35.58 |

As a point of reference, according to the National Oceanic and Atmospheric Administration (NOAA), the average annual storm for the Malibu area is estimated to produce approximately 1.8 inches of rainfall in a 24-hour period. This is referred to as the 2-yr, 24-hour storm event, and has a probability of occurring once every two years, or a 50-percent chance of occurring in any given year. The bacteria TMDL for Malibu Creek and Lagoon specifies that receiving water bacteria levels shall not be exceeded more than three times per year. Therefore, using the 2-yr, 24-hr storm as an initial target would be a reasonable approximation of the probable needs for stormwater treatment to meet the TMDL requirements. If the runoff from this size storm can be adequately contained, treated and discharged within the receiving water quality limits, the Civic Center area would likely be judged to have met its obligations for stormwater treatment under the TMDL.

While different portions of the watersheds contribute to different bacteria loadings, all runoff from the north side of the Civic Center is combined into a single storm drain discharge (Storm Drain A), and therefore has a single combined water quality (e.g., bacteria) impact at the outfall to the Creek. Storm Drain B serves principally an area of urban commercial land uses, which typically can be expected to contain bacteria at levels in excess of receiving water standards. Therefore, the prudent approach is to evaluate stormwater requirements for the Civic Center under the assumption that all runoff from Storm Drains A and B will require treatment to meet receiving water objectives, with limited (3 times per year) exceedances allowed. The total runoff volume and total peak discharge rates shown in **Table 8-1** give a first approximation of the amount of stormwater that would need to be treated for different storm conditions. A hydrograph showing the distribution of runoff over time (per the model) is provided in **Figure 8-2** for a storm event producing 2.0 inches of rainfall over 24 hours; this is slightly higher above the estimated 2-yr, 24-hour storm for the Malibu area.

Figure 8-2. Malibu Civic Center 24-hour Hydrograph for 2.0 Inches Rainfall




## 8.5 *Development of Stormwater Detention-Treatment Alternatives*

**Treatment Options.** Treatment of stormwater can be achieved either by: (1) developing a facility (i.e, a treatment plant) with sufficient "flow-through" capacity to handle the peak discharge; or (2) providing temporary storage (i.e., detention) of the stormwater, in combination with a smaller treatment facility to handle a lower flow rate during and in the hours or days after the storm subsides. Sizing for treatment of the peak flow is usually impractical and rarely done. For example, the City's planned stormwater treatment facility (intended for treatment of dry season and "first flush" flows) has been designed with a flow-through treatment capacity of 1,400 gallons per minute, or approximately 3.1 cfs. This facility alone would be able to treat only a small fraction of the peak discharge for typical 1-inch to 2-inch winter storm events, which have projected peak flow rates in the range of 16 to 43 cfs. A realistic stormwater treatment approach for the Civic Center area must necessarily follow the second approach, including the use of stormwater detention. This approach also makes sense because of the potentially available land area for detention-storage, and the possibilities of developing the detention facility for other community and environmental objectives; e.g., open space and wetlands creation, restoration and preservation.

**Detention-Storage Alternatives.** There are different ways to provide stormwater detention in the Civic Center area, including, for example: 1) a "dry" detention basin that fills only during rain events and may be used for other purposes (e.g. recreation) during non-rainy periods; (2) a "wet" detention pond (e.g., wetland water feature) that maintains a minimum permanent water level, designed to contain and store stormwater runoff above the minimum pond level; and (3) a

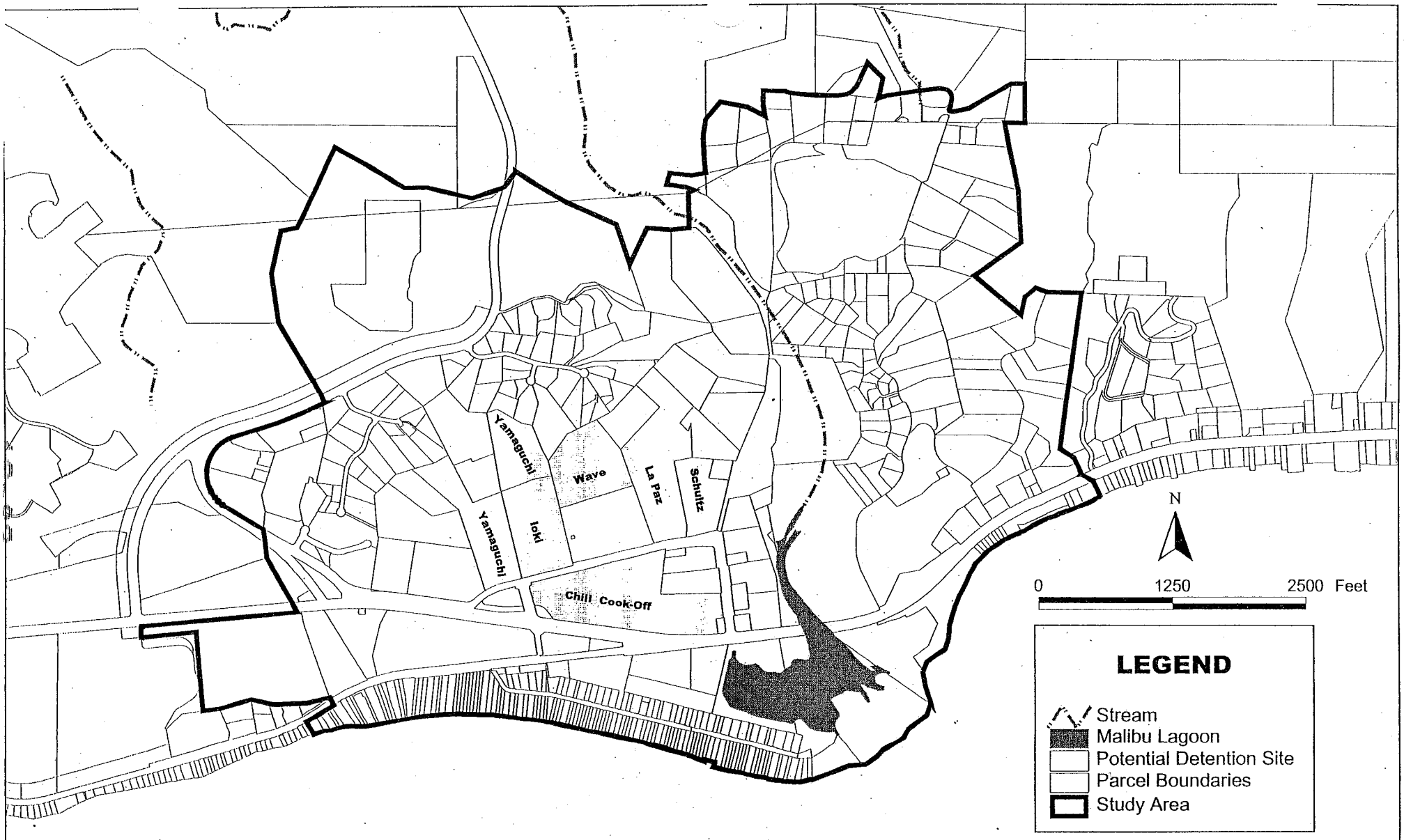
meandering or "linear" type wetland, with a permanent stream-like water feature with an adjacent riparian overflow area for stormwater flood storage.

In general, "wet" detention basins have been shown to provide a much greater degree of stormwater treatment effectiveness than "dry" detention basins, due to better sedimentation characteristics (depth and detention time) along with establishment of biological-vegetative treatment processes. "Wet" detention approaches have the additional advantage of allowing for integration of created/restored wetland features and habitat that is an important goal for the Malibu Civic Center area. For this reason, our study focused on evaluating the feasibility of a wetland-oriented stormwater detention system, having some amount of permanent "wet" area as a focal point, along with capacity for fluctuation of water levels or seasonal overflow wetland areas to absorb and detain (temporarily) storm runoff. In this concept, the water detained and treated in the wetland areas would collect during the storm event, and would be slowly metered through a stormwater treatment facility, such as the City's planned stormwater treatment system. The flow would be metered (pumped) through the treatment facility during and following storm events to provide disinfection of the runoff discharged to the Creek.

Possible locations for a stormwater detention facility were determined by reviewing; (a) the existing Civic Center storm drainage system; (b) the location, size and elevations of vacant land areas; and (c) the approximate volume of stormwater that would likely have to be detained for a 2-yr, 24-hour storm event. We also reviewed the discussion and analysis of potential stormwater-wetland treatment alternatives contained in the recent study *"Lower Malibu Creek and Lagoon Resource Enhancement and Management"* (Ambrose and Orme, 2000). Specific vacant land areas and their characteristics are summarized **Table 8-2;** locations are shown in **Figure 8-3.**

**Table 8-2. Characteristics of Potential Stormwater Detention Sites**

| Site Name | Land Area (acres) | Ground Surface Elevation (feet, AMSL) | Proposed Development Plans | Comments |
|---|---|---|---|---|
| Chili Cook-off | 19.6 | 8 to 20 | No | - Identified as Site C2, high priority for combined stormwater and wastewater treatment, by Ambrose and Orme;<br>- Centrally located and adjacent to existing storm drains A and B;<br>- Contains existing remnant storm drain channel; |
| Yamaguchi | 16 | 14 to >30 | No | - Identified as Site C1, medium priority for wetland enhancement/restoration, by Ambrose and Orme;<br>- Located adjacent to western sub-basin of Storm Drain A; inaccessible to remaining storm drainage without pumping system;<br>- Lower portion is the only feasible area; but it is a small area with limited capacity; could be used in conjunction with other areas. |




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Project No.:
240220
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7 March 2005
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# POTENTIAL STORM WATER DETENTION TREATMENT SITES

## Malibu Civic Center Intergrated Water Quality Management Feasibility Study

FIGURE
8-3

| Site Name | Land Area (acres) | Ground Surface Elevation (feet, AMSL) | Proposed Development Plans | Comments |
|---|---|---|---|---|
| Wave | 8.5 | 18 to >30 | No | - Upland area identified as part of Site C2 by Ambrose and Orme for wetland wastewater treatment, and possible stormwater treatment;<br>- Elevations and remote location from storm drains incompatible with its use for stormwater detention; |
| Ioki | 9.3 | 12 to >30 | Yes | - Not identified for wetland enhancement/restoration, by Ambrose and Orme;<br>- Located adjacent to western sub-basin of Storm Drain A; inaccessible to remaining storm drainage without pumping system;<br>- Small area with limited capacity; could be used in conjunction with other areas. |
| Shultz | 2.3 | 12 to 18 | Yes | Area identified as part of Site C2 by Ambrose and Orme for wetland wastewater treatment, and possible stormwater treatment;<br>Limited land area near outfall of Storm Drain A;<br>Small area with limited capacity; could potentially be used in conjunction with other areas;<br>Conflict with existing development plans. |
| La Paz | 15.3 | 12 to >20 | Yes | Area identified as part of Site C2 by Ambrose and Orme for wetland wastewater treatment, and possible stormwater treatment;<br>Suitable location and elevations, near outfall of Storm Drain A;<br>Accessible to Storm Drain B with by pumping;<br>Could be used in conjunction with other areas;<br>Conflict with existing development plans. |

**Conceptual Plans.** Based on elevations and the projected needs for stormwater detention capacity (10 to 20 acre-feet of runoff), the two most realistic options for a stormwater-wetland detention facility are the Chili Cook-off and La Paz properties, which were also identified as high priority areas C2 and C3, respectively, by Ambrose and Orme (2000). The Chili Cook-off site has the advantage of being larger in size, centrally located with respect to Storm Drains A and B, not in conflict with any formal existing development plans, and contains an existing remnant storm drainage channel. On this basis the Chili Cook-off site is the apparent best location for a stormwater wetland detention facility. This would not preclude the development of

smaller stormwater detention features on other parcels; however, consolidating the stormwater in one area would tend to be more economical and efficient from a construction and operational standpoint, making its implementation more likely.

**Figures 8-4** through **8-7** have been prepared to illustrate conceptual layouts and cross-sections of how a stormwater wetland detention facility might be developed using the Chili Cook-off site. **Figures 8-4** and **8-5** show the "wet" pond concept; Figures **8-6** and **8-7** show the meandering or "linear" wetland and riparian flood storage concept. The following should be noted regarding these conceptual alternatives:

- As shown for both alternatives it will be necessary to establish the permanent water surface at an elevation that is low enough to allow storm inflow from Storm Drains A and B; we estimate to this elevation to be approximately 8 feet above sea level (note: this is preliminary only and has not been confirmed through a field survey).

- A maximum elevation of 11 feet is assumed for these conceptual plans, which is estimated to be the highest level compatible with collection and detention of runoff without causing overflow of water from the contributing storm drains (note: this is preliminary only and has not been confirmed through a field survey).

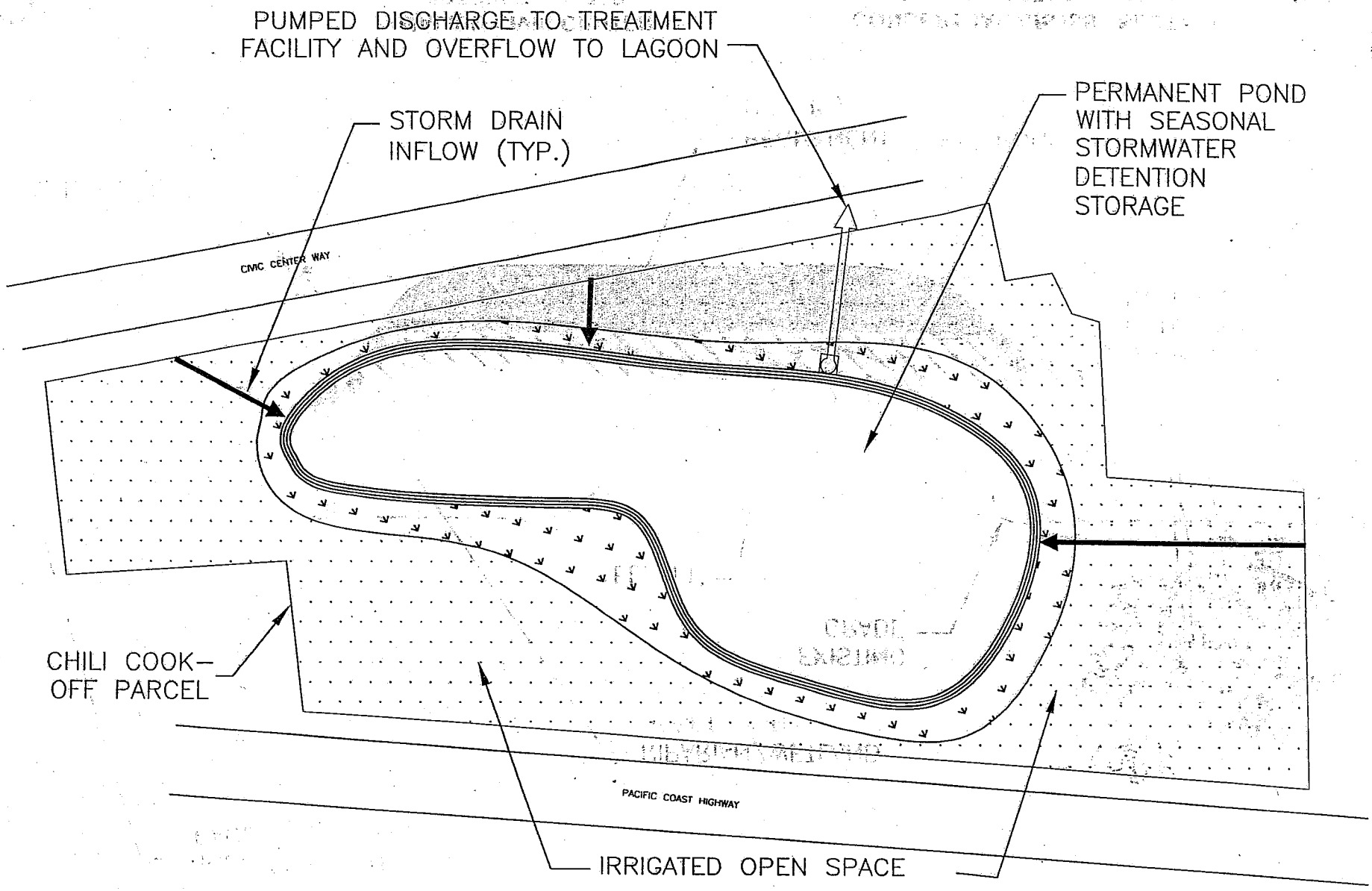
- Discharge from the detention facility would be via pumping (at a metered rate) to the City's planned stormwater treatment facility; during large storm events which exceed the detention-treatment capacity, a high water overflow (or bypass) to Storm Drain A would occur, to prevent local flooding.

- The site would be vulnerable to inundation when Malibu Creek goes to flood stage.

- The groundwater level at the Chili Cook-off site is estimated to be about 6 feet above sea level. This is at a suitable level to support the wetland riparian vegetation (e.g., willows, cottonwoods, sycamores, mulefat) planted within a dedicated flood storage area as depicted in **Figures 8-5** and **8-7**. It could also provide some of the water to sustain a permanent pond. However, in order to maintain a permanent water level of 8 feet, the pond or linear water feature would a make-up water source, such as groundwater pumped from adjacent or other nearby areas.

- The conceptual plans assume that upland areas of the site as well as riparian vegetation areas adjacent to the water features would be available for irrigation with tertiary recycled wastewater. However, recycled water would not be permitted to be discharged (or to runoff) to the water features; if this were to be proposed it would constitute a surface water discharge, and thereby subject to a surface water discharge permit under the National Pollutant Discharge Elimination System (NPDES). This is not recommended.

The above assumptions regarding elevations and drainage design features are suitable for the present planning-level feasibility analysis; however, they will require further detailed hydraulic engineering analysis if the project is implemented.



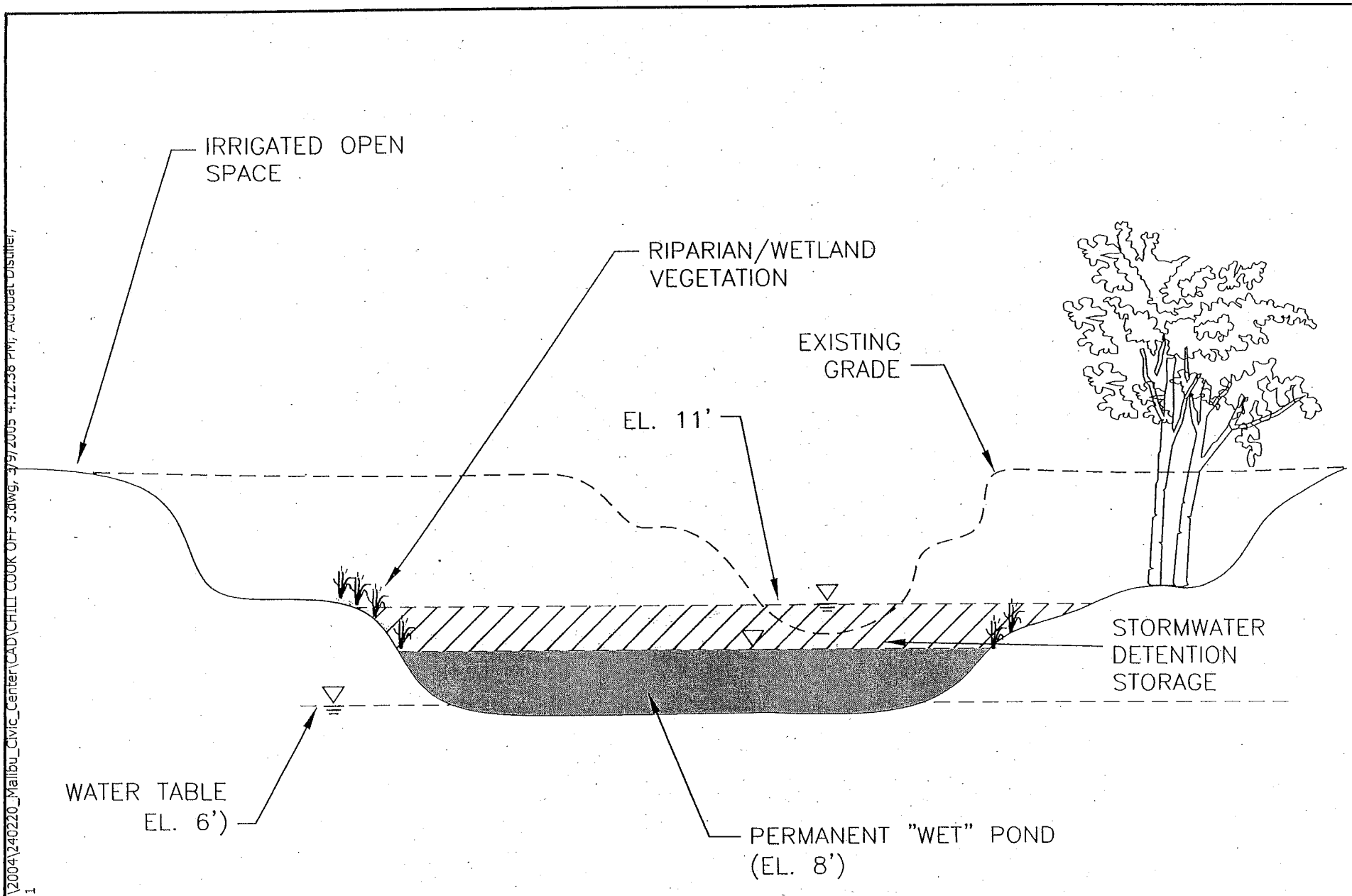

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**CONCEPTUAL PLAN FOR "WET" STORMWATER DETENTION POND CHILI COOK-OFF SITE**

FIGURE
8-4



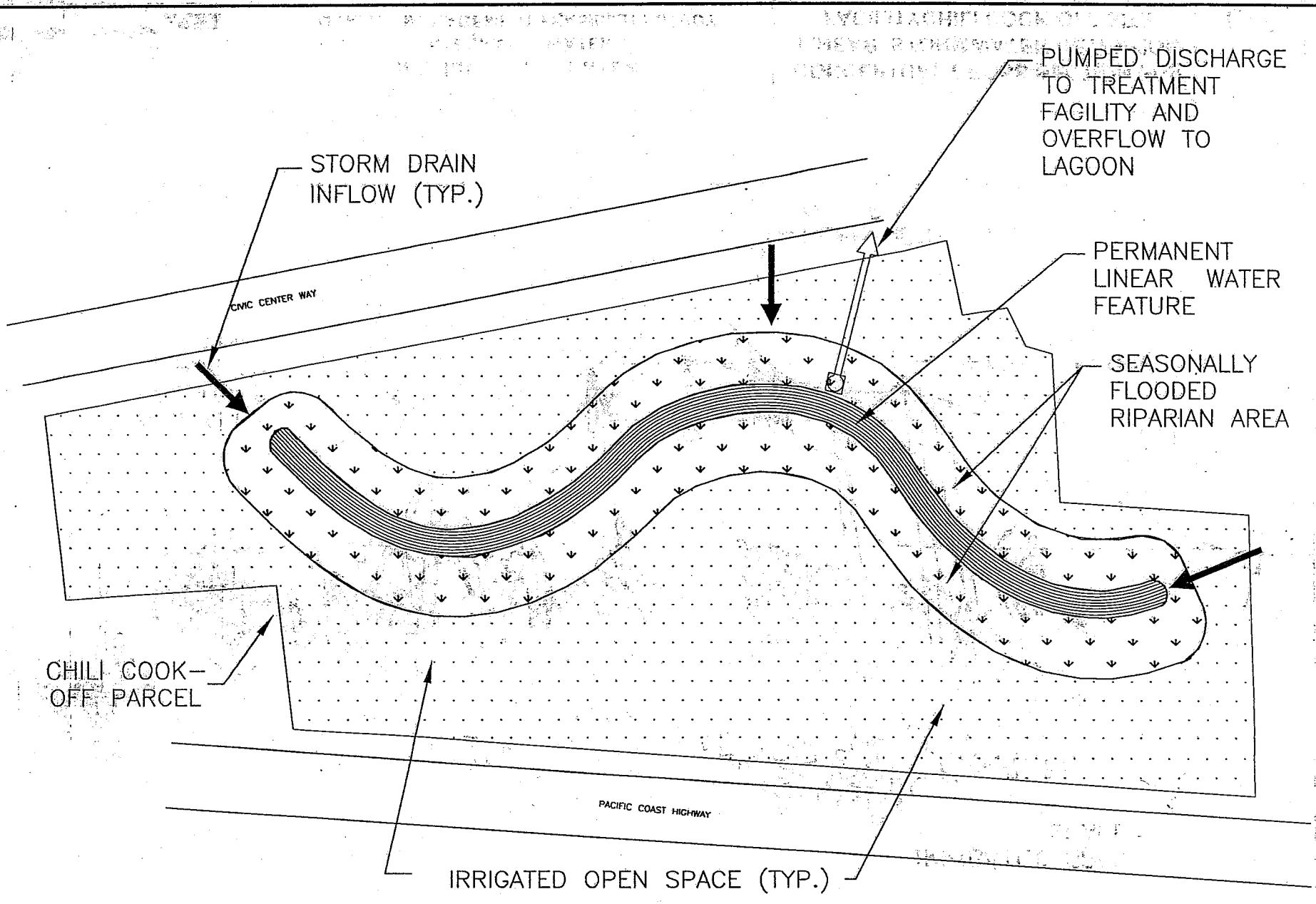

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**CONCEPTUAL CROSS - SECTION FOR "WET" STORMWATER DETENTION POND**

FIGURE
8-5



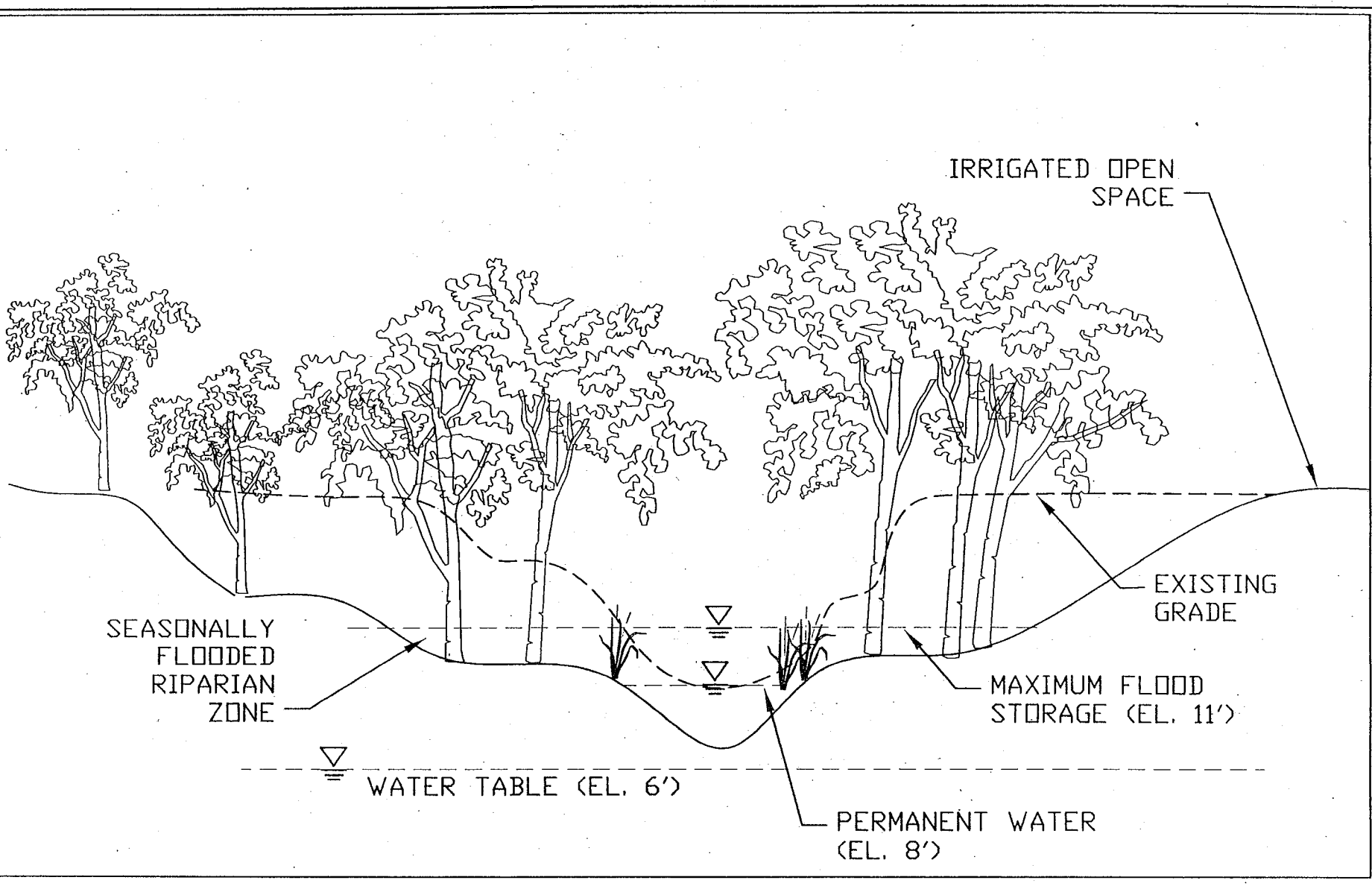

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**CONCEPTUAL PLAN FOR LINEAR STORMWATER DETENTION FACILITY CHILI COOK-OFF SITE**

FIGURE
8-6




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**CONCEPTUAL CROSS-SECTION FOR LINEAR STORMWATER DETENTION FACILITYCHILI COOK-OFF SITE**

FIGURE
8-7

## 8.6 *Detention Storage Analysis*

To assess how the conceptual plans presented for the Chili Cook-off site would function during given storm events, we adjusted the HEC-HMS model to incorporate a detention storage routine. We then ran the model for various assumed storage basin dimensions, and for various storm rainfall totals. In all modeling runs we set the discharge equal to the flow-through capacity (3 cfs) of the City's planned stormwater treatment plant. We also included allowance for overflow to Malibu Creek (via Storm Drain A) during times when the maximum detention storage level is reached (set at elevation 11 feet).

The results of the detention storage analysis are summarized in **Table 8-3** for both the wetland pond concept and the linear wetland-riparian overflow alternative. The analysis shows possible land and water area dimensions and configurations, and the resulting water level fluctuations for stormwater detention that would occur in response to different storm events. The analysis shows that it would be feasible to accomplish the required stormwater detention for a 2-year, 24-hour storm within an area of about 5 to 7 acres, with a water level fluctuation of 2.5 to 3 feet, and with a metered discharge rate of 3 cfs through the City's planned stormwater treatment facility.

The conceptual alternatives and the assumed dimensions and discharge rates are not the only feasible options; but they provide an estimate of what might be reasonable stormwater wetland detention projects for the Civic Center area, given the available land area and the assumed community desire to provide multi-use environmental and public open space benefits. Other alternatives, such as larger, shallower flood storage areas, could be considered. This additional analysis can be done with minor adjustments to the hydrologic model, based on more refined definition of alternatives following City Council and public review of the draft report.

**Table 8-3. Projected Detention Basin Water Depths for Various Alternatives and Storm Events (feet above permanent water level)***

| Wetland Pond | | | |
|---|---|---|---|
| Size | 24-hour Rainfall Amount (in.) | | |
| (ac) | 1.0 | 1.5 | 1.8 |
| 4 | 0.94 | 2.25 | 2.99 |
| 5 | 0.76 | 1.82 | 2.57 |
| 6 | 0.65 | 1.53 | 2.16 |
| **Linear Wetland** | | | |
| Size | 24-hour Rainfall Amount (in.) | | |
| (ac) | 1.0 | 1.5 | 1.8 |
| 5 | 2.07 | 2.90 | 2.91 |
| 6 | 1.71 | 2.58 | 2.90 |
| 7 | 1.62 | 2.44 | 2.90 |

** Assumes constant 3.0 cfs for 0 to 3 feet of storage.*

## *8.7 Wetland and Pond Habitat Restoration*

The ecological benefit of utilizing the Chili Cook-off site primarily for stormwater management features while using subsurface irrigation with wastewater during the dry-weather periods were evaluated by Dr. Richard Ambrose (Dr. Ambrose's review memorandum is provided in **Appendix G**); a summary of some of the key review comments is provided here.

Stormwater management solutions should have ecological value restoring wetland and associated habitats. The natural wetlands of the area tend to dry up seasonally. One approach would be to use the linear flow wetland and modify the cross-section (**Figure 8-7**) to have wide terraces to provide a variety of habitats.

A mix of habitats can utilize native plants that do not need irrigation water once established, as well as native plant species that can tolerate irrigation during the summer. For example, willows have a high evapotranspiration rate and do not require seasonally dry conditions; they will thrive with applied recycled irrigation water.

Regarding Malibu Creek and Malibu Lagoon hydrology, one problem with the creek is the amount of inflow to the creek and lagoon during dry weather periods. It would be beneficial to decrease dry weather groundwater flow to the creek by maximizing evapotranspiration through wastewater recycling.

According to Dr. Ambrose, depending on community input, a viable approach would be to utilize mixed habitat types, including:

- Seasonal wetlands without irrigation;
- Small pond(s) to create a palustrine environment; and
- Linear woodland riparian habitat.

The specific design of small ponds or other open water features should include adequate rates of through-flow and recirculation to minimize breeding opportunity for mosquitoes that could carry West Nile Virus.

## *8.8 Estimated Costs*

Estimated costs for both the wetland pond and the linear wetland-riparian overflow alternatives are summarized in **Table 8-4**. Supporting cost data are provided in **Appendix F**. Actual costs will vary depending on the selected type, configuration, capacity and other features of the stormwater-wetland facility.

In addition to the initial construction costs, there will be ongoing annual costs associated with the operation and maintenance of the pumping systems, make-up water supply, and the vegetation or other amenities included in the final design. These costs are estimated to be about $75,000 per year, including approximately $20,000 for vegetation maintenance, $35,000 for electrical costs and pump maintenance, and $20,000 for make-up water.

**Table 8-4. Estimated Wetland-Detention Basin Costs**

| Item | Wetland Pond (4-6 acres) | Linear Wetland with Riparian Overflow (5-7 acres) |
|---|---|---|
| | Total Cost ($) | Total Cost ($) |
| Excavation | 409,000 | 324,000 |
| Planting/Irrigation | 201,000 | 156,000 |
| Outfalls/Spillway | 50,000 | 50,000 |
| Pump Station | 200,000 | 200,000 |
| Landscape Features | 150,000 | 150,000 |
| Make-up Water & Circulation System | 250,000 | 250,000 |
| Mobilization @ 15% (±) | 190,000 | 170,000 |
| **TOTAL** | **1,450,000** | **1,300,000** |

# 9.0 Environmental Benefits and Impacts

This section provides a brief overview of some of the environmental benefits and key environmental impact issues that will need to be addressed by the project through the facilities planning and appropriate environmental review. The information presented here is very general and preliminary in nature; it is not intended to be a substitute for the thorough environmental analysis that will be required for the project.

## *9.1 Environmental Benefits*

As envisioned, the project will provide a growth-neutral approach to wastewater management. It will neither encourage nor discourage growth in the Civic Center area.

Aesthetic considerations such as visual appearance and odor control can be incorporated into the reclamation facility and reuse program to be compatible with an urban open space and commercial setting.

The benefit of maximizing water conservation and reuse will minimize and potentially reduce the groundwater recharge and potential cumulative impacts of new development on groundwater levels in the Civic Center area. Title 22 tertiary recycled water standards are higher than the City of Malibu's current "tertiary" wastewater treatment standards. The result of this higher level of treatment and emphasis on reuse will be a decrease in the potential adverse impact on groundwater and surface water quality.

The development of a stormwater management facility, as conceptually outlined and described in this study, would result in directly measurable water quality improvements in Malibu Creek and Lagoon, while providing a wetland-oriented space amenity to the Civic Center area. Wetland and palustrine habitat restoration will be an integral part of the stormwater management system.

## *9.2 Environmental Impact Overview*

### 9.2.1 Sewage Collection System

Sewage collection would be provided either with grinder pumps or a STEP system with a common pressure sewer network. Each property would have one or more interceptor tanks and pumps. Multiple, commercial-grade pumps would be incorporated into each system and would pump the macerated or clarified sewage effluent to the reclamation facility. Grease interceptors would also be installed prior to the interceptor tank for all restaurants. The potential environmental concerns with the collection system include odors, pump system outage/overflow, and force main rupture or leakage.

**Odors.** Sewage odors would be generated at each property in the area of grease interceptors, septic tanks and pump units. Offensive odors are contained in the tank and vented through pipes to the roof of the building. The only exception to this is at the time of servicing, when the tank lids need to be opened to allow pumping of the contents. This would not represent a significant change from existing conditions, where individual properties are served by onsite septic systems that typically involve septic tanks, grease interceptors and pump systems. The conceptual plan does not include any common sewer lift stations in public rights of way.

**Pump Outages.** A failure of an individual grinder pump or STEP unit (pump station) could result in back-up of sewage and, potentially, surfacing of sewage in the immediate area of the pump station. The chances for this to occur is normally minimized through the use of multiple (redundant) effluent pumps, surplus emergency storage capacity in the pump chamber, telemetry alarm systems, and by the provision of a mobile emergency generator that can be used to supply back-up power to the effluent pumps in the event of a power outage.

**Force Main Rupture/Leakage.** The pumping of sewage from the grinder pumps or STEP tanks to the treatment plant will require a network of 2 to 6-inch diameter force main (i.e., pressure line). Damage to the force main could result in the release of septic tank effluent to the surrounding soil and possibly to the ground surface. The likelihood of a rupture or leak in the force main is relatively small in this case because of the short distance between the interceptor tanks and the reclamation facility (a few thousand feet) and the small elevation difference to overcome. There are no slide-prone areas, or other factors that would pose special risks of pipeline damage. Moreover, the pipeline route will follow public rights of way wherever possible, such that any problems will be readily evident to maintenance staff, and easily accessible for correction. However, the Malibu Civic Center area is subject to seismic activity and liquefaction hazards, which must be taken into consideration in the pipeline design. Typical measures commonly employed to address liquefaction hazards include: (a) use of flexible piping materials; (b) extensive use of isolation valves and temporary bypass piping systems; and (c) pressure sensors or other monitoring devices to detect movement or damage to pipelines.

While wastewater service to the primary commercial area would not involve any pipeline-creek crossings, the study identifies the possibility of extending wastewater collection to a limited number of properties on the east side of Malibu Creek. This would require a pipeline crossing at the PCH Bridge. Crossings such as this are not uncommon, and are usually accomplished using either ductile iron pipes, or possibly a "sleeved" pipeline (for double containment), to protect against damage and leaks. Shut-off valves and provisions for temporary bypass piping for emergency use are usually included. Without these types of design and contingency measures, a pipeline-creek crossing could pose a potentially significant water quality threat in the case of pipe rupture.

### 9.2.2 Reclamation Facility

The reclamation facility would be a customized facility designed to provide tertiary treatment including denitrification. The key elements of the treatment process are the influent equalization tank, aeration tanks, tertiary filters, disinfection, sludge storage, treated water storage and disposal and water recycling pumping systems.

**Visual.** The reclamation facility would consist of a series of buried treatment tanks and various aboveground equipment, tanks, controls, office, laboratory and ancillary areas that are planned to be housed in an architecturally-designed building. The building, parking areas, fencing and any exterior equipment would be partially visible from various public vantage points and private properties. The building, landscaping and site design would be expected to undergo design review to identify and properly address potential visual impacts.

**Odors.** Odors from the proposed wastewater facilities would be confined to the immediate treatment plant area. The plant itself would be designed to capture and contain methane and hydrogen sulfide odors within the buried treatment tanks and the building enclosure, and to eliminate the odors through a forced air subsurface soil filtration-dispersion venting system or equivalent system.

**Flooding.** The published FEMA map indicates that most of the Chili Cook-off site is in the 100-year floodplain; however, both the Wave and Yamaguchi sites (the preferred treatment locations) are elevated well above the floodplain.

**Safety Hazards.** Normal safety precautions would need to be observed by the treatment plant operators. The treatment plant would be enclosed and fenced and, as such, should not pose a safety risk to Malibu visitors or to nearby businesses or residents. Chlorine gas is not proposed to be used in the treatment plant, so the associated potential for chemical releases and hazards would be absent. Although not identified as the preferred treatment approach, if a wetland treatment system were to be proposed, public access would have to be restricted, detracting from the often perceived attractiveness of a wetland-wastewater treatment system.

**Power Outage.** The treatment plant requires a continuous power supply for operation of the pumps, blowers and other equipment. A dedicated emergency generator would be installed and maintained at the treatment plant to assure a suitable back-up power supply in the event of an extended power outage.

**Noise.** The treatment system would require pumps, and emergency generator, and air blowers, which are the main potential sources of mechanical noise at the plant. The various pumps are generally small (e.g., one to two horsepower) submersible units installed within buried pump vaults and operate intermittently; consequently, pump operating noise is barely perceptible immediately alongside the pump vaults. The emergency generator would require periodic operation for routine maintenance and testing. The air blowers would be the main source of noise at the treatment plant and, depending upon the selected design, may operate continuously or intermittently. People at adjacent properties may be able to hear the emergency generator operation and blower noise. Appropriate soundproofing would need to be incorporated in the design to reduce noise to unobjectionable levels.

**Wastewater Overflow/Bypass.** The likelihood of an overflow or by-pass of untreated or partially treated wastewater at the treatment plant is very remote. The treatment tanks would be located below ground and designed with excess storage capacity to meet minimum influent storage capacity requirements per Title 22 for wastewater reclamation facilities. Sewer system infiltration-inflow (I/I) can sometimes create overflow situations at treatment plants; however in this case there would be relatively little chance for I/I, because of the use of a STEP/pressure sewer system that includes no manholes or deep gravity sewers. Additionally, sewage flows can be monitored at each individual STEP tank to identify and respond to excessive flow conditions at individual properties in the service area. Pipe rupture or leakage is always a possibility for any wastewater facility; however, this risk can be minimized and reduced to acceptable levels through proper design and construction practices and through normal daily operator surveillance of the facilities. The treatment plant site can also be graded and drained in a manner to minimize

the chances for accidental spillage to enter the storm drain system for the project site. The preferred plant site (Wave) is a significant distance from any water courses or storm drains.

### 9.2.3 Recycled Water Distribution System

The distribution system for recycled water would consist of a network of buried pipes, 2 to 6-inches diameter, similar to the STEP-pressure sewer collection system. It would be subject to the same design and operational issues as the collection system piping. The main environmental impact and design issues are provisions and contingencies for possible rupture or leakage due to seismic (liquefaction) or other damage. The design considerations and mitigations are likely to be the same as those cited earlier for the sewage collection system. The impacts associated with leakage from the recycled water distribution system would be of lower environmental risk due to the fact that the water in the distribution system would be tertiary-treated, disinfected water suitable for irrigation and other uses.

### 9.2.4 Irrigation-Dispersal Operations

**Human Contact With Treated Wastewater.** The reclaimed wastewater would generally be disposed below ground in areas that are not restricted as to public access, but would generally have limited access and activities, and minor opportunity for human contact with the reclaimed wastewater. However, surface irrigation and creation of open water landscaping features would also be incorporated in the project. Accordingly, the wastewater would be treated to a tertiary level (per Tertiary 2.2), which is deemed suitable for non-restricted recreational contact. Conformance with all applicable standards and operational requirements should reduce the risk to humans to acceptable levels.

**Wastewater Runoff to Malibu Lagoon.** Wastewater reclamation-irrigation operations are required to operate without creation of puddling or runoff of treated water. However, there will always be a potential risk of runoff of treated effluent from any of the irrigation-disposal areas, as a result of malfunctions or operator error, for example. If the runoff collects in a storm drain system, it may enter Malibu Lagoon. In general, the relatively level terrain and well drained soils in the Malibu Civic Center area minimize the potential for wastewater runoff conditions to occur. However, system design and operational measures should include careful review and attention to avoid or minimize the potential for runoff. Use of subsurface drip irrigation measures should generally be promoted and possibly required in any critical areas.

**Groundwater Mounding.** Groundwater mounding can occur under any large or concentrated wastewater dispersal field. When this occurs to a significant extent, the winter water table may rise high enough to interfere with the soil treatment functions or the ability of subsurface dispersal fields to drain properly. This will need to be considered in the selection and approval of the proposed dispersal areas and design for the project, and in the development of recommended loading rates for each area. The irrigation systems would typically be operated at loading rates intended to match the plant evapotranspiration requirements, such that seepage losses and associated groundwater mounding effects would be negligible. The estimates of wastewater percolation and irrigation capacity presented in this study have been based on preliminary groundwater mounding and irrigation water-balance analyses. These analyses would need to be refined during the facilities planning and design phases using additional site-specific soils data.

The groundwater mounding and modeling analysis for lower Yamaguchi has shown a high likelihood that recycled water dispersal would cause an elevated water table and surfacing condition at the adjacent wetland. Accordingly, this site should either be limited to reuse via irrigation or have a wetland habitat restoration component.

**Nitrate Loading Impacts.** Sewage wastes contain high amounts of nitrogen which, when discharged to land, can result in localized or area-wide increases in nitrate concentrations in the underlying ground water. The wastewater treatment approach for the proposed project is intended to incorporate a high degree of nitrogen removal through several mechanisms to provide significant reduction of nitrate loading in the Civic Center-Malibu Lagoon area as compared with existing conditions. Nitrate loading reduction will be achieved through: (a) denitrification processes in the treatment system; (b) enhanced uptake of nutrients by plants via irrigation reuse systems; and (c) overall reduction (as a result of recycling uses) in the amount of water reaching the groundwater-lagoon system via percolation. A Total Maximum Daily Load (TMDL) for nutrients, including nitrogen in the Malibu Creek Watershed had been published by the USEPA (2003b). An implementation plan for this TMDL is being developed by the Los Angeles RWQCB; any project should be designed to comply with TMDL limits.

**Bacterial Contamination of Groundwater or Malibu Lagoon.** The potential for bacterial contamination of groundwater or Malibu Lagoon from wastewater recycling or subsurface percolation would be negligible and substantially improved over existing conditions by virtue of the fact that: (1) the water would be treated to a tertiary level, including disinfection, which is considerably higher than normally required for subsurface wastewater dispersal or landscape irrigation; (2) any new areas proposed for subsurface wastewater dispersal would be expected to meet standard soil and groundwater requirements for subsurface dispersal of primary treated (i.e., septic tank) effluent; and (3) irrigation of landscaped areas (using recycled water) would be matched to the water needs (evapotranspiration) of the plants to reduce the amount of water reaching the groundwater system. The wastewater system would achieve compliance with bacteria TMDL requirements adopted for Malibu Creek and Lagoon by the Los Angeles RWQCB.

### 9.2.5 Recycled Water for Toilet Flushing

The use of recycled water for toilet flushing exposes humans to possible physical contact with treated wastewater. California Title 22 Water Recycling Criteria recognize toilet flushing as a suitable use for treated wastewater, and contain standards to protect against unacceptable risks to public health. For the proposed project, the treatment of wastewater would be to a tertiary level, which meets minimum recycled water standards for toilet flushing. The treatment system would be designed, operated and monitored to comply with the same standards followed elsewhere in California for the proposed recycling uses; therefore, the risks to public health would be small.

## 10.0 Conclusions and Recommendations

The study team has concluded that, from a wastewater perspective, the commercial area immediately west of the Lagoon that contributes groundwater to the Lagoon (Sub-area 1) has a flow that is compatible with the capacity of the Chili Cook-off or the Wave reclamation or dispersal and recycling sites. Providing a community wastewater system for this service area using either of these two dispersal sites can provide a significant water quality benefit when also combined with nitrogen removal in residential onsite systems in the lagoon contributing area, particularly the Serra Retreat area. Larger service areas can be accommodated by using multiple dispersal sites; however, the nitrogen water quality benefit to the lagoon would not be as great, due to the need to disperse more treated effluent in existing commercial wastewater system leachfields.

STEP systems appear to be a very appropriate technology for the service area in Sub-area 1.

The results of the comparative analysis favors locating the treatment facility at either the Wave or Yamaguchi property, rather than the Chili Cook-off site because of the more remote proximity to public areas and the consequential reduction in the degree of potential visual, odor, noise or other nuisance impacts. The analysis did not determine a strong preference between the SBR and MBR treatment technologies for the two levels of capacity reviewed. The SBR is estimated to be less costly; however, because of the smaller land requirements, there would be greater design flexibility and perhaps lower cost to enclose the MBR, especially for the larger plant size. The overall land area required for a community treatment-reclamation facility would be on the order of 0.5 to 1.0 acre. Three wastewater reclamation options should remain under consideration: SBR, MBR and TFCW. The final selection will require consideration of the site selected for the treatment facility and the land use requirements of the stormwater management elements of the integrated water quality management project.

The evaluation of potential locations for the reclamation facility revealed that the Wave property is relatively remote and thereby buffered from public view. It is also significantly out of the flood plain and has considerable potential capacity for dispersal and reuse of treated water. The Chili Cook-off site has a limited area outside the 100-year flood plain; it will be more difficult to buffer this location using facility placement, and landscaping. The Chili Cook-off has the highest approximate capacity for wastewater reuse and dispersal. The upper Yamaguchi property is relatively remote and out of the flood plain however, there is significantly less potential capacity for wastewater dispersal and reuse at this site. The lower Yamaguchi property will require more buffering, does not have the dispersal and reuse capacity of either the Wave or Chili Cook-off parcels, and mostly well above the flood plain.

The key outcomes of the draft report are as follows:

1. Areas within the Civic Center study area rated as having a potentially high need for community wastewater treatment include the properties within the following areas: Civic Center commercial, Malibu Colony, Malibu Road, Serra and PCH commercial (east).

2. Use of individual onsite nitrogen reduction systems in the Serra Retreat area can provide significant reduction of nitrogen load to the lagoon, and should be a component of any wastewater management program in the study area.

3. Dispersal and recycling capacity can be feasibly provided for a community wastewater system within the Civic Center area for a service area with average wastewater flows up to about 200,000 gpd in a way that would provide compliance with the bacteria and nitrate (anticipated) TMDL for Malibu Creek and Lagoon.

4. Should the policy decision be made to support wastewater treatment for all high need occupancies in the study area (approximately 200,000 gpd), then the apparent best option for a community wastewater system for a larger service area would include treatment and dispersal at the Wave property, with additional dispersal and recycling capacity (irrigation and percolation) at the Chili Cook-off site (**Figure 10-1**). [Note: implementation of this conclusion is dependent on finalizing transactions to purchase both of these properties].

5. Should the policy decision be made to focus exclusively on the commercial area of the Civic Center for community wastewater treatment, in conjunction with imposition of more stringent requirements on OWTS for specific residential areas, then the apparent best location for a community wastewater treatment system to serve only the Civic Center commercial area would be at the Wave property. (**Figure 10-2**) [Note: implementation of this conclusion is dependent on finalizing a transaction to purchase the Wave property.]

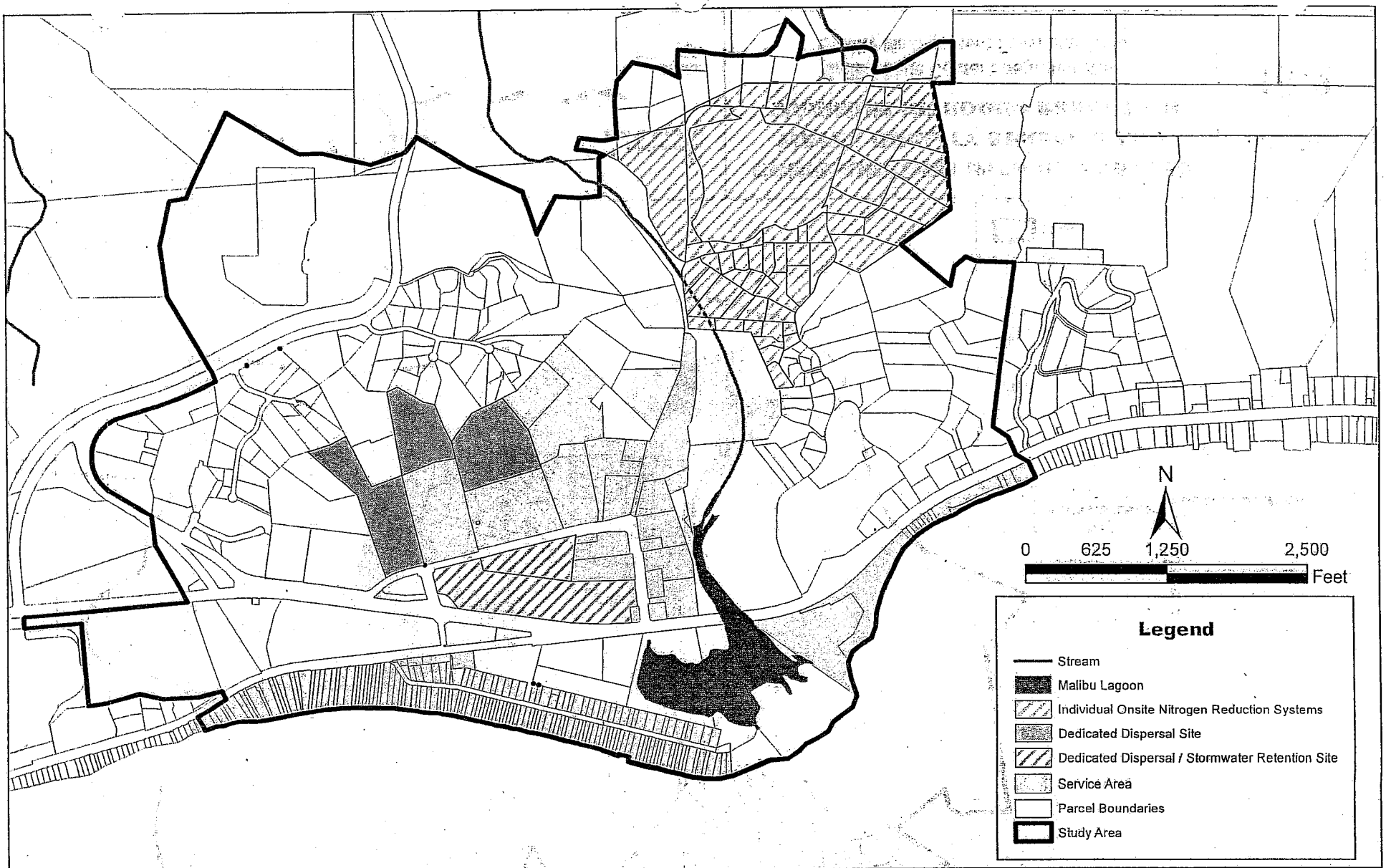
6. Provision of stormwater treatment (per TMDL requirements) utilizing a wetland-flood detention approach can be accomplished at the Chili Cook-off site. It could be done in a way that is compatible with goals for environmental enhancement, irrigation reuse (per 3 above) and other community-oriented open space uses.

7. Development of an integrated water quality management approach to address both the wastewater and stormwater quality control needs in the Civic Center area would be achieved most feasibly with the acquisition and use of both the Wave and Chili Cook-off properties.

8. An optimal maximum project for stormwater and wastewater could incorporate Wave, Chili Cook-off, both Yamaguchi parcels, and onsite nitrogen reduction in the Serra Retreat area.

9. Estimated implementation costs for the various wastewater treatment, recycling, and stormwater management measures addressed in this report are summarized in **Table 10-1**. These include costs for construction, engineering, environmental review, and contingencies. They do not include costs for land acquisition.

10. Estimated annual operation and maintenance costs for an integrated water quality management project are presented in **Table 10-2**.



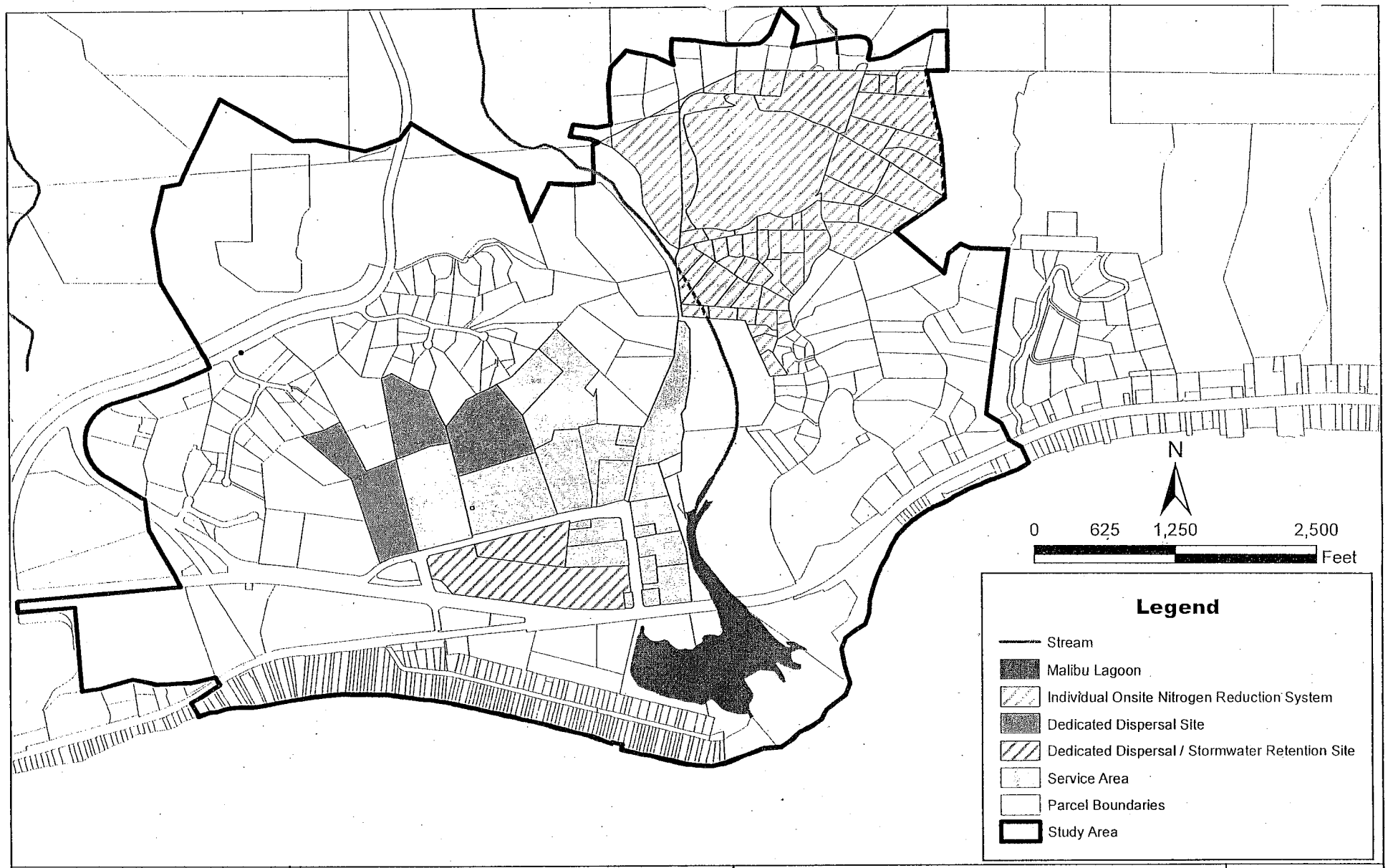

Project:
Malibu Civic Center
Project No.:
240220
Date:
25 April 2005
Drawn By:
KOW
Path:
P:\2004\240220 ...libu_Civic_Center

QUESTA ENGINEERING CORP.
Civil Environmental & Water Resources
P.O. Box 70856 1220 Brickyard Cove Road Point Richmond, CA 94807

# CONFIGURATION WITH MAXIMUM INTEGRATED WATER QUALITY BENEFITS

Malibu Civic Center Integrated Water Quality Management Feasibility Study

FIGURE
10-1




Project:
Malibu Civic Center
Project No.:
240220
Date:
25 April 2005
Drawn By:
KOW
Path:
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QUESTA
Civil
Environmental
& Water Resources
P.O. Box 70356 1220 Brickyard Cove Road Point Richmond, CA 94807

**CONFIGURATION WITH INTEGRATED WATER QUALITY BENEFITS AND MAXIMUM NITROGEN REDUCTION**

Malibu Civic Center Integrated Water Quality Management Feasibility Study

FIGURE
**10-2**

## Table 10-1. Summary of Estimated Project Costs for Integrated Water Quality Management[1]

| ITEM | SERVICE ALTERNATIVE 1, 2[2] | | SERVICE ALTERNATIVE 3[3] | |
|---|---|---|---|---|
| | Low Cost | High Cost | Low Cost | High Cost |
| WASTEWATER COSTS | | | | |
| Collection System | $ 3,080,000 | $ 3,470,000 | $ 1,031,000 | $ 1,475,000 |
| Wastewater Treatment | $ 2,131,000 | $ 2,930,000 | $ 1,792,000 | $ 2,212,000 |
| Building Enclosure, Site Work and Landscaping | $ 2,000,000 | $ 2,200,000 | $ 1,700,000 | $ 1,900,000 |
| Wastewater Irrigation and Dispersal at Dedicated Dispersal Sites | $ 1,850,000 | $ 3,300,000 | $ 1,850,000 | $ 2,000,000 |
| Recycled Water Distribution System | $ 1,100,000 | $ 1,100,000 | $ 800,000 | $ 800,000 |
| WASTEWATER TOTAL | $ 10,161,000 | $ 13,000,000 | $ 7,173,000 | $ 8,387,000 |
| STORMWATER MANAGEMENT COSTS | | | | |
| Stormwater Wetland Detention System[4] | $ 1,300,000 | $ 1,450,000 | $ 1,300,000 | $ 1,450,000 |
| SUBTOTAL | $ 11,461,000 | $ 14,450,000 | $ 8,473,000 | $ 9,837,000 |
| Planning, Permitting, Engineering and Administration @ 30% | $ 3,438,300 | $ 4,335,000 | $ 2,541,900 | $ 2,951,100 |
| Contingencies @ 20% | $ 2,292,200 | $ 2,890,000 | $ 1,694,600 | $ 1,967,400 |
| GRAND TOTAL | $ 17,191,500 | $ 21,675,000 | $ 12,709,500 | $ 14,755,500 |

[1]Does not include land acquisition costs
[2]Corresponds to a wastewater treatment capacity of 200,000 gpd
[3]Corresponds to a wastewater treatment capacity of 120,000 gpd
[4]Costs for Stormwater Detention System do not include any modifications to the City's planned Stormwater Treatment Facility.

## Table 10-2. Estimated Annual Operation and Maintenance Costs for Integrated Water Quality Management

| ITEM | WASTEWATER FLOW 120,000 gpd ($) | WASTEWATER FLOW 200,000 gpd ($) |
|---|---|---|
| Collection [1] | 80,000 | 130,000 |
| Treatment [2] | 270,000 | 320,000 |
| Dispersal/Recycling [3] | 75,000 | 75,000 |
| Stormwater Detention [4] | 75,000 | 75,000 |
| Permits, Insurance & Professional Services | 50,000 | 60,000 |
| Contingency | 50,000 | 60,000 |
| TOTAL | $600,000 | $720,000 |

[1] Includes labor and materials for STEP/grinder pump inspection, pump maintenance/replacement, septic tank pumping and disposal.
[2] See **Appendix C1** for detailed itemization of costs.
[3] Includes labor, electrical and materials for inspection, monitoring, and repair/replacement of dispersal field facilities, irrigation systems, and recycled water distribution piping.
[4] Includes labor, electrical and materials for stormwater pumping system, make-up water and recirculation system, and wetland vegetation/landscape maintenance.

# Appendix A
# REFERENCES

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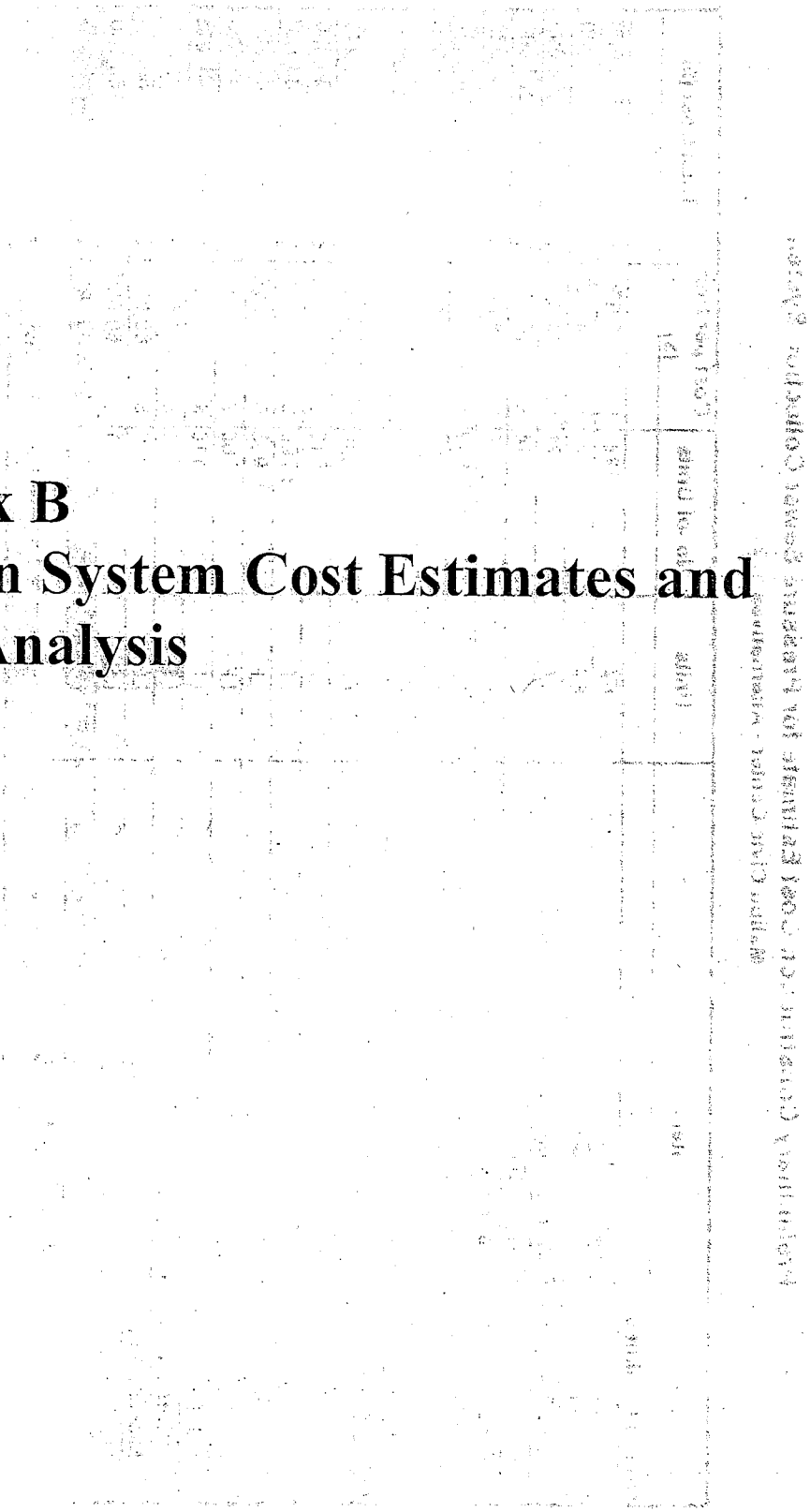
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# Appendix B
# Collection System Cost Estimates and Branch Analysis



## Preliminary Construction Cost Estimate for Pressure Sewer Collection System

**Malibu Civic Center - Alternatives 1, 2**

| Item | Units | No. of Units | Cost per Unit ($) | Total Cost ($) |
|---|---|---|---|---|
| **On-Lot Facilities** | | | | |
| GP 2010 (pump & alarm panel) | EA | 184 | $ 3,500 | $ 644,000 |
| GP 2012 (pump & alarm panel) | EA | 4 | $ 4,000 | $ 16,000 |
| GP 2014 (pump & alarm panel) | EA | 21 | $ 14,000 | $ 294,000 |
| GP 2015 (pump & alarm panel) | EA | 14 | $ 16,000 | $ 224,000 |
| GP 2016 (pump & alarm panel) | EA | 2 | $ 18,000 | $ 36,000 |
| 1.25" Pipe Laterals | LF | 22,500 | $ 25 | $ 562,500 |
| Lateral Kits | EA | 225 | $ 200 | $ 45,000 |
| Pump/Panel Installation | EA | 225 | $ 2,500 | $ 562,500 |
| **Piping & Valves** | | | | |
| 1.5" PVC | LF | 1,485 | $ 17 | $ 25,245 |
| 2.0" PVC | LF | 1,515 | $ 20 | $ 30,300 |
| 2.5" PVC | LF | 3,790 | $ 22 | $ 83,380 |
| 3.0" PVC | LF | 5,905 | $ 25 | $ 147,625 |
| 4.0" PVC | LF | 1,360 | $ 32 | $ 43,520 |
| 5.0" PVC | LF | 1,110 | $ 40 | $ 44,400 |
| Valves and Appurtenances | LS | 1 | $ 31,530 | $ 31,530 |
| Miscellaneous | LS | 1 | $ 80,000 | $ 80,000 |
| Mobilization | LS | 1 | $ 150,000 | $ 150,000 |
| | | | **SUBTOTAL** | **$ 3,020,000** |
| **Contractor Overhead & Profit @ 15% (+)** | | | | $ 450,000 |
| | | | **TOTAL** | **$ 3,470,000** |

## Preliminary Construction Cost Estimate for Pressure Sewer Collection System

**Malibu Civic Center - Alternative 3**

| Item | Units | No. of Units | Cost per Unit ($) | Total Cost ($) |
|---|---|---|---|---|
| On-Lot Facilities | | | | |
| GP 2010 (pump & alarm panel) | EA | 15 | $ 3,500 | $ 52,500 |
| GP 2012 (pump & alarm panel) | EA | 4 | $ 4,000 | $ 16,000 |
| GP 2014 (pump & alarm panel) | EA | 21 | $ 14,000 | $ 294,000 |
| GP 2015 (pump & alarm panel) | EA | 14 | $ 16,000 | $ 224,000 |
| GP 2016 (pump & alarm panel) | EA | 2 | $ 18,000 | $ 36,000 |
| 1.25" Pipe Laterals | LF | 5,600 | $ 25 | $ 140,000 |
| Lateral Kits | EA | 56 | $ 200 | $ 11,200 |
| Pump/Panel Installation | EA | 56 | $ 2,500 | $ 140,000 |
| Piping & Valves | | | | |
| 1.5" PVC | LF | 910 | $ 17 | $ 15,470 |
| 2.0" PVC | LF | 1,100 | $ 20 | $ 22,000 |
| 2.5" PVC | LF | 1,090 | $ 22 | $ 23,980 |
| 3.0" PVC | LF | 2,850 | $ 25 | $ 71,250 |
| 4.0" PVC | LF | 1,360 | $ 32 | $ 43,520 |
| 5.0" PVC | LF | 2,000 | $ 40 | $ 80,000 |
| Valves and Appurtenances | LS | 1 | $ 15,000 | $ 15,000 |
| Miscellaneous | LS | 1 | $ 30,000 | $ 30,000 |
| Mobilization | LS | 1 | $ 60,000 | $ 60,000 |
| | | | SUBTOTAL | $ 1,274,920 |
| Contractor Overhead & Profit @ 15% (+) | | | | $ 200,000 |
| | | | TOTAL | $ 1,457,000 |

## Preliminary Construction Cost Estimate for STEP Sewer Collection System

**Malibu Civic Center - Alternatives 1, 2**

| Item | Units | No. of Units | Cost per Unit ($) | Total Cost ($) |
|---|---|---|---|---|
| **On-Lot Facilities** | | | | |
| Residential Septic Tank | EA | 139 | $ 4,000 | $ 556,000 |
| Commercial Septic Tank | EA | 31 | $ 5,500 | $ 170,500 |
| Residential STEP Unit | EA | 139 | $ 4,000 | $ 556,000 |
| Commercial STEP Unit | EA | 31 | $ 5,000 | $ 155,000 |
| 1.25" Pipe Laterals | LF | 22,500 | $ 25 | $ 562,500 |
| **Piping & Valves** | | | | |
| 1.5" PVC | LF | 1,485 | $ 17 | $ 25,245 |
| 2.0" PVC | LF | 1,515 | $ 20 | $ 30,300 |
| 2.5" PVC | LF | 3,790 | $ 22 | $ 83,380 |
| 3.0" PVC | LF | 5,905 | $ 25 | $ 147,625 |
| 4.0" PVC | LF | 1,360 | $ 32 | $ 43,520 |
| 5.0" PVC | LF | 1,110 | $ 40 | $ 44,400 |
| Valves and Appurtenances | LS | 1 | $ 25,530 | $ 25,530 |
| Miscellaneous | LS | 1 | $ 80,000 | $ 80,000 |
| Mobilization | LS | 1 | $ 200,000 | $ 200,000 |
| | | | **SUBTOTAL** | **$ 2,680,000** |
| **Contractor Overhead & Profit @ 15% (±)** | | | | $ 400,000 |
| | | | **TOTAL** | **$ 3,080,000** |

## Preliminary Construction Cost Estimate for STEP Sewer Collection System

**Malibu Civic Center - Alternative 3**

| Item | Units | No. of Units | Cost per Unit ($) | Total Cost ($) |
|---|---|---|---|---|
| On-Lot Facilities | | | | |
| Residential Septic Tank | EA | 10 | $ 4,000 | $ 41,000 |
| Commercial Septic Tank | EA | 31 | $ 5,500 | $ 170,500 |
| Residential STEP Unit | EA | 10 | $ 4,000 | $ 40,000 |
| Commercial STEP Unit | EA | 31 | $ 5,000 | $ 155,000 |
| 1.25" Pipe Laterals | LF | 5,600 | $ 25 | $ 140,000 |
| Piping & Valves | | | | |
| 1.5" PVC | LF | 910 | $ 17 | $ 15,470 |
| 2.0" PVC | LF | 1,100 | $ 20 | $ 22,000 |
| 2.5" PVC | LF | 1,090 | $ 22 | $ 23,980 |
| 3.0" PVC | LF | 2,850 | $ 25 | $ 71,250 |
| 4.0" PVC | LF | 1,360 | $ 32 | $ 43,520 |
| 5.0" PVC | LF | 2,000 | $ 40 | $ 80,000 |
| Valves and Appurtenances | LS | 1 | $ 8,280 | $ 8,280 |
| Miscellaneous | LS | 1 | $ 25,000 | $ 25,000 |
| Mobilization | LS | 1 | $ 60,000 | $ 60,000 |
| | | | SUBTOTAL | $ 896,000 |
| Contractor Overhead & Profit @ 15% (+) | | | | $ 135,000 |
| | | | TOTAL | $ 1,031,000 |

Prepared By:
Anna Rensi

# PRELIMINARY PRESSURE SEWER - PIPE SIZING AND BRANCH ANALYSIS
## PRELIMINARY PRESSURE SEWER BRANCH ANALYSIS
### Malibu Civic Center - Alternative 1 and 2

March 8, 2005

| Zone Number | Connects to Zone | Number of Pumps in Zone | Accum Pumps in Zone | Gal/Day per Core | Max Flow per Core | Max Sim Ops | Max Flow (GPM) | Pipe Size (Inches) | Max Velocity (FPS) | Length of Main this Zone | Friction Loss Factor (ft/100ft) | Friction Loss this Zone | Accumulated Friction Loss (Feet) | Max Main Elevation | Minimum Pump Elevation | Static Head (Feet) | Total Dynamic Head (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| his spreadsheet was calculated using pipe diameters for:SDR21PVC | | | | | | | | | | | | | Friction loss calculations were based on a Constant for inside roughness 150 | | | | |
| 1.00 | 2.00 | 3 | 3 | 500.00 | 11.00 | 2 | 22.00 | 1.50 | 3.04 | 70.00 | 2.15 | 1.51 | 110.40 | 30.00 | 8.00 | 22.00 | 132.40 |
| 2.00 | 3.00 | 5 | 8 | 500.00 | 11.00 | 3 | 33.00 | 2.00 | 2.92 | 160.00 | 1.54 | 2.47 | 108.89 | 30.00 | 6.50 | 23.50 | 132.39 |
| 3.00 | 4.00 | 8 | 16 | 500.00 | 11.00 | 4 | 44.00 | 2.00 | 3.89 | 195.00 | 2.63 | 5.13 | 106.42 | 30.00 | 6.10 | 23.90 | 130.32 |
| 4.00 | 5.00 | 11 | 27 | 500.00 | 11.00 | 5 | 55.00 | 2.50 | 3.32 | 250.00 | 1.57 | 3.92 | 101.30 | 30.00 | 6.10 | 23.90 | 125.20 |
| 5.00 | 6.00 | 23 | 50 | 500.00 | 11.00 | 6 | 66.00 | 2.50 | 3.98 | 520.00 | 2.20 | 11.44 | 97.37 | 30.00 | 5.50 | 24.50 | 121.87 |
| 6.00 | 7.00 | 29 | 79 | 500.00 | 11.00 | 7 | 77.00 | 2.50 | 4.65 | 660.00 | 2.93 | 19.32 | 85.93 | 30.00 | 7.50 | 22.50 | 108.43 |
| 7.00 | 8.00 | 33 | 112 | 500.00 | 11.00 | 8 | 88.00 | 3.00 | 3.59 | 680.00 | 1.44 | 9.80 | 66.61 | 30.00 | 8.90 | 21.10 | 87.71 |
| 8.00 | 14.00 | 18 | 130 | 500.00 | 11.00 | 9 | 99.00 | 3.00 | 4.03 | 630.00 | 1.79 | 11.29 | 56.81 | 30.00 | 8.00 | 22.00 | 78.81 |
| 9.00 | 10.00 | 3 | 3 | 500.00 | 11.00 | 2 | 22.00 | 1.50 | 3.04 | 230.00 | 2.15 | 4.95 | 90.62 | 30.00 | 4.00 | 26.00 | 116.62 |
| 10.00 | 11.00 | 6 | 9 | 500.00 | 11.00 | 3 | 33.00 | 1.50 | 4.56 | 275.00 | 4.56 | 12.54 | 85.67 | 30.00 | 4.00 | 26.00 | 111.67 |
| 11.00 | 12.00 | 9 | 18 | 500.00 | 11.00 | 4 | 44.00 | 2.00 | 3.89 | 510.00 | 2.63 | 13.41 | 73.13 | 30.00 | 12.00 | 18.00 | 91.13 |
| 12.00 | 13.00 | 12 | 30 | 500.00 | 11.00 | 5 | 55.00 | 2.50 | 3.32 | 610.00 | 1.57 | 9.58 | 59.72 | 30.00 | 9.60 | 20.40 | 80.12 |
| 13.00 | 14.00 | 6 | 36 | 500.00 | 11.00 | 6 | 66.00 | 2.50 | 3.98 | 210.00 | 2.20 | 4.62 | 50.15 | 30.00 | 7.90 | 22.10 | 72.25 |
| 14.00 | 26.00 | 3 | 169 | 500.00 | 11.00 | 10 | 110.00 | 3.00 | 4.48 | 1,745.00 | 2.18 | 38.00 | 45.53 | 30.00 | 12.00 | 18.00 | 63.53 |
| 15.00 | 16.00 | 14 | 14 | 500.00 | 11.00 | 4 | 44.00 | 2.50 | 2.66 | 150.00 | 1.04 | 1.56 | 99.81 | 30.00 | 4.00 | 26.00 | 125.81 |
| 16.00 | 17.00 | 12 | 26 | 500.00 | 11.00 | 5 | 55.00 | 2.50 | 3.32 | 300.00 | 1.57 | 4.71 | 98.25 | 30.00 | 16.00 | 14.00 | 112.25 |
| 17.00 | 18.00 | 16 | 42 | 500.00 | 11.00 | 6 | 66.00 | 2.50 | 3.98 | 370.00 | 2.20 | 8.14 | 93.54 | 30.00 | 10.00 | 20.00 | 113.54 |
| 18.00 | 19.00 | 29 | 71 | 500.00 | 11.00 | 7 | 77.00 | 2.50 | 4.65 | 720.00 | 2.93 | 21.08 | 85.40 | 30.00 | 8.00 | 22.00 | 107.40 |
| 19.00 | 20.00 | 14 | 85 | 500.00 | 11.00 | 8 | 88.00 | 3.00 | 3.59 | 2,040.00 | 1.44 | 29.39 | 64.32 | 30.00 | 16.00 | 14.00 | 78.32 |
| 20.00 | 21.00 | 30 | 115 | 500.00 | 11.00 | 9 | 99.00 | 3.00 | 4.03 | 630.00 | 1.79 | 11.29 | 34.93 | 30.00 | 8.00 | 22.00 | 56.93 |
| 21.00 | 25.00 | 64 | 179 | 500.00 | 11.00 | 10 | 110.00 | 3.00 | 4.48 | 180.00 | 2.18 | 3.92 | 23.65 | 30.00 | 9.50 | 20.50 | 44.15 |
| 22.00 | 23.00 | 2 | 2 | 500.00 | 11.00 | 2 | 22.00 | 1.50 | 3.04 | 750.00 | 2.15 | 16.14 | 60.25 | 30.00 | 15.00 | 15.00 | 75.25 |
| 23.00 | 24.00 | 2 | 4 | 500.00 | 11.00 | 3 | 33.00 | 1.50 | 4.56 | 160.00 | 4.56 | 7.29 | 44.11 | 30.00 | 17.00 | 13.00 | 57.11 |
| 24.00 | 25.00 | 13 | 17 | 500.00 | 11.00 | 4 | 44.00 | 2.00 | 3.89 | 650.00 | 2.63 | 17.09 | 36.81 | 30.00 | 11.90 | 18.10 | 54.91 |
| 25.00 | 26.00 | 19 | 215 | 500.00 | 11.00 | 12 | 132.00 | 4.00 | 3.25 | 1,360.00 | 0.90 | 12.20 | 19.73 | 30.00 | 11.90 | 18.10 | 37.83 |
| 26.00 | 26.00 | 38 | 422 | 500.00 | 11.00 | 18 | 198.00 | 5.00 | 3.19 | 1,110.00 | 0.68 | 7.53 | 7.53 | 30.00 | 12.50 | 17.50 | 25.03 |



Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One.
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Prepared By:
Anna Rensi

PRELIMINARY PRESSURE SE ACCUMULATED RETENTION TIME (HR)
PRELIMINARY PRES RE SEWER BRANCH ANALYSIS
Malibu Civic Center - Alternative 1 and 2

March 8, 2005

| Zone Number | Connects to Zone | Accumulated Total of Pumps this Zone | Existing Pipe Size | Gallons per 100 Lineal Feet | Length of Zone | Capacity of Zone | Average Daily Flow | Average Fluid Changes per Day | Average Retention Time (Hr) | Accumulated Retention Time (Hr) |
|---|---|---|---|---|---|---|---|---|---|---|
| his spreadsheet was calculated using pipe diameters for SDR21PVC | | | | | | | | | | |
| 1.00 | 2.00 | 3 | 1.50 | 12.07 | 70.00 | 8.45 | 1,500 | 177.53 | 0.14 | 1.34 |
| 2.00 | 3.00 | 8 | 2.00 | 18.84 | 160.00 | 30.15 | 4,000 | 132.68 | 0.18 | 1.21 |
| 3.00 | 4.00 | 16 | 2.00 | 18.84 | 195.00 | 36.74 | 8,000 | 217.73 | 0.11 | 1.03 |
| 4.00 | 5.00 | 27 | 2.50 | 27.60 | 250.00 | 69.00 | 13,500 | 195.64 | 0.12 | 0.92 |
| 5.00 | 6.00 | 50 | 2.50 | 27.60 | 520.00 | 143.53 | 25,000 | 174.18 | 0.14 | 0.80 |
| 6.00 | 7.00 | 79 | 2.50 | 27.60 | 660.00 | 182.17 | 39,500 | 216.83 | 0.11 | 0.66 |
| 7.00 | 8.00 | 112 | 3.00 | 40.90 | 680.00 | 278.09 | 56,000 | 201.37 | 0.12 | 0.55 |
| 8.00 | 14.00 | 130 | 3.00 | 40.90 | 630.00 | 257.64 | 65,000 | 252.29 | 0.10 | 0.43 |
| 9.00 | 10.00 | 3 | 1.50 | 12.07 | 230.00 | 27.76 | 1,500 | 54.03 | 0.44 | 1.56 |
| 10.00 | 11.00 | 9 | 1.50 | 12.07 | 275.00 | 33.19 | 4,500 | 135.57 | 0.18 | 1.11 |
| 11.00 | 12.00 | 18 | 2.00 | 18.84 | 510.00 | 96.10 | 9,000 | 93.66 | 0.26 | 0.94 |
| 12.00 | 13.00 | 30 | 2.50 | 27.60 | 610.00 | 168.37 | 15,000 | 89.09 | 0.27 | 0.68 |
| 13.00 | 14.00 | 36 | 2.50 | 27.60 | 210.00 | 57.96 | 18,000 | 310.54 | 0.08 | 0.41 |
| 14.00 | 26.00 | 169 | 3.00 | 40.90 | 1,745.00 | 713.64 | 84,500 | 118.41 | 0.20 | 0.33 |
| 15.00 | 16.00 | 14 | 2.50 | 27.60 | 150.00 | 41.40 | 7,000 | 169.07 | 0.14 | 1.48 |
| 16.00 | 17.00 | 26 | 2.50 | 27.60 | 300.00 | 82.81 | 13,000 | 156.99 | 0.15 | 1.34 |
| 17.00 | 18.00 | 42 | 2.50 | 27.60 | 370.00 | 102.13 | 21,000 | 205.63 | 0.12 | 1.19 |
| 18.00 | 19.00 | 71 | 2.50 | 27.60 | 720.00 | 198.73 | 35,500 | 178.63 | 0.13 | 1.07 |
| 19.00 | 20.00 | 85 | 3.00 | 40.90 | 2,040.00 | 834.28 | 42,500 | 50.94 | 0.47 | 0.93 |
| 20.00 | 21.00 | 115 | 3.00 | 40.90 | 630.00 | 257.64 | 57,500 | 223.18 | 0.11 | 0.46 |
| 21.00 | 25.00 | 179 | 3.00 | 40.90 | 180.00 | 73.61 | 89,500 | 1,215.82 | 0.02 | 0.36 |
| 22.00 | 23.00 | 2 | 1.50 | 12.07 | 750.00 | 90.53 | 1,000 | 11.05 | 2.17 | 3.09 |
| 23.00 | 24.00 | 4 | 1.50 | 12.07 | 160.00 | 19.31 | 2,000 | 103.56 | 0.23 | 0.91 |
| 24.00 | 25.00 | 17 | 2.00 | 18.84 | 650.00 | 122.47 | 8,500 | 69.40 | 0.35 | 0.68 |
| 25.00 | 26.00 | 215 | 4.00 | 67.65 | 1,360.00 | 920.05 | 107,500 | 116.84 | 0.21 | 0.34 |
| 26.00 | 26.00 | 422 | 5.00 | 103.35 | 1,110.00 | 1,147.19 | 211,000 | 183.93 | 0.13 | 0.13 |



Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One
C:\Program Files\EONE Design Assistant 6.0.2\Projects\240220-Alternative1.MDB

Prepared By:
Anna Rensi

# PRELIMINARY PRESSURE SEWER - PIPE SIZING AND BRANCH ANALYSIS
## PRELIMINARY PRESSURE SEWER BRANCH ANALYSIS
Malibu Civic Center - Alternative 3

March 8, 2005

| Zone Number | Connects to Zone | Number of Pumps in Zone | Accum Pumps in Zone | Gal/Day per Core | Max Flow per Core | Max Sim Ops | Max Flow (GPM) | Pipe Size (Inches) | Max Velocity (FPS) | Length of Main this Zone | Friction Loss Factor (ft/100ft) | Friction Loss this Zone | Accumulated Friction Loss (Feet) | Max Main Elevation | Minimum Pump Elevation | Static Head (Feet) | Total Dynamic Head (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| his spreadsheet was calculated using pipe diameters for:SDR21PVC | | | | | | | | | | | | | Friction loss calculations were based on a Constant for inside roughness 150 | | | | |
| 1.00 | 2.00 | 14 | 14 | 500.00 | 11.00 | 4 | 44.00 | 2.00 | 3.89 | 150.00 | 2.63 | 3.94 | 109.30 | 30.00 | 4.00 | 26.00 | 135.30 |
| 2.00 | 3.00 | 12 | 26 | 500.00 | 11.00 | 5 | 55.00 | 2.00 | 4.86 | 300.00 | 3.97 | 11.92 | 105.36 | 30.00 | 16.00 | 14.00 | 119.36 |
| 3.00 | 4.00 | 16 | 42 | 500.00 | 11.00 | 6 | 66.00 | 2.50 | 3.98 | 370.00 | 2.20 | 8.14 | 93.44 | 30.00 | 10.00 | 20.00 | 113.44 |
| 4.00 | 5.00 | 29 | 71 | 500.00 | 11.00 | 7 | 77.00 | 2.50 | 4.65 | 720.00 | 2.93 | 21.08 | 85.29 | 30.00 | 8.00 | 22.00 | 107.29 |
| 5.00 | 6.00 | 14 | 85 | 500.00 | 11.00 | 8 | 88.00 | 3.00 | 3.59 | 2,040.00 | 1.44 | 29.39 | 64.22 | 30.00 | 16.00 | 14.00 | 78.22 |
| 6.00 | 7.00 | 30 | 115 | 500.00 | 11.00 | 9 | 99.00 | 3.00 | 4.03 | 630.00 | 1.79 | 11.29 | 34.83 | 30.00 | 8.00 | 22.00 | 56.83 |
| 7.00 | 11.00 | 64 | 179 | 500.00 | 11.00 | 10 | 110.00 | 3.00 | 4.48 | 180.00 | 2.18 | 3.92 | 23.54 | 30.00 | 9.50 | 20.50 | 44.04 |
| 8.00 | 9.00 | 2 | 2 | 500.00 | 11.00 | 2 | 22.00 | 1.50 | 3.04 | 750.00 | 2.15 | 16.14 | 60.14 | 30.00 | 15.00 | 15.00 | 75.14 |
| 9.00 | 10.00 | 2 | 4 | 500.00 | 11.00 | 3 | 33.00 | 1.50 | 4.56 | 160.00 | 4.56 | 7.29 | 44.00 | 30.00 | 17.00 | 13.00 | 57.00 |
| 10.00 | 11.00 | 13 | 17 | 500.00 | 11.00 | 4 | 44.00 | 2.00 | 3.89 | 650.00 | 2.63 | 17.09 | 36.71 | 30.00 | 11.90 | 18.10 | 54.81 |
| 11.00 | 12.00 | 19 | 215 | 500.00 | 11.00 | 12 | 132.00 | 4.00 | 3.25 | 1,360.00 | 0.90 | 12.20 | 19.62 | 30.00 | 11.90 | 18.10 | 37.72 |
| 12.00 | 12.00 | 38 | 253 | 500.00 | 11.00 | 13 | 143.00 | 5.00 | 2.31 | 2,000.00 | 0.37 | 7.42 | 7.42 | 30.00 | 12.50 | 17.50 | 24.92 |



Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One.
C:\Program Files\EONE Design A nt 6.0.2\Projects\240220-Alternative3.MDB

Prepared By:
Anna Rensi

# PRELIMINARY PRESSURE SI - ACCUMULATED RETENTION TIME (HR)
## PRELIMINARY PRE. RE SEWER BRANCH ANALYSIS
### Malibu Civic Center - Alternative 3

March 8, 2005

| Zone Number | Connects to Zone | Accumulated Total of Pumps this Zone | Existing Pipe Size | Gallons per 100 Lineal Feet | Length of Zone | Capacity of Zone | Average Daily Flow | Average Fluid Changes per Day | Average Retention Time (Hr) | Accumulated Retention Time (Hr) |
|---|---|---|---|---|---|---|---|---|---|---|
| his spreadsheet was calculated using pipe diameters for SDR21PVC | | | | | | | | | | |
| 1.00 | 2.00 | 14 | 2.00 | 18.84 | 150.00 | 28.26 | 7,000 | 247.67 | 0.10 | 1.65 |
| 2.00 | 3.00 | 26 | 2.00 | 18.84 | 300.00 | 56.53 | 13,000 | 229.98 | 0.10 | 1.55 |
| 3.00 | 4.00 | 42 | 2.50 | 27.60 | 370.00 | 102.13 | 21,000 | 205.63 | 0.12 | 1.45 |
| 4.00 | 5.00 | 71 | 2.50 | 27.60 | 720.00 | 198.73 | 35,500 | 178.63 | 0.13 | 1.33 |
| 5.00 | 6.00 | 85 | 3.00 | 40.90 | 2,040.00 | 834.28 | 42,500 | 50.94 | 0.47 | 1.20 |
| 6.00 | 7.00 | 115 | 3.00 | 40.90 | 630.00 | 257.64 | 57,500 | 223.18 | 0.11 | 0.72 |
| 7.00 | 11.00 | 179 | 3.00 | 40.90 | 180.00 | 73.61 | 89,500 | 1,215.82 | 0.02 | 0.62 |
| 8.00 | 9.00 | 2 | 1.50 | 12.07 | 750.00 | 90.53 | 1,000 | 11.05 | 2.17 | 3.35 |
| 9.00 | 10.00 | 4 | 1.50 | 12.07 | 160.00 | 19.31 | 2,000 | 103.56 | 0.23 | 1.18 |
| 10.00 | 11.00 | 17 | 2.00 | 18.84 | 650.00 | 122.47 | 8,500 | 69.40 | 0.35 | 0.94 |
| 11.00 | 12.00 | 215 | 4.00 | 67.65 | 1,360.00 | 920.05 | 107,500 | 116.84 | 0.21 | 0.60 |
| 12.00 | 12.00 | 253 | 5.00 | 103.35 | 2,000.00 | 2,067.01 | 126,500 | 61.20 | 0.39 | 0.39 |



Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One
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# Appendix D
# Groundwater Modeling Report

McDonald Morrissey ASSOCIATES, Inc.

GROUND WATER HYDROLOGISTS

MEMORANDUM

**FROM:** Daniel J. Morrissey, McDonald Morrissey Associates, Inc.

**TO:** Bruce Douglas, Questa Engineering Corporation

**DATE:** April 26, 2005

**SUBJECT:** Malibu Civic Center Wastewater Feasibility Study—Ground Water and Solute Transport Modeling Documentation.

## Introduction

The purpose of his memorandum is to document ground water flow and solute transport modeling done to evaluate waste water management alternatives for the City of Malibu, California. Modeling for this project is based upon a previous modeling effort that was documented in the report "Risk Assessment of Decentralized Wastewater Treatment Systems in High Priority Areas in the City of Malibu, California" completed in August, 2004.

The general procedure used to evaluate each of the wastewater management alternatives involved a ground water flow model simulation followed by a solute transport simulation. The ground water flow model was used to calculate the hydraulic effects of proposed changes to the amounts and locations of wastewater flow. The solute transport model was used to calculate nitrate loading to Malibu Creek and Lagoon that would result from each of the management scenarios.

Model Construction

Details of model construction and calibration are included in the report "Risk Assessment of Decentralized Wastewater Treatment Systems in High Priority Areas in the City of Malibu, California" completed in August, 2004. The model covers an area that is approximately 1 square mile. The extent of the model was designed to simulate ground-water flow in alluvial deposits that underlie the Malibu Civic Center area along Malibu Creek and Lagoon. The model domain also includes the alluvial deposits in Winter Canyon and sections of shore line east and west of the main body of the alluvium.

The model grid has 50 foot uniform spacing for rows and columns and is subdivided into 4 layers. Layers 1 and 2 are designed to represent the sands and silts that exist atop the Civic Center gravels. The top of model layer 3 was set at an elevation of -30 feet NGVD in the Civic Center area in order to correspond to the top surface of the Civic Center gravels. The bottom of the model was designed to be at the contact between alluvium and the underlying bedrock.

Conditions that affect the movement of ground water across all model boundaries were specified as follows: the lower boundary, which is at the contact between alluvium and underlying bedrock was assumed to be impermeable. The top boundary, represented by the water table, receives flow from infiltration of precipitation, excess irrigation, stream leakage and from waste-water discharge. Flux boundaries were used in the model to simulate recharge from upland areas adjacent to the alluvium. Recharge from the uplands includes contributions from ground water and surface water runoff as well as waste-water disposal.

Model calibration was accomplished with two steady-state simulations based upon water levels and streamflow data collected on September 25, 2003 for a flooded lagoon condition, and on March 9, 2004 for a breached lagoon condition. During model calibration average annual rates of recharge for all sources were specified in the model and adjustments were made to conductivity values in order to match measured water levels.

Model Application

The flow and transport simulations are designed to represent the period from 1930 through 2055, a total of 125 years. The wastewater flows specified in the model are the same for the period from 1930 through 2005 however the nitrate loading varies to represent changes that occurred during the period. In stress period 5 changes in wastewater flow for each management alternative are represented along with assumptions about nitrate concentrations. Each stress period is simulated with a steady state model run. Recharge from precipitation and upland runoff is held constant throughout each stress period and all stress periods assume breached lagoon conditions. The stress periods were designed to represent general changes in source loading to the system as follows:

-*Stress period 1 (1930 to 1964).* Nitrate loading during this period is from Malibu Colony only.

-*Stress period 2 (1965 to 1974).* During this stress period nitrate loading is simulated from the Colony, from residential areas in uplands adjacent to the alluvium, residences in Winter Canyon, residences in the northern part of the alluvium near Serra Retreat, Malibu Pier and from the LA county waste water treatment Plant in Winter Canyon.

-*Stress period 3 (1975 to 1989).* Includes all sources active in stress period 2 plus, nitrate loading from commercial systems in the main body of alluvium.

-*Stress Period 4 (1990 to 2005).* Includes all sources active in stress period 3 plus nitrate loading from waste-water disposal at the Malibu Bay Colony plant.

-*Stress Period 5 (2006 to 2055).* Changes in nitrate loading and hydraulic stresses are simulated for each of the management alternatives.

This model set up is an approximation of actual conditions because the start dates of each waste-water system is not modeled precisely. Furthermore, this simulation assumes that hydraulic stresses are consistent throughout the time period from 1930 to 2005. In actuality, Malibu Bay Water Company wells were active during the early stress periods and may have affected the flow system. Because there are no records of timing and amount of pumping at these wells they have not been included. However, for the purposes of estimating gross loading rates to the lagoon and ocean these assumptions are considered to be reasonable. For each of the management alternatives simulated in stress period 5, adjustments were made in the flow model to represent changes in hydraulic stresses associated with the wastewater disposal management assumptions.

Sensitivity analyses of denitrification were simulated in the transport model done for the previous investigation by using a first-order non-reversible decay rate. Based upon information supplied by Questa Engineering (Bruce Douglas, written communication, 2004) these rates were simulated as nitrate half-lives of two and five years. The degradation reaction has the effect of reducing model predicted nitrate concentrations and caused better, but clearly not perfect, agreement with observed average nitrate concentrations. Although this is not definitive proof, this model result suggests that some degradation of nitrate may be occurring in the flow system. In the model runs made for this investigation a five year half-life was assumed for nitrate.

For the period from 1930 through 2005 concentrations of nitrate were assumed to be 20 mg/l from domestic waste-water disposal systems and 50 mg/l from commercial systems based upon information provided by Questa Engineering (Bruce Douglas, written communication, 2004). After 2005, assumptions regarding nitrate concentrations were modified in each scenario to represent assumed levels of treatment as described in the next section of this memorandum.



42447

Management Alternative Scenarios

Wastewater management alternatives were outlined in memoranda by Bruce Douglas (January 29, 2005 and April 14, 2005). Details of management alternative scenarios as implemented in each model run are as follows:

**BASE RUN**

1) Review and modify existing wastewater loading estimates based upon a review of water use information by Bruce Douglas.

2) Run scenario assuming that existing conditions will go on continuously into the future

**ALTERNATIVE #1**

1) Collect waste water from sub areas 1,6,9,10 and 14
   Sub-area 1 -- Commercial district at Cross Creek Plaza
   Sub-area 6 -- Northeast corner of Malibu Colony
   Sub-area 9 – Residences west of Malibu Colony along the Ocean
   Sub-area 10 – South side of Malibu Colony along Ocean
   Sub-area 14 – North side Malibu Colony Road back from Ocean
   Total waste water discharge from these sub-areas is 140,224 gpd. (18,746.5 ft3/d)

2) Return 75% (105,168 gpd) of collected flows to Chili Cook-Off and Wave disposal sites

3) Return 25% (35,056 gpd) of collected flows to existing dispersal systems in Area 1, the commercial zone.

4) Of the 105,168 gpd sent to Chili Cook-Off and Wave 35,000 gpd is assumed to evaporate.
   9,000 gpd evaporates at Wave
   27,000 gpd evaporates at Chili Cook-Off

5) After evaporation 70,168 gpd are left to infiltrate at Wave and Chili Cook-Off.

6) 56% of this remainder (39,294 gpd) is infiltrated at Wave.
   37,024 gpd is percolation of reclaimed water at 10 mg/l nitrate.
   2,270 gpd is percolation of irrigation water at 25 mg/l nitrate.

7) 44% of the remainder (30,874 gpd) is infiltrated at Chili Cook-Off.
   23,995 gpd is percolation of reclaimed water at 10 mg/l nitrate.
   6,879 gpd is percolation of irrigation water at 25 mg/l nitrate.



4 6 4 4 6

8) Existing flows in Area 1 are 58,870 gpd. In order to infiltrate 35,056 gpd (see #3 above) the existing flows were multiplied by a factor of 0.59548. This infiltration was assumed to have nitrate at 10 mg/l.

9) Infiltration at Wave and Chili Cook-Off was assumed to occur over entire area at each site and is documented in "Notes on Recharge Basins.xls".

10) Included infiltration at the three proposed sites Shultz, Lapaz and Ioki.
Shultz – perc 154 ft3/d @ 10 mg/l, irrig 92 ft3/d @ 25 mg/l = 246 ft3/d @ 15.6 mg/l
LaPaz – perc 307 ft3/d @ 10 mg/l, irrig 184 ft3/d @ 25 mg/l = 491 ft3/d @ 15.6 mg/l
Ioki – perc 421ft3/d @ 10 mg/l, irrig 253 ft3/d @ 25 mg/l = 674 ft3/d @ 15.6 mg/l

## ALTERNATIVE #2

1) Collect waste water from sub areas 1,6,9,10 and 14
Sub-area 1 -- Commercial district at Cross Creek Plaza
Sub-area 6 -- Northeast corner of Malibu Colony
Sub-area 9 – Residences west of Malibu Colony along the Ocean
Sub-area 10 – South side of Malibu Colony along Ocean
Sub-area 14 – North side Malibu Colony Road back from Ocean
Total waste water discharge from these sub-areas is 140,224 gpd. (18,746.5 ft3/d)

2) Return 75% (105,168 gpd) of collected flows to Chili Cook-Off and Yamaguchi disposal sites

3) Return 25% (35,056 gpd) of collected flows to existing dispersal systems in Sub-area 1, the commercial zone.

4) Of the 105,168 gpd sent to Chili Cook-Off and Lower Yamaguchi 41,400 gpd is assumed to evaporate.
14,400 gpd evaporates at Lower Yamaguchi
27,000 gpd evaporates at Chili Cook-Off

5) After evaporation 63,768 gpd are left to infiltrate at Chili Cook-Off and Lower Yamaguchi.

6) 45% of this remainder (28,696 gpd) is infiltrated at Yamaguchi
25,134 gpd is percolation of reclaimed water at 10 mg/l nitrate.
3,562 gpd is percolation of irrigation water at 25 mg/l nitrate.

7) 55% of the remainder (35,072 gpd) is infiltrated at Chili Cook-Off.
28,308 gpd is percolation of reclaimed water at 10 mg/l nitrate.
6,764 gpd is percolation of irrigation water at 25 mg/l nitrate.

8) Existing flows in sub-area 1 are 58,870 gpd. In order to infiltrate 35,056 gpd (see #3 above) the existing flows were multiplied by a factor of 0.59548. This infiltration was assumed to have nitrate at 10 mg/l.

9) Infiltration at Yamaguchi and Chili Cook-Off was assumed to occur over entire area at each site and is documented in "Notes on Recharge Basins.xls".

10) Included infiltration at the three proposed sites Shultz, Lapaz and Ioki.
Shultz – perc 154 ft3/d @ 10 mg/l, irrig 92 ft3/d @ 25 mg/l = 246 ft3/d @ 15.6 mg/l
LaPaz – perc 307 ft3/d @ 10 mg/l, irrig 184 ft3/d @ 25 mg/l = 491 ft3/d @ 15.6 mg/l
Ioki – perc 421ft3/d @ 10 mg/l, irrig 253 ft3/d @ 25 mg/l = 674 ft3/d @ 15.6 mg/l

**ALTERNATIVE #3**

1) Collect waste water from sub-area 1 -- Commercial district at Cross Creek Plaza
Total waste water discharge from this sub-area is 58,870 gpd

2) Return 100% (58,870 gpd) of collected flows to Chili Cook-Off.

3) Of the 58,870 gpd sent to Chili Cook-Off 27,000 gpd is assumed to evaporate.

4) Infiltrate 31,870 at Chili Cook-Off as follows:
25,724 gpd is percolation of reclaimed water at 10 mg/l nitrate.
6,146 gpd is percolation of irrigation water at 25 mg/l nitrate.

5) Included infiltration at the three proposed sites Shultz, Lapaz and Stuart Ioki.
Shultz – perc 154 ft3/d @ 10 mg/l, irrig 92 ft3/d @ 25 mg/l = 246 ft3/d @ 15.6 mg/l
LaPaz – perc 307 ft3/d @ 10 mg/l, irrig 184 ft3/d @ 25 mg/l = 491 ft3/d @ 15.6 mg/l
Ioki – perc 421ft3/d @ 10 mg/l, irrig 253 ft3/d @ 25 mg/l = 674 ft3/d @ 15.6 mg/l

**ALTERNATIVE #4**

1) Collect waste water from sub-area 1 -- Commercial district at Cross Creek Plaza
Total waste water discharge from this sub-area is 58,870 gpd

2) Return 100% (58,870 gpd) of collected flows to Wave.

3) Of the 58,870 gpd sent to Wave 9,000 gpd is assumed to evaporate.

4) Infiltrate 49,870 gpd at Wave as follows:
47,620 gpd is percolation of reclaimed water at 5 mg/l nitrate.
2,250 gpd is percolation of irrigation water at 12.5 mg/l nitrate.

5) Included infiltration at the three proposed sites Shultz, Lapaz and Ioki.
Shultz – perc 154 ft3/d @ 10 mg/l, irrig 92 ft3/d @ 25 mg/l = 246 ft3/d @ 15.6 mg/l
LaPaz – perc 307 ft3/d @ 10 mg/l, irrig 184 ft3/d @ 25 mg/l = 491 ft3/d @ 15.6 mg/l
Ioki – perc 421ft3/d @ 10 mg/l, irrig 253 ft3/d @ 25 mg/l = 674 ft3/d @ 15.6 mg/l

ALTERNATIVE #5

1) Collect waste water from sub-area 1 -- Commercial district at Cross Creek Plaza
Total waste water discharge from this sub-area is 58,870 gpd

2) Return 100% (58,870 gpd) of collected flows to Chili Cook-Off.

3) Of the 58,870 gpd sent to Chili Cook-Off 27,000 gpd is assumed to evaporate.

4) Infiltrate 31,870 at Chili Cook-Off as follows:
25,724 gpd is percolation of reclaimed water at 5 mg/l nitrate.
6,146 gpd is percolation of irrigation water at 12.5 mg/l nitrate.

5) Included infiltration at the three proposed sites Shultz, Lapaz and Ioki.
Shultz – perc 154 ft3/d @ 10 mg/l, irrig 92 ft3/d @ 25 mg/l = 246 ft3/d @ 15.6 mg/l
LaPaz – perc 307 ft3/d @ 10 mg/l, irrig 184 ft3/d @ 25 mg/l = 491 ft3/d @ 15.6 mg/l
Ioki – perc 421ft3/d @ 10 mg/l, irrig 253 ft3/d @ 25 mg/l = 674 ft3/d @ 15.6 mg/l

ALTERNATIVE #6

1) Collect waste water from sub-rea 1 -- Commercial district at Cross Creek Plaza
Total waste water discharge from this sub-area is 58,870 gpd

2) Return 100% (58,870 gpd) of collected flows to Chili Cook-Off.

3) Of the 58,870 gpd sent to Chili Cook-Off 27,000 gpd is assumed to evaporate.

4) Infiltrate 31,870 at Chili Cook-Off as follows:
25,724 gpd is percolation of reclaimed water at 5 mg/l nitrate.
6,146 gpd is percolation of irrigation water at 12.5 mg/l nitrate.

5) Reduce nitrate loading in sub-area 3 from 20 mg/l to 10 mg/l at each parcel in the area.

6) Included infiltration at the three proposed sites Shultz, Lapaz and Ioki.
Shultz – perc 154 ft3/d @ 10 mg/l, irrig 92 ft3/d @ 25 mg/l = 246 ft3/d @ 15.6 mg/l
LaPaz – perc 307 ft3/d @ 10 mg/l, irrig 184 ft3/d @ 25 mg/l = 491 ft3/d @ 15.6 mg/l
Ioki – perc 421ft3/d @ 10 mg/l, irrig 253 ft3/d @ 25 mg/l = 674 ft3/d @ 15.6 mg/l

ALTERNATIVE #7

1) Collect waste water from sub-areas 1,6,9,10 and 14
Sub-area 1 -- Commercial district at Cross Creek Plaza
Sub-area 6 -- Northeast corner of Malibu Colony
Sub-area 9 – Residences west of Malibu Colony along the Ocean
Sub-area 10 – South side of Malibu Colony along Ocean
Sub-area 14 – North side Malibu Colony Road back from Ocean

Total waste water discharge from these sub-areas is 140,224 gpd. (18,746.5 ft3/d)

2) Return 58% (81,354 gpd (=140,224 gpd – 58,870 gpd) of collected flows to Chili Cook-Off and Wave disposal sites

3) Return 42% (58,870 gpd) of collected flows to existing dispersal systems in sub-area 1, the commercial zone.

4) To the 81,354 gpd sent to Chili Cook-Off and Wave add 6,510 gpd (future Wave flow) for a total of 87,864 gpd; of this 22,500 gpd (36,000 gpd-13,500 gpd) is assumed to evaporate.

9,000 gpd evaporates at Wave
13,500 gpd evaporates at Chili Cook-Off

5) After evaporation (87,864 gpd-22,500 gpd) = 65,364 gpd are left to infiltrate at Wave and Chili Cook-Off.

6) 67% of this remainder (43,794 gpd) is infiltrated at Wave.
41,544 gpd is percolation of reclaimed water at 5 mg/l nitrate.
2,250 gpd is percolation of irrigation water at 12.5 mg/l nitrate.

7) 33% of the remainder (21,570 gpd) is infiltrated at Chili Cook-Off.
(21,570 gpd – 3375 gpd=) 18,195 gpd is percolation of reclaimed water at 5 mg/l nitrate.
3,375 gpd is percolation of irrigation water at 12.5 mg/l nitrate.

8) Existing flows in sub-area 1 are 58,870 gpd. The same amount is proposed to be reinfiltrated into the existing systems. This infiltration was assumed to have nitrate at 5 mg/l.

9) Infiltration at Wave and Chili Cook-Off was assumed to occur over entire area at each site and is documented in "Notes on Recharge Basins.xls".

10) Included infiltration at the three proposed sites Shultz, Lapaz and Ioki.
Shultz – perc 154 ft3/d @ 10 mg/l, irrig 92 ft3/d @ 25 mg/l = 246 ft3/d @ 15.6 mg/l
LaPaz – perc 307 ft3/d @ 10 mg/l, irrig 184 ft3/d @ 25 mg/l = 491 ft3/d @ 15.6 mg/l

Ioki – perc 421ft3/d @ 10 mg/l, irrig 253 ft3/d @ 25 mg/l = 674 ft3/d @ 15.6 mg/l

11) Reduce nitrate loading in sub-area 3 from 20 mg/l to 10 mg/l at each parcel in the sub-area.

12) Onsite dispersal of 8,000 gpd at Upper Yamaguchi for 25,000 gpd Educational Facility – with 4,000 gpd assumed to evaporate. Of this total:

2,875 gpd is percolation of reclaimed water at 5 mg/L nitrate-N.
1,125 gpd (450 gpd/acre*2.5 acres) is percolation of irrigation water at 12.5 mg/l nitrate-N.

ALTERNATIVE #8
(Lower and Upper Yamaguchi only dedicated dispersal sites)

1) Collect waste water from sub-area 1 -- Commercial district at Cross Creek Plaza
Total waste water discharge from this sub-area is 58,870 gpd

2) Return 50% (50% of 58,870 gpd = 29,435 gpd)) of collected flows to Lower Yamaguchi.

3) Of the 29,435 gpd gpd sent to Lower Yamaguchi, 14,400 gpd is assumed to evaporate.

4) Infiltrate 15,035 gpd at Lower Yamaguchi as follows:

11,435 gpd is percolation of reclaimed water at 5 mg/l nitrate-N.
3,600 gpd (8 acres * 450gpd/acre) is percolation of irrigation water at 12.5 mg/l nitrate-N.

5) Return 29,435 gpd to Existing systems in sub-area 1. (The existing flows were multiplied by a factor of 0.5. This infiltration was assumed to have nitrate at 5 mg/l.

6) Included infiltration at the three proposed sites Shultz, Lapaz, Ioki and Wave.
Shultz – perc 154 ft3/d @ 10 mg/l, irrig 92 ft3/d @ 25 mg/l = 246 ft3/d @ 15.6 mg/l
LaPaz – perc 307 ft3/d @ 10 mg/l, irrig 184 ft3/d @ 25 mg/l = 491 ft3/d @ 15.6 mg/l
Ioki – perc 421ft3/d @ 10 mg/l, irrig 253 ft3/d @ 25 mg/l = 674 ft3/d @ 15.6 mg/l
Wave – perc 218 ft3/day @ 10 mg/l, irrig 131 ft3/d @ 25 mg/l= 15.6 mg/l

7) Onsite dispersal of 8,000 gpd at Upper Yamaguchi for 25,000 gpd Educational Facility – with 4,000 gpd assumed to evaporate. Of this remaining 4,000 gpd:

2,875 gpd is percolation of reclaimed water at 5 mg/L nitrate-N.
1,125 gpd (450 gpd/acre*2.5 acres) is percolation of irrigation water at 12.5 mg/l nitrate-N.

ALTERNATIVE #9
(Wave and Upper and Lower Yamaguchi as dispersal sites)

1) Collect waste water from Sub-area 1 -- Commercial district at Cross Creek Plaza
Total waste water discharge from this sub-area is 58,870 gpd

2) Return 50% (50% of 58,870 gpd = 29,435 gpd)) of collected flows to Lower Yamaguchi.

3) Of the 29,435 gpd gpd sent to Lower Yamaguchi, 14,400 gpd is assumed to evaporate.

4) Infiltrate 15,035 gpd at Lower Yamaguchi as follows:
11,435 gpd is percolation of reclaimed water at 5 mg/l nitrate-N.
3,600 gpd (8 acres * 450gpd/acre) is percolation of irrigation water at 12.5 mg/l nitrate-N.

5) Return 50% (29,435 gpd) of collected flows to Wave property.

6) Add 6,510 gpd generated by future flows generated on Wave for a total of 35,945 gpd

7) Of the 35,945 gpd to be dispersed at Wave, 9,000 gpd is assumed to evaporate.

8) Infiltrate 26,945 gpd at Wave as follows:
24,695 gpd is percolation of treated waste at 5 mg/l nitrate.
2,250 gpd is percolation of irrigation water at 12.5 mg/l nitrate.

9) Included infiltration at the three proposed sites Shultz, Lapaz and Ioki.
Shultz – perc 154 ft3/d @ 10 mg/l, irrig 92 ft3/d @ 25 mg/l = 246 ft3/d @ 15.6 mg/l
LaPaz – perc 307 ft3/d @ 10 mg/l, irrig 184 ft3/d @ 25 mg/l = 491 ft3/d @ 15.6 mg/l
Ioki – perc 421ft3/d @ 10 mg/l, irrig 253 ft3/d @ 25 mg/l = 674 ft3/d @ 15.6 mg/l

10) Onsite dispersal of 8,000 gpd at Upper Yamaguchi for 25,000 gpd Educational Facility – with 4,000 gpd assumed to evaporate. Of this total:

2,875 gpd is percolation of reclaimed water at 5 mg/L nitrate-N.
1,125 gpd (450 gpd/acre*2.5 acres) is percolation of irrigation water at 12.5 mg/l nitrate-N.

Model Results

Nitrate loading to Malibu Creek and Lagoon was calculated from the solute transport model for the base run and each management alternative. Results are presented in figure1as loading in pounds of nitrate versus time; figure 2 shows the same results at a slightly different scale. For the base run, the model calculates a loading rate of 20 lbs/day into the future. This result is slightly greater than results presented in the previous investigation (17 lbs/day) because the updated base run includes additional loading in the commercial area along Malibu Creek.

Examination of figure1 shows that each of the management alternatives will reduce nitrate loading to the Creek and Lagoon. Furthermore, for each alternative it will take approximately 25 years to achieve the full reduction in loading. The reason for the lag time between implementation and effect is caused by the fact that ground water velocities are relatively slow.

Alternatives 1 and 2 assume that wastewater is collected from the commercial systems in the Cross Creek Plaza area, from domestic systems along Malibu Colony Road, and from Ocean front properties to the west of Malibu Colony. In Alternative 1 the wastewater is treated and dispersed at the Chili Cook-Off and Wave sites, and some treated waste is returned to existing systems in the commercial area. In Alternative 2 assumptions are identical to those of Alternative 1 except that waste water is dispersed at the Chili Cook-Off and Lower Yamaguchi sites. Model calculations indicate that both of these scenarios will reduce nitrate loading to the Creek and Lagoon to approximately 9 lbs/day by 2030. Both of these alternatives will also cause significant reductions in nitrate loading to the Ocean because they assume cessation of domestic wastewater disposal from residences along the shoreline. Model calculations suggest that the assumed loading at Lower Yamaguchi might cause breakout of wastewater at land surface.

Alternatives 3, 4 and 5 produce almost identical reductions in nitrate loading to the Creek and Lagoon. In each of these scenarios waste water from the commercial



4C-495

systems in the Cross Creek Plaza area is collected, treated and then dispersed either at the Chili Cook-Off or Wave properties. In alternative 3 the wastewater is treated to achieve 10 mg/l of nitrate and dispersed at Chili Cook-Off. In alternative 4 the wastewater is treated to achieve 5 mg/l of nitrate and dispersed at Wave. In alternative 5 the wastewater is treated to achieve 5 mg/l of nitrate and dispersed at Chili Cook-Off.

The model calculates a very slight reduction in nitrate loading to the Lagoon and Creek when the wastewater is treated to achieve 5 mg/l (alternatives 4 & 5) as opposed to 10 mg/l. The reason for this result may be caused by the assumption of a five-year half-life for nitrate such that the travel time and the effects of degradation are the controlling factors on nitrate concentrations at the Lagoon and Creek.

Alternative 6 is identical to alternative 5 in that wastewater from the commercial area is collected and dispersed at the Chili Cook-Off site at a 5 mg/l nitrate concentration. However, alternative 6 also assumes that domestic wastewater from the area around Serra retreat along Malibu Creek has a concentration of 10 mg/l nitrate rather than 20 mg/l as was assumed in the base run. This assumption causes a reduction in nitrate loading to the Lagoon and Creek to approximately 6 lbs/day.

In alternative 7 wastewater is collected from sub areas 1, 6, 9, 10 and 14 and is treated and dispersed at the Wave, Chili Cook-Off and existing commercial systems in sub area 1. All of the reclaimed waste water in this alternative is treated to achieve 5 mg/l of nitrate, irrigation water is assumed to have a 12.5 mg/l nitrate concentration. In addition, the Upper Yamaguchi site receives 4,000 gpd of infiltration from an educational facility. This scenario is predicted to reduce nitrate loading the Creek and Lagoon to approximately 8.3 lbs/day by 2020 and to 7.6 lbs/day by 2050. This alternative will also cause significant reductions in nitrate loading to the Ocean because it assumes cessation of domestic wastewater disposal from residences along the shoreline.

Alternative 8 assumes that all waste water in the commercial zone (sub-area 1) is collected, treated to 5 mg/l nitrate and infiltrated at the Lower Yamaguchi site and at the existing commercial infiltration systems. In addition, the Upper Yamaguchi site is assumed to receive 4,000 gpd of infiltration from an educational facility. Results of this analysis show that nitrate loading would be 8.7 lbs/day by 2020 and 8.0 lbs/day by 2050. In this scenario the flow model also predicts that ground water levels at the Lower Yamaguchi site will be above land surface.

Alternative 9 is the same as alternative 8 except that the treated waste water is infiltrated at the Lower Yamaguchi and Wave sites. Results of this analysis show that nitrate loading would be 8.3 lbs/day by 2020 and 7.6 lbs/day by 2050. As in alternative 8, the flow model also predicts that ground water levels at the Lower Yamaguchi site will be above land surface.

Conclusions

Ground water flow and solute transport model calculations show that each of the alternative management scenarios will reduce nitrate loading to Malibu Lagoon and Creek. At present the nitrate load is estimated to be approximately 20 lbs/day. Model simulations of various management alternatives predict future loading rates ranging from 6.1 to 9.5 lbs/day depending upon the collection, treatment and dispersal options.

The greatest reduction in nitrate loading to the Lagoon and Creek is predicted to occur with collection and treatment of waste water from the commercial zone (sub-area 1) with dispersal at the Chili Cook-Off site combined with a reduction in nitrate loading from domestic systems in sub-area 3 along the Creek (Alternative 6). Alternative 1 provides the least reduction in nitrate loading to the Lagoon and Creek. In this alternative waste water is collected from the commercial area (sub-area 1) and from residences along the Ocean (sub-areas 6, 9, 10 and 14) and is treated and dispersed at the Chili Cook-Off and Wave sites. Although alternative 1 offers the least reduction in nitrate loading to the Creek and Lagoon for each tested alternative, it provides significant reductions in nitrate loading to the Ocean.



12-457

The model calculates a very slight reduction in nitrate loading to the Lagoon and Creek when the wastewater is treated to achieve 5 mg/l (alternatives 4 & 5) as opposed to 10 mg/l. The reason for this result may be caused by the assumption of a five-year half-life for nitrate such that the travel time and the effects of degradation are the controlling factors on nitrate concentrations at the Lagoon and Creek.

The model predicts that hydraulic loading at the Lower Yamaguchi site (Alternatives 2, 8 and 9) causes ground water to "break out" at land surface. Under natural conditions ground water is close to land surface at the southern end of the Lower Yamaguchi site.

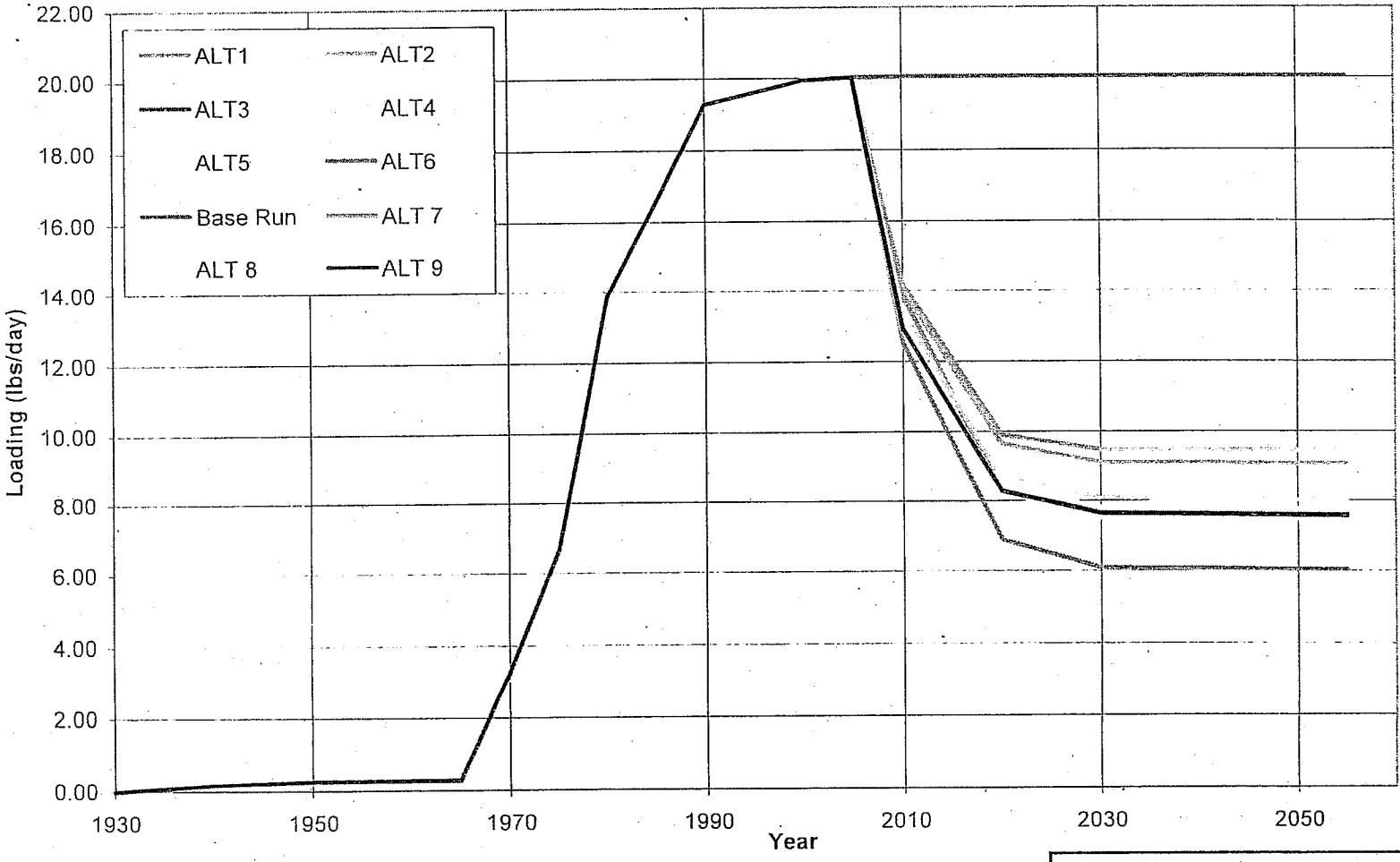



**Figure 1. -- Nitrate loading rates to the lagoon for the alternative management scenarios, all runs assume a five-year half-life for nitrogen.**

McDonald Morrissey ASSOCIATES Inc.

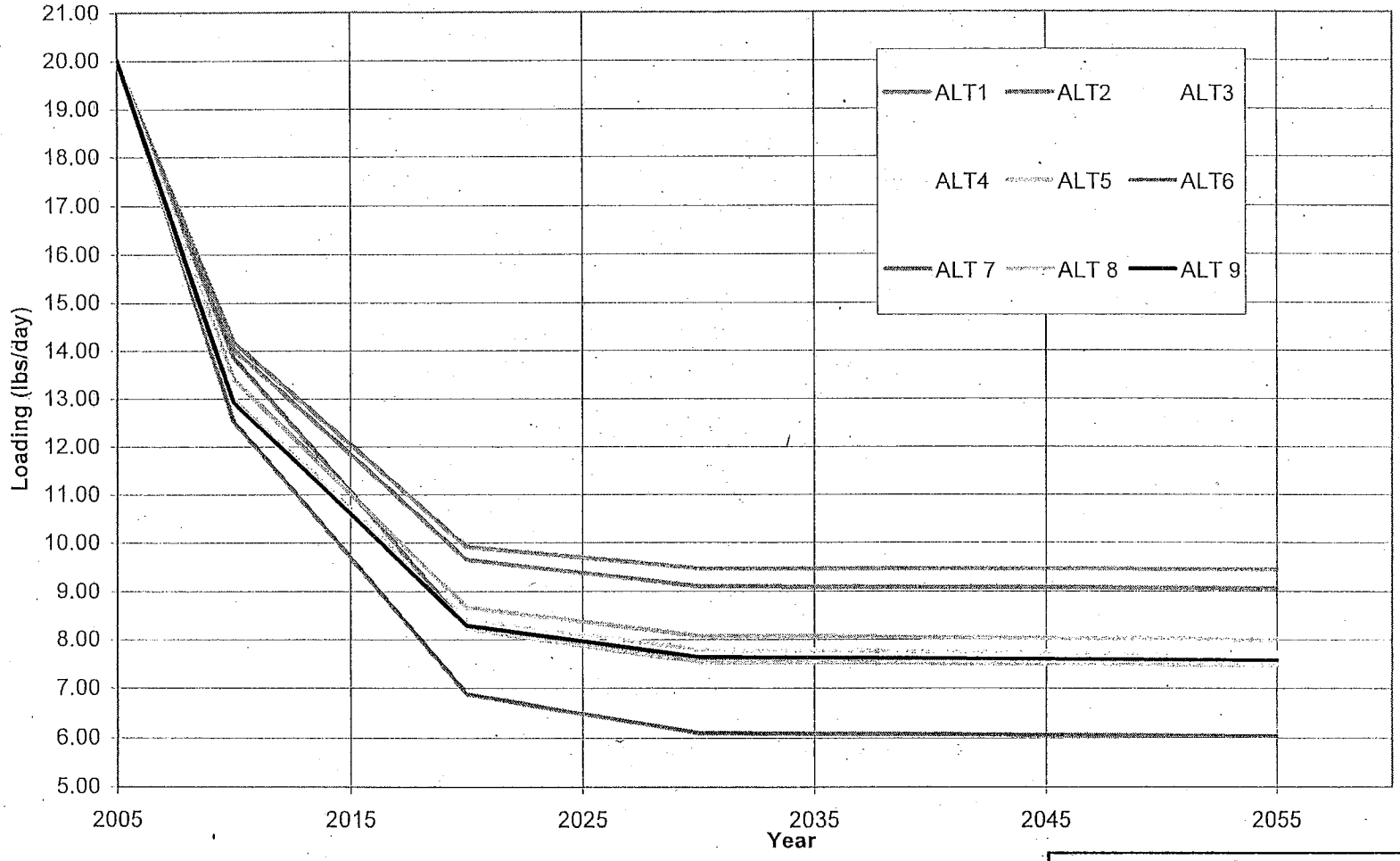



**Figure 2. -- Nitrate loading rates to the lagoon for the alternative management scenarios, all runs assume a five-year half-life for nitrogen.**

McDonald Morrissey ASSOCIATES, Inc.

Table 1. Model predicted flux and nitrate loading to Malibu Creek and Lagoon in 2055 for alternative management scenarios.

| Alternative | River /Lagoon Gain (ft3/day) | Model Predicted Nitrate Loading in 2030 (lbs/day) |
|---|---|---|
| 1 | 129,060 | 9.48 |
| 2 | 128,130 | 9.11 |
| 3 | 126,130 | 7.68 |
| 4 | 127,410 | 7.80 |
| 5 | 126,130 | 7.53 |
| 6 | 126,130 | 6.10 |
| 7 | 131,120 | 7.60 |
| 8 | 127,630 | 8.08 |
| 9 | 126,870 | 7.65 |

# Appendix E
# Hydrologic Modeling

*HEC-HMS Description*

HEC-HMS is a hydrologic model that simulates the precipitation-runoff processes of branched watershed systems using unit hydrograph methods. The user must input various parameters to delineate watershed and sub-watershed boundaries and define the routing characteristics of reaches and reservoirs. Then, using either historical or synthetic design storm data, the model simulates the process of converting precipitation to direct runoff. The model output consists of an outflow hydrograph at each defined sub-basin or junction. Peak discharge and total flow are computed for each outlet, as well as water elevations for reaches and reservoirs.

Several methods for surface runoff computations are available in HEC-HMS and can be selected by the user. These include the unit hydrograph methods of Clark (1945), Snyder (1938), the Soil Conservation Service (1975), and others. Known user hydrographs can also be directly input.

*Model Parameters*

**Sub-watershed Boundaries and Reach Routing.** For this study, the Malibu Civic Center watershed was segregated into four sub-basins, called the West, Mid, East, and Shopping Center sub-basins. They have 93, 70, 70, and 26 acres, respectively. The West, Mid, and East sub-basins drain into a 5.5-feet high by 11-feet wide box culvert beneath Civic Center Way which discharges into Malibu Creek just east of the intersection of Civic Center Drive and Cross Creek Road. The Shopping Center sub-basin drains into the Creek through two 36-inch concrete pipes near the southeast corner of the Malibu Creek Plaza shopping center.

**Design Storm.** The National Oceanic and Atmospheric Administration (NOAA) estimates that statistically, during the 2-year, 24-hour storm the Malibu Area receives approximately 1.8 inches of rainfall. With this in mind, the HEC-HMS model was run for a series of hypothetical 24-storm events with rainfall amounts between 1.0 and 3.0 inches. An SCS Type 1 storm distribution was used.

**Synthetic Unit Hydrograph.** The USDA-SCS dimensionless unit hydrograph was adopted for use in this study because it allows the use of a single parameter, basin lag, for estimation of the subarea unit hydrograph. The basin lag is defined as the time between the center of mass of rainfall excess and the peak of the unit hydrograph. The following empirical equation was used to determine lag time $t_p$ for each sub-basin:

$$t_p = [L^{0.3}(S + 1)^{0.7}] / 1900y^{0.5},$$

where L = representative sub-basin length (ft),
y = average watershed slope (%),
S = 1000/CN – 10,
CN = curve number for various soil/land use.

SCS curve numbers were assigned to each sub-basin based on soil type, land use, and land condition. **Table 1** summarizes the model parameters used to generate the SCS unit hydrograph for each sub-basin.

**Table 1. Sub-basin Parameters.**

| | West | Mid | East | Shopping Center |
|---|---|---|---|---|
| Length (ft) | 4400 | 3200 | 3400 | 2200 |
| Slope (%) | 19.7 | 16.2 | 11.6 | 0.5 |
| SCS Curve Number | 70 | 70 | 70 | 92 |
| SCS Lag Time (min) | 17.4 | 14 | 18 | 0.5 |
| Initial Loss (in) | 0.25 | 0.25 | 0.25 | 0.25 |
| % Impervious | 10 | 27 | 32 | 85 |

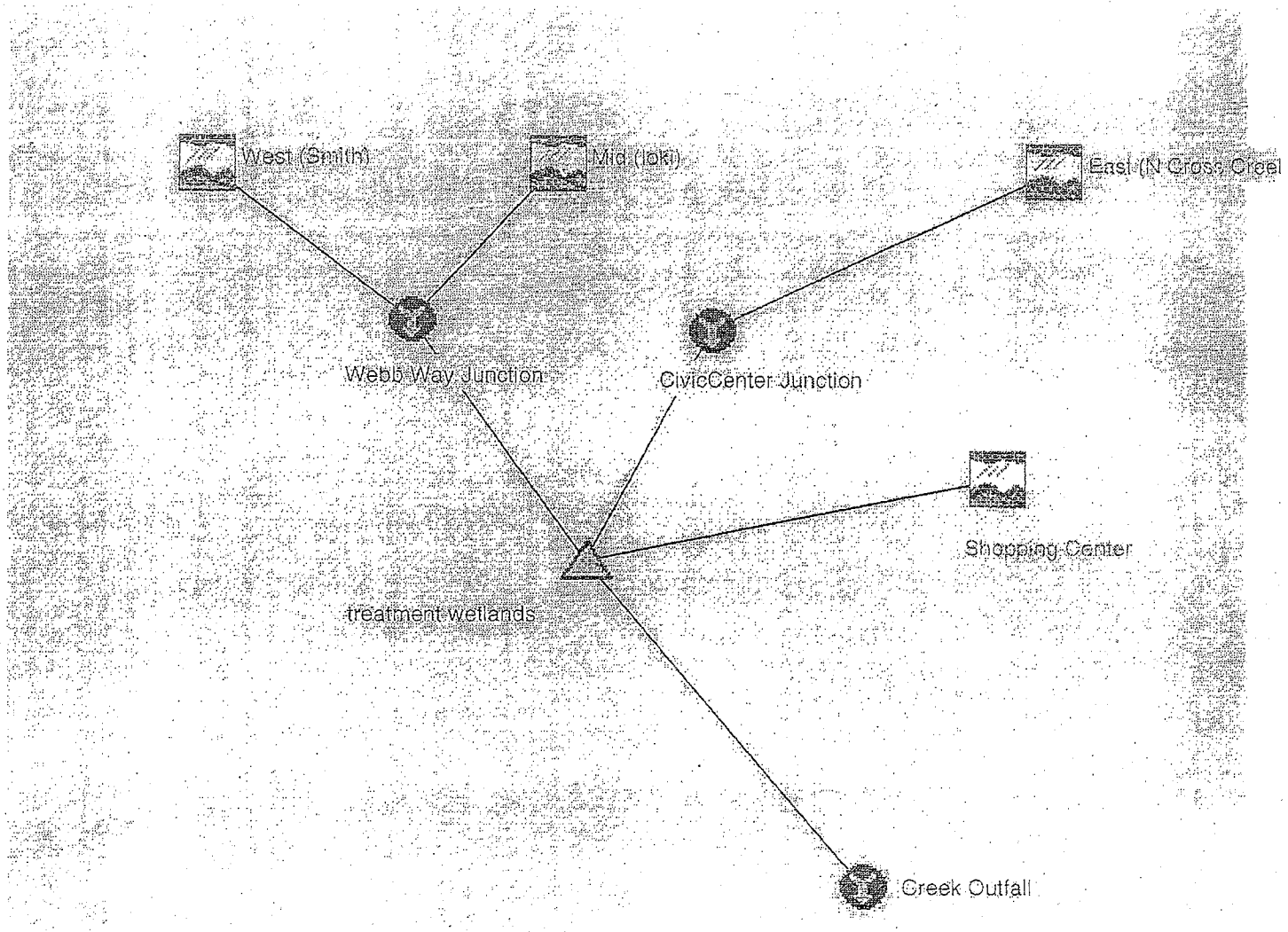
**Flood Wave Routing Assumptions.** Flood routing is used to simulate flood wave movement through reaches and reservoirs. The routing procedure simply keeps track of the flood wave channel time and combines it with inflowing hydrographs from the other sub-basins. The travel distances were short from sub-basin to sub-basin so no channel routing was used. However, the wetland reservoirs significantly impact travel time and hydrographs were routed through them. The level pool routing procedure was used in the HEC-HMS model to account for the travel time as well as attenuation in peak discharge. The elevation *vs* area *vs* discharge curves for each alternative wetland reservoir are presented in **Table 2.** These curves were generally assumed based on the project concepts. As project details are formulated, more detailed elevation *vs* area *vs* discharge curves will be developed to specifically test each design.

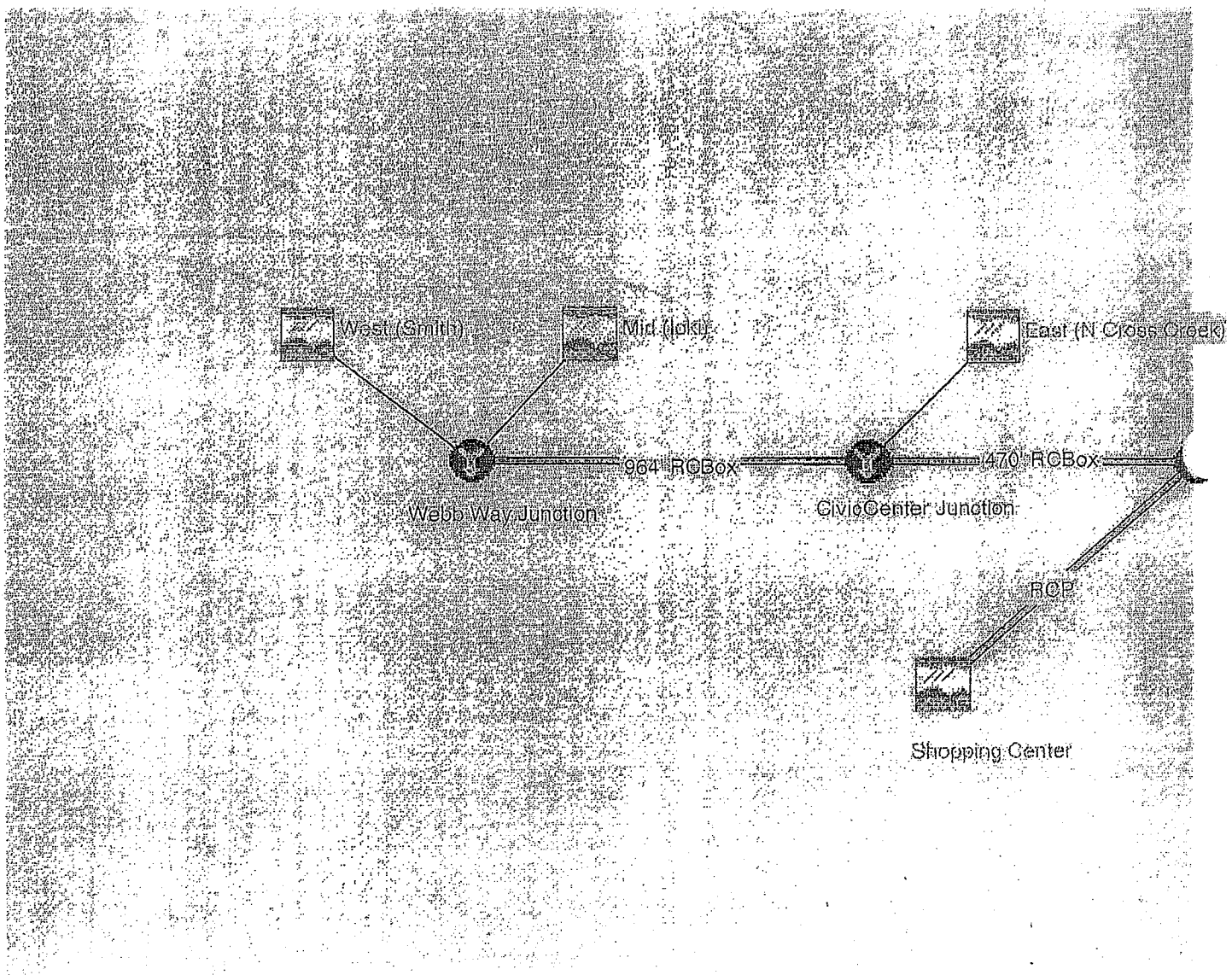
Table 2. Wetland Treatment Rating Curves.

| WETLAND POND | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| OPTION A: 4-acre wetland | | | OPTION B: 5-acre wetland | | | OPTION C: 6-acre wetland | | |
| Elevation (ft) | Water Surface Area (ac) | Outflow (cfs) | Elevation (ft) | Water Surface Area (ac) | Outflow (cfs) | Elevation (ft) | Water Surface Area (ac) | Outflow (cfs) |
| 8 | 3.806 | 0 | 8 | 4.78 | 0 | 8 | 5.76 | 0 |
| 8.1 | 3.81 | 3 | 8.1 | 4.8 | 3 | 8.1 | 5.78 | 3 |
| 9 | 3.87 | 3 | 9 | 4.858 | 3 | 9 | 5.846 | 3 |
| 10 | 3.94 | 3 | 10 | 4.93 | 3 | 10 | 5.93 | 3 |
| 10.99 | 3.99 | 3 | 10.99 | 4.99 | 3 | 10.99 | 5.99 | 3 |
| 11 | 4 | 200 | 11 | 5 | 200 | 11 | 6 | 200 |

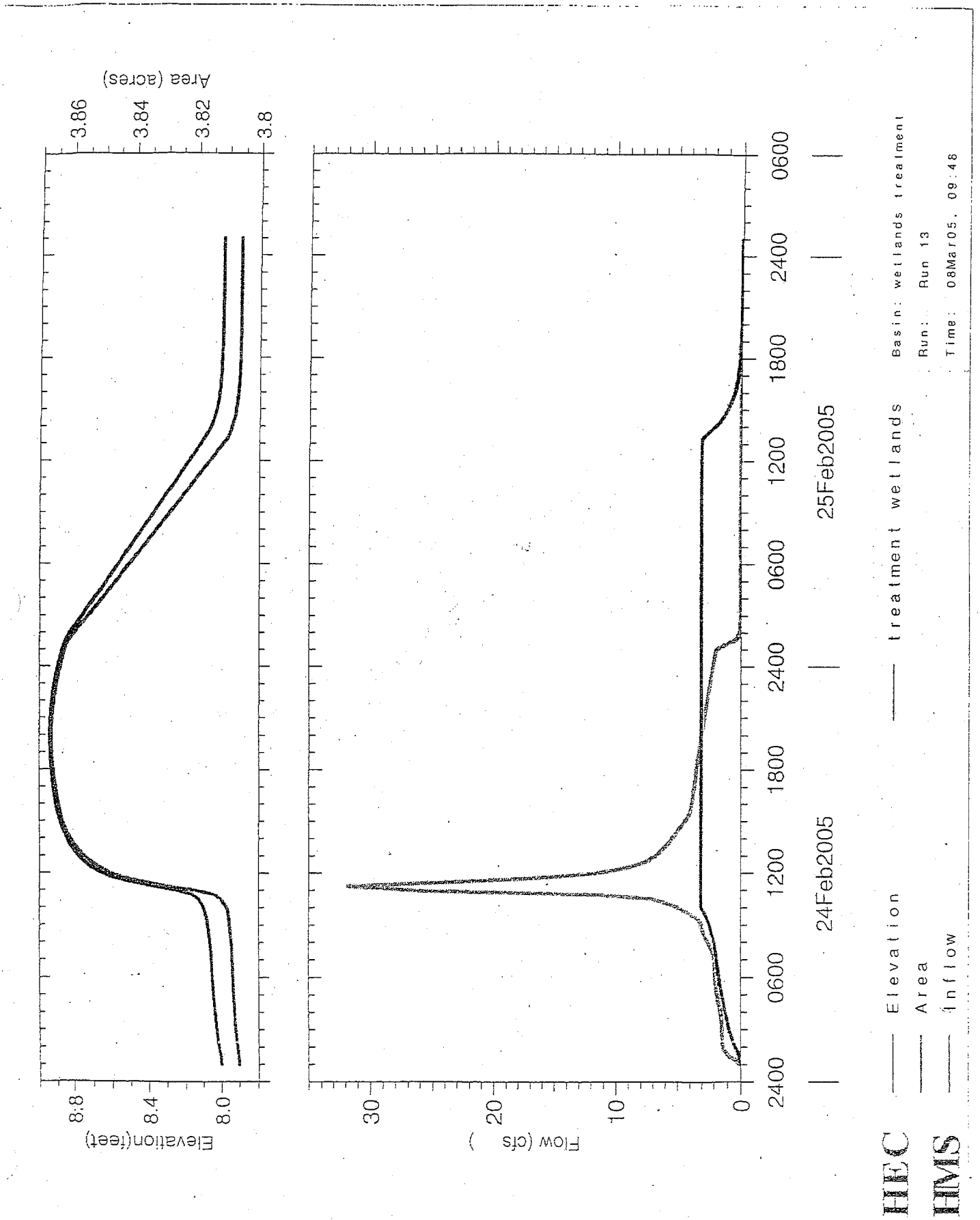
| LINEAR WETLAND WITH RIPARIAN OVERFLOW | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| OPTION A: 6-acre wetland | | | OPTION B: 7-acre wetland | | | OPTION C: 8-acre wetland | | |
| Elevation (ft) | Water Surface Area (ac) | Outflow (cfs) | Elevation (ft) | Water Surface Area (ac) | Outflow (cfs) | Elevation (ft) | Water Surface Area (ac) | Outflow (cfs) |
| 8 | 0 | 0 | 8 | 0 | 0 | 8 | 0 | 0 |
| 9 | 1.5 | 3 | 9 | 2.5 | 3 | 9 | 2.8 | 3 |
| 10 | 4.5 | 3 | 10 | 6.5 | 3 | 10 | 7.3 | 3 |
| 10.9 | 4.9 | 3 | 10.9 | 6.9 | 3 | 10.9 | 7.8 | 3 |
| 11 | 5 | 200 | 11 | 7 | 200 | 11 | 8 | 200 |

HEC-HMS Project: wetlands Treatment Basin Model: wetlands

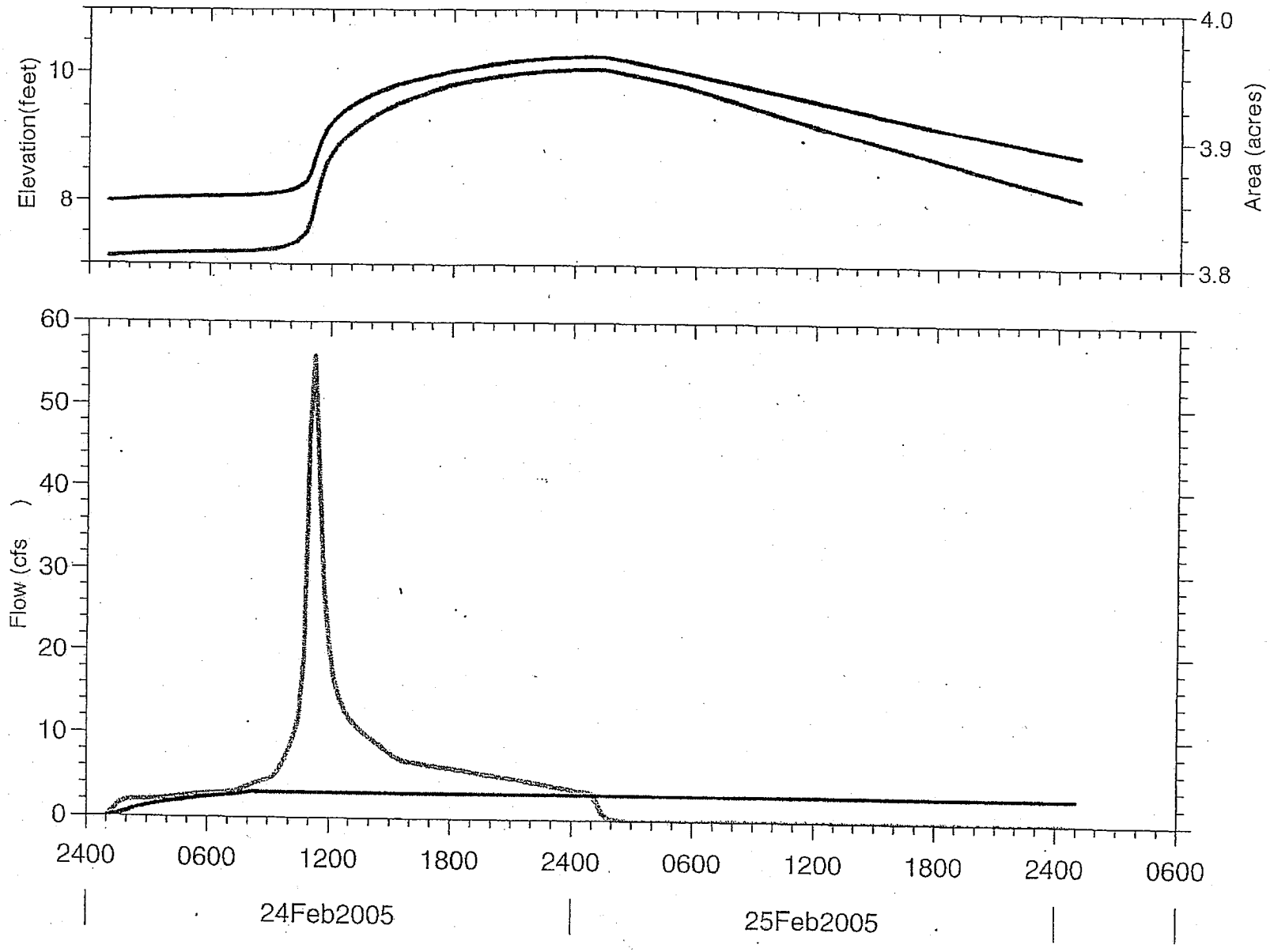



West (Smith)
Mid (Jokr)
East (N Cross Creek)
964 RCBox
470 RCBox
Webb Way Junction
CivicCenter Junction
RCP
Shopping Center

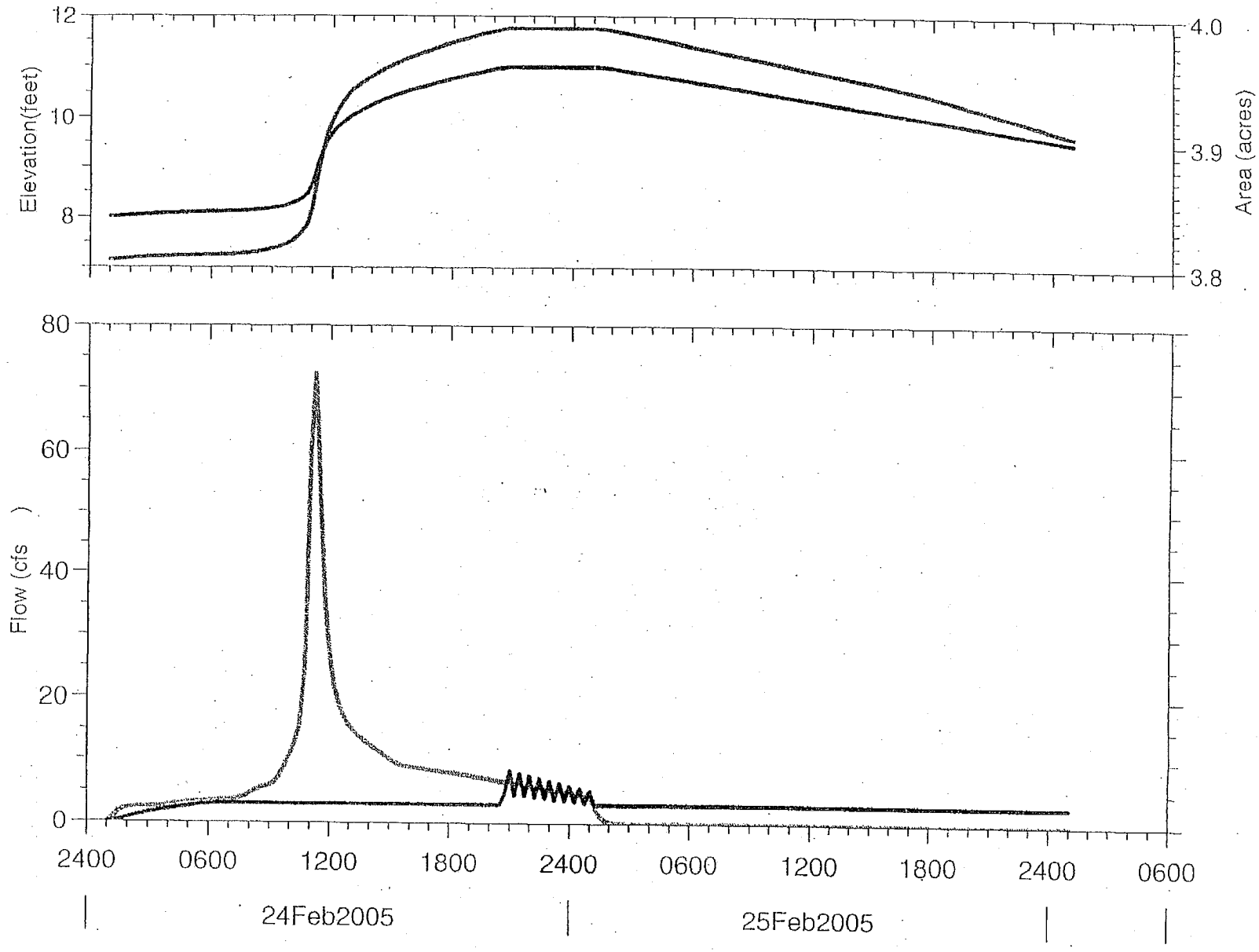
POND OPTION A 1" Storm



POND (A) 1.5" storm



POND (A) 1.8" storm

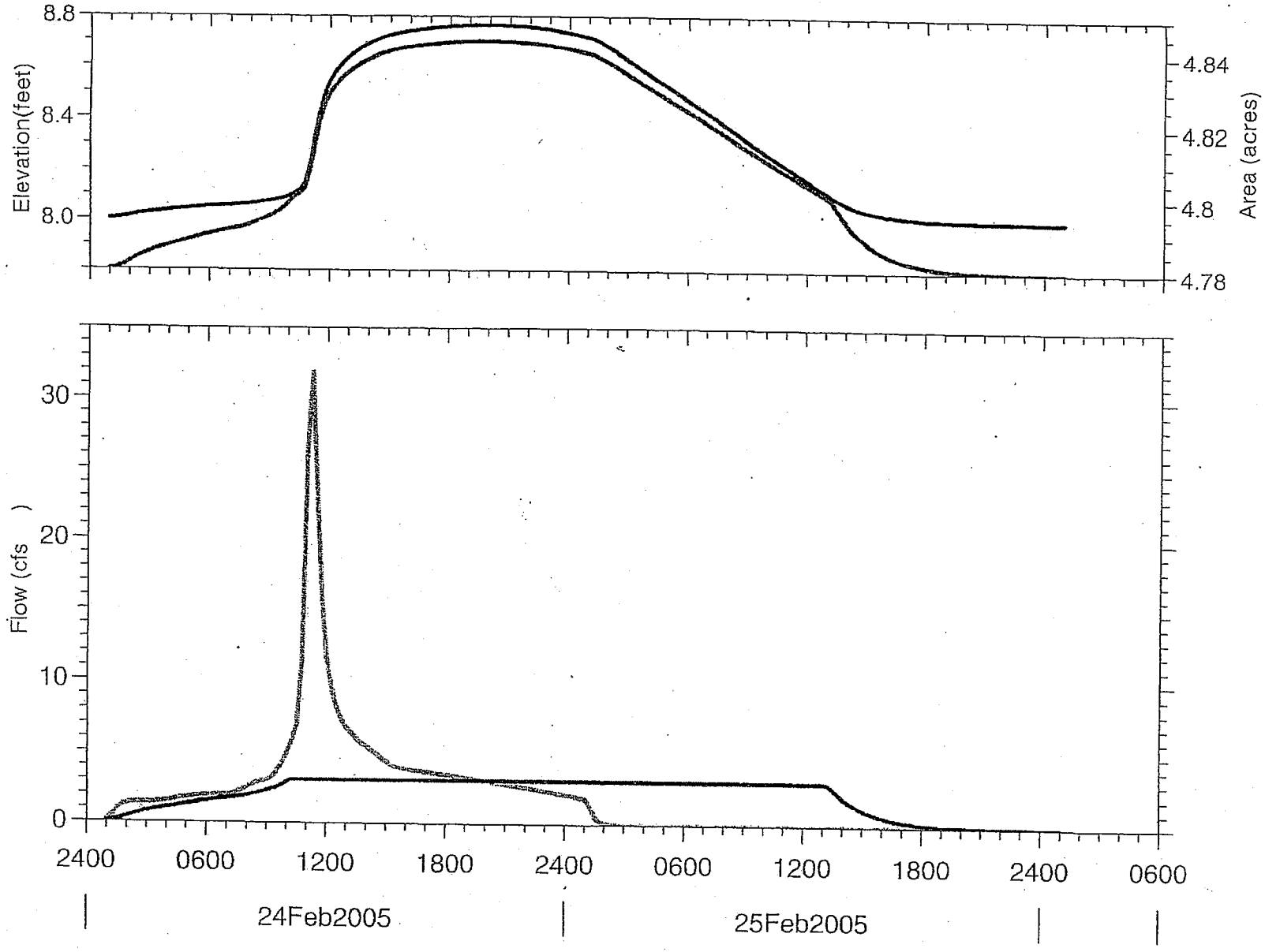



HEC HMS

Elevation
Area
Inflow
treatment wetlands

Basin wetlands treatment
Run 1.8 inch
Time: 08Mar05, 10:12

POND (B) 1" storm



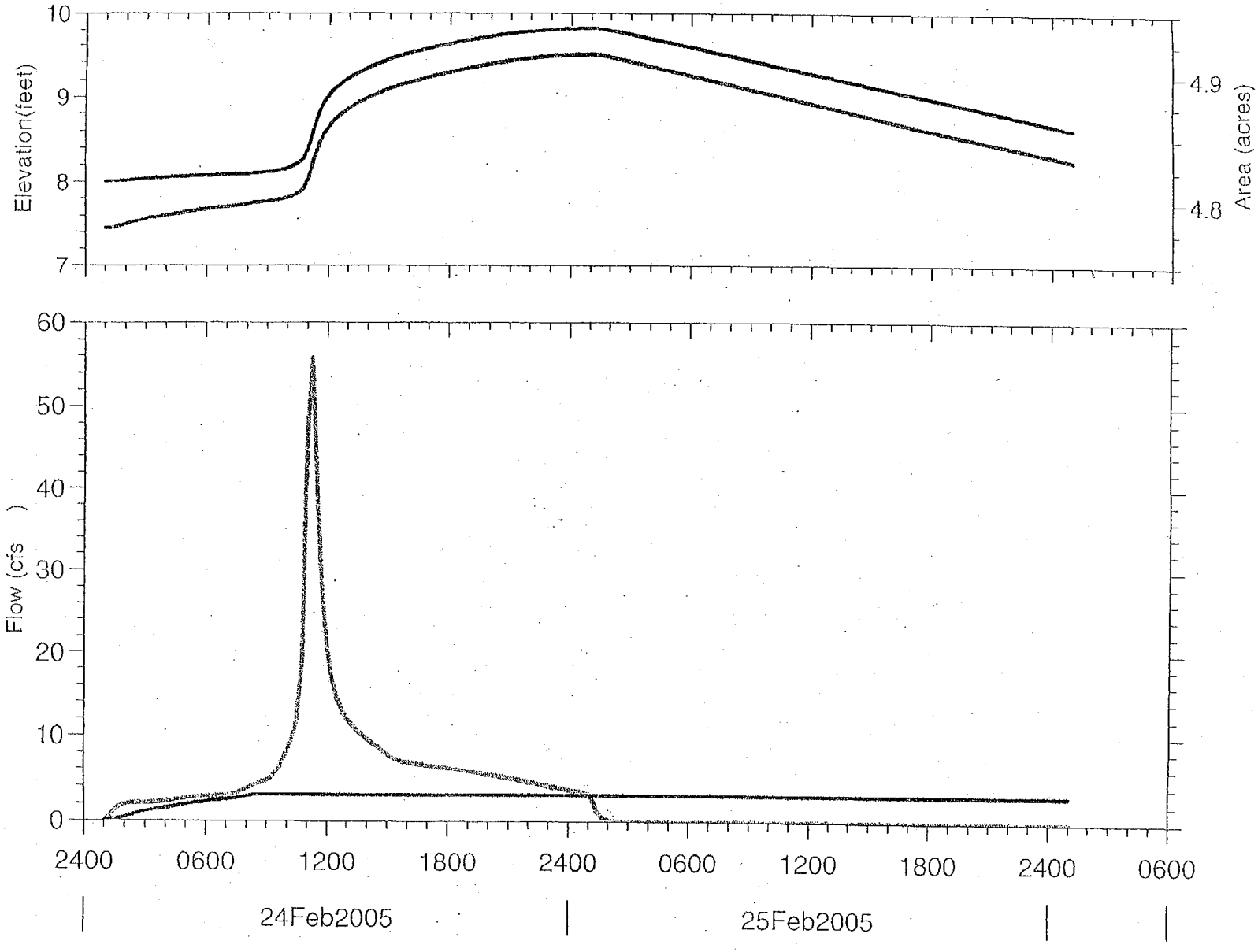

HEC HMS

Elevation
Area
Inflow

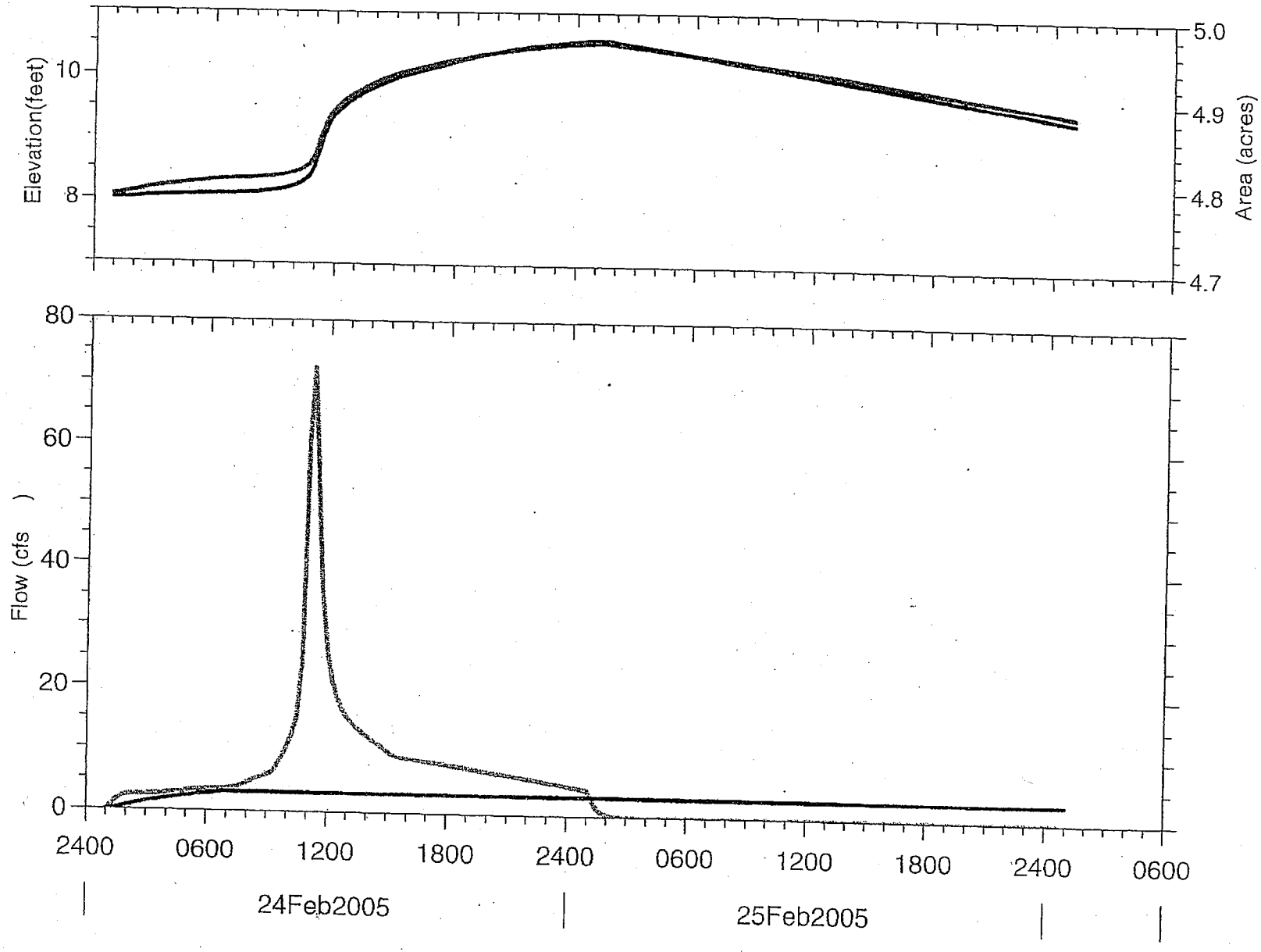
treatment wetlands

Basin: wetlands treatment
Run: 1 inch
Time: 08Mar05, 10:13

POND (8) 1.5" storm



POND (B) 1.8" storm



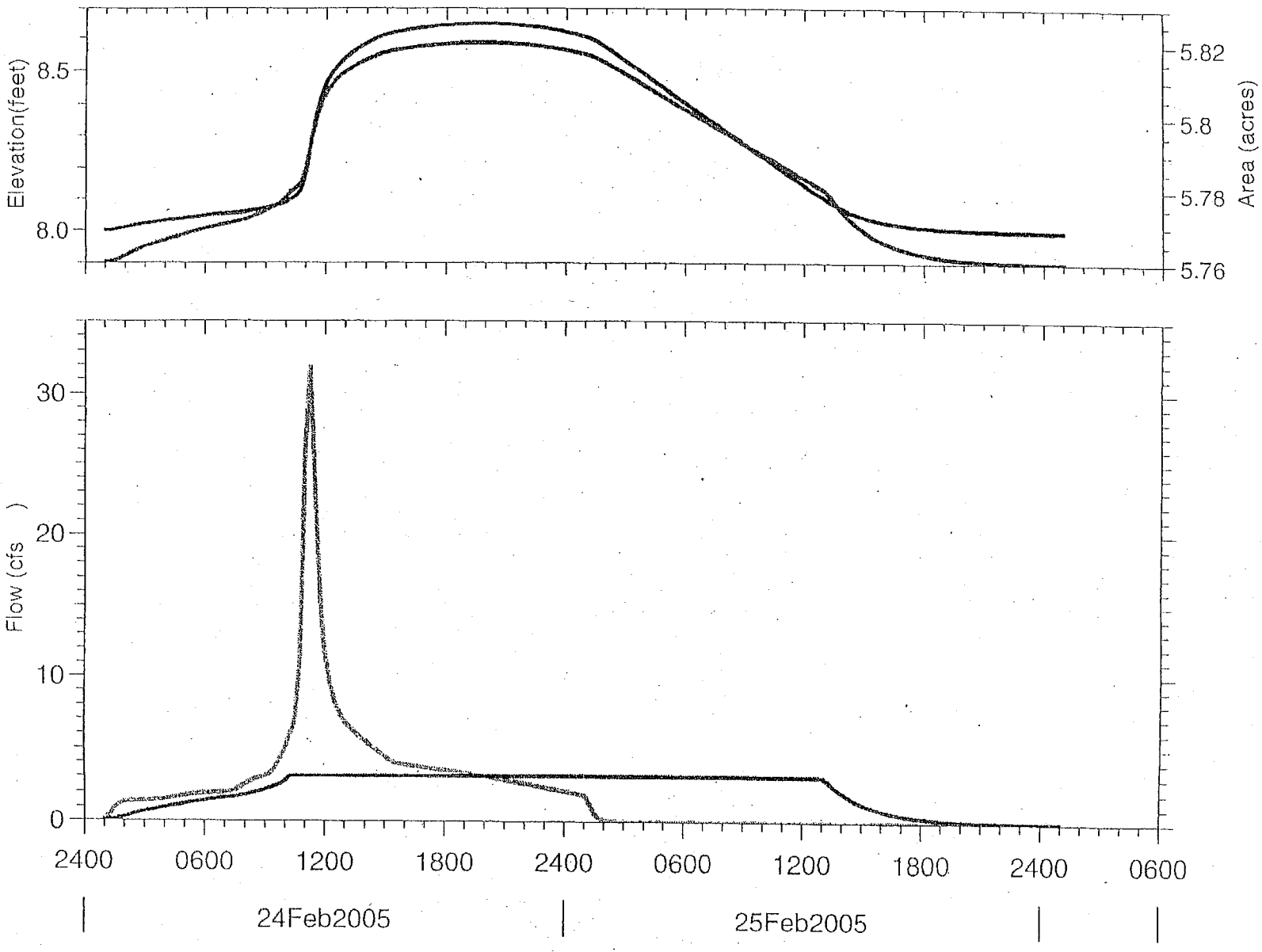

HEC HMS

Elevation
Area
Inflow

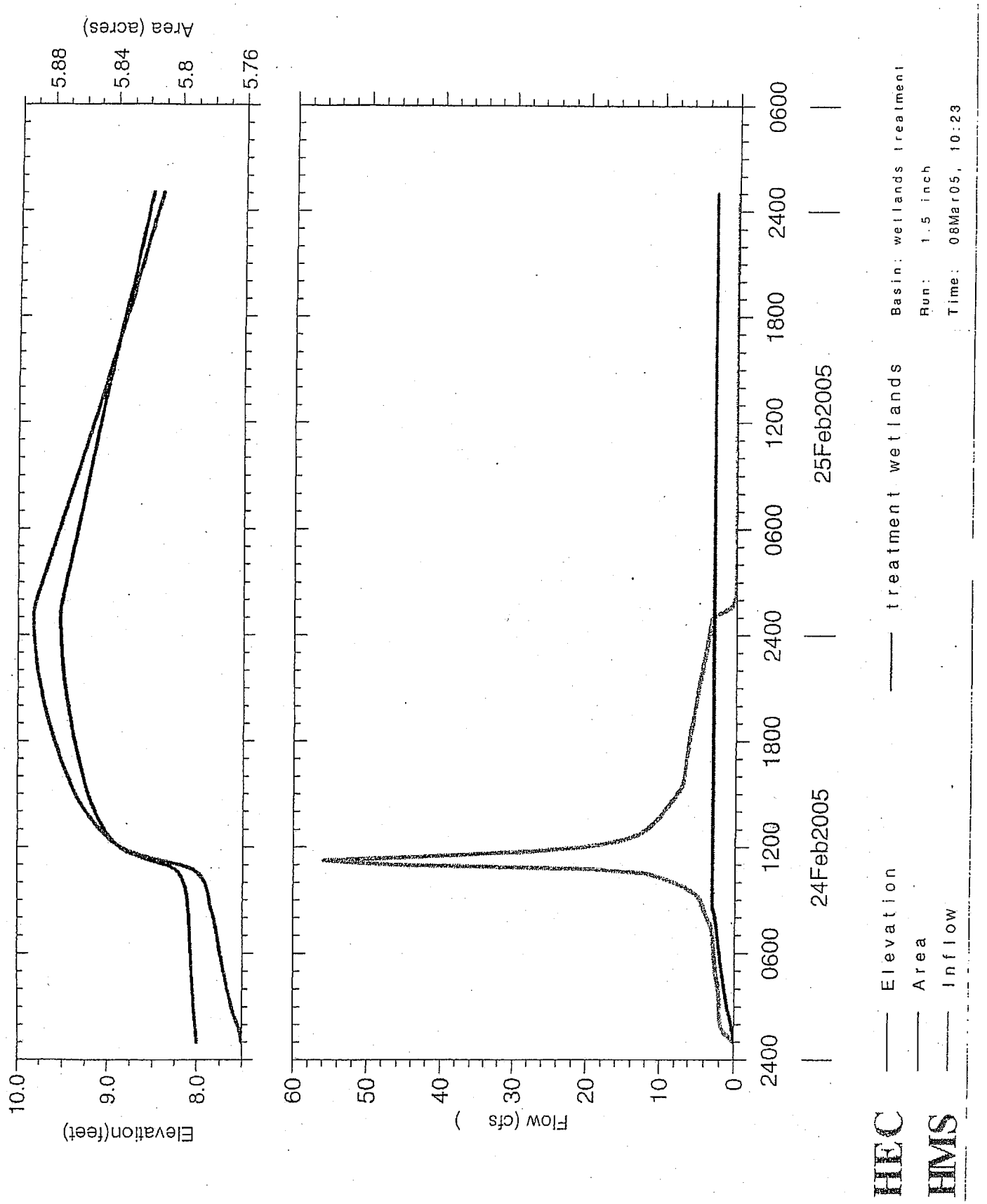
treatment wetlands

Basin: wetlands treatment
Run: 1.8 inch
Time: 08Mar05, 10:15

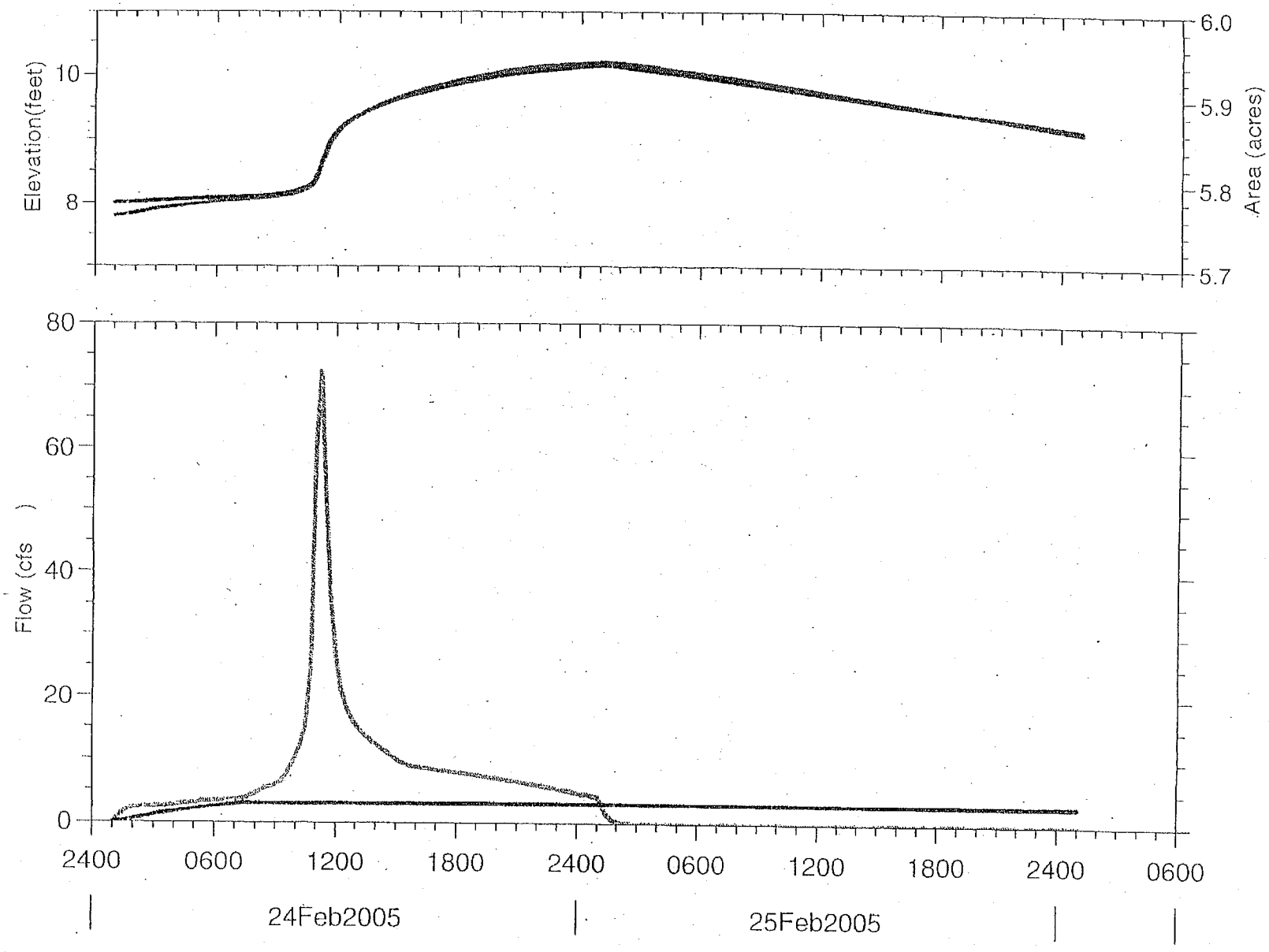
POND (C) 1" storm

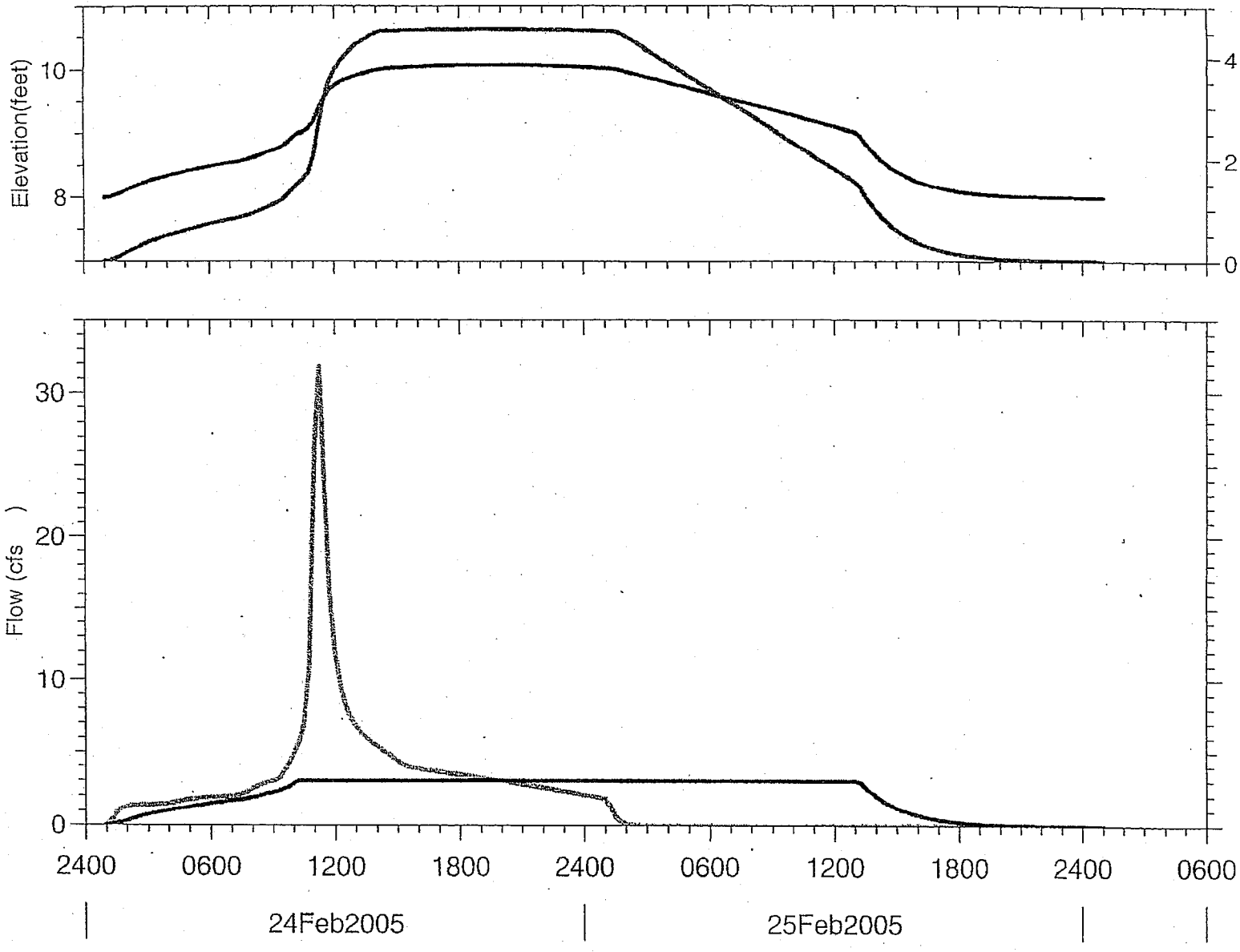


POND (C) 1.5" storm

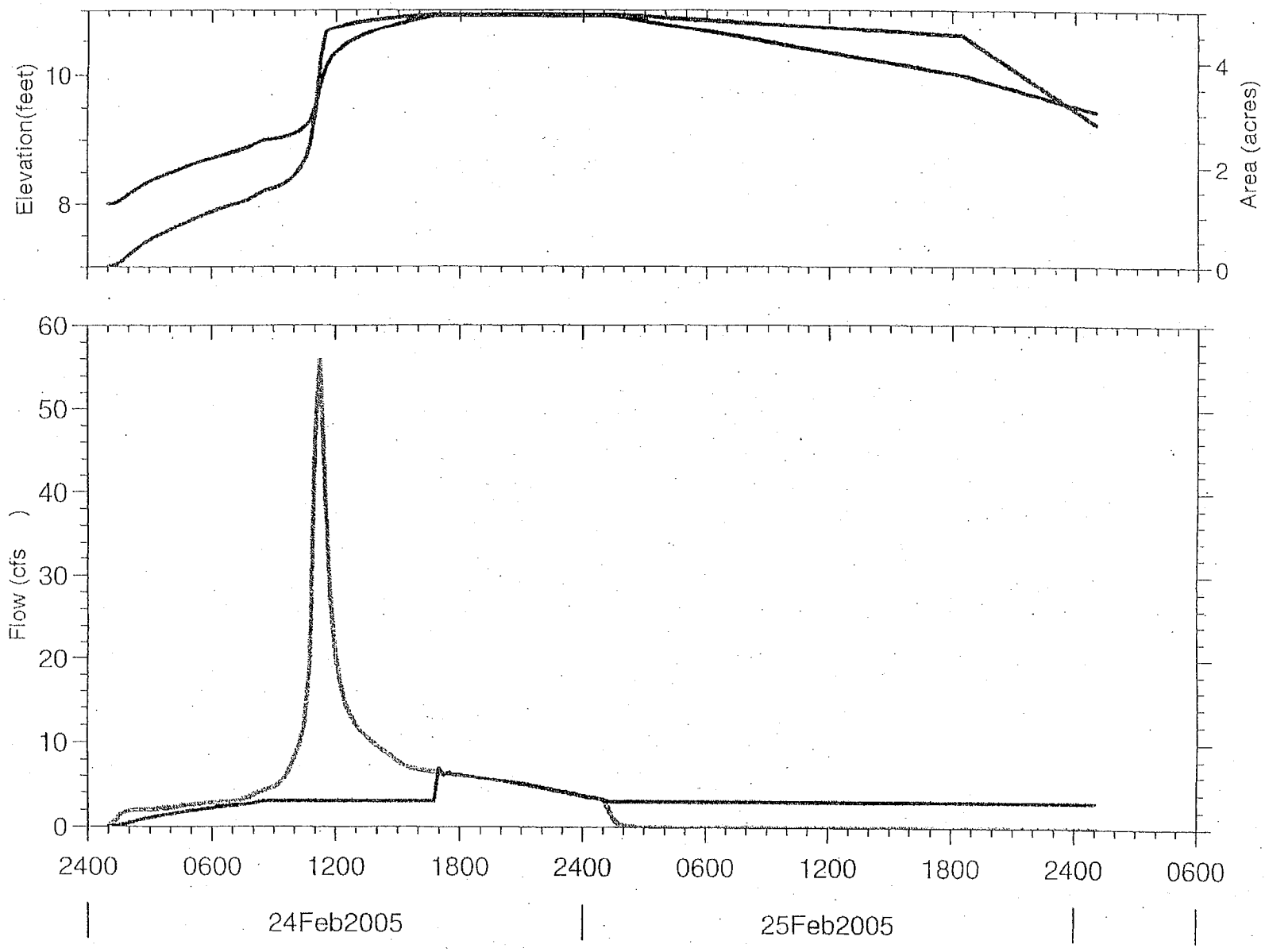


POND (c) 1.8" storm



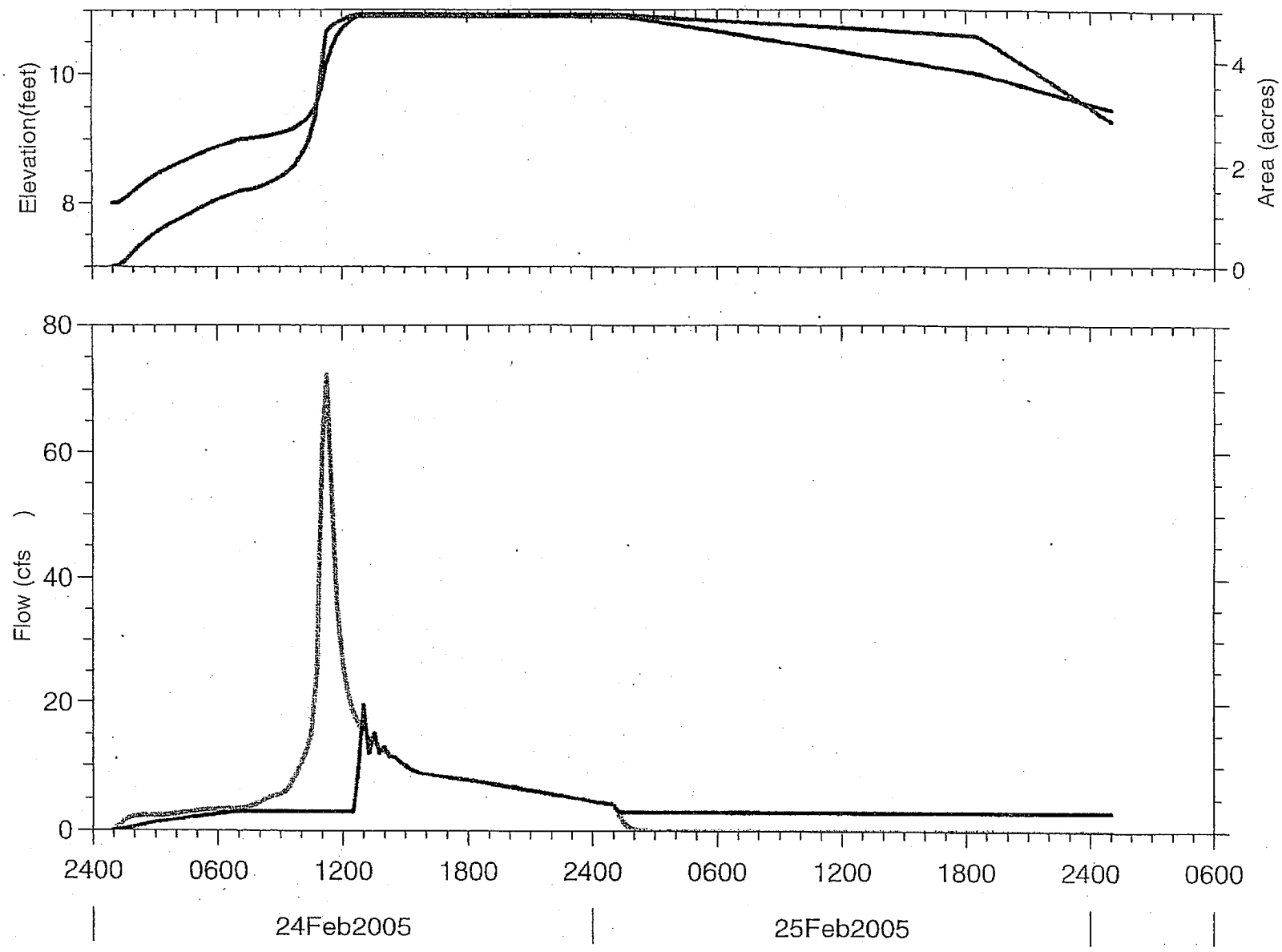



LINEAR (A) 1" storm




LINEAR (#) 1.5'' storm

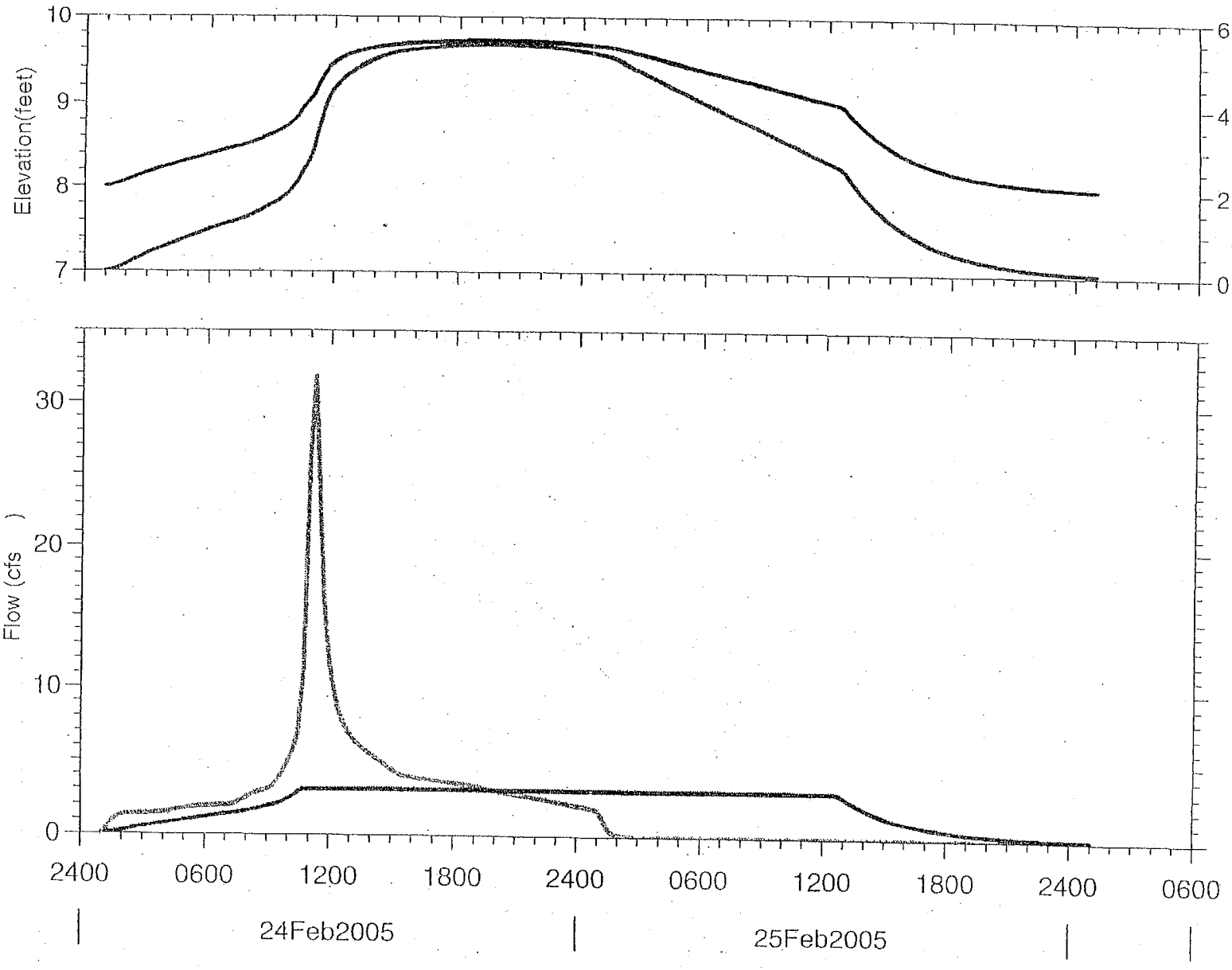
LINEAR (A) 1.8" storm




HEC HMS

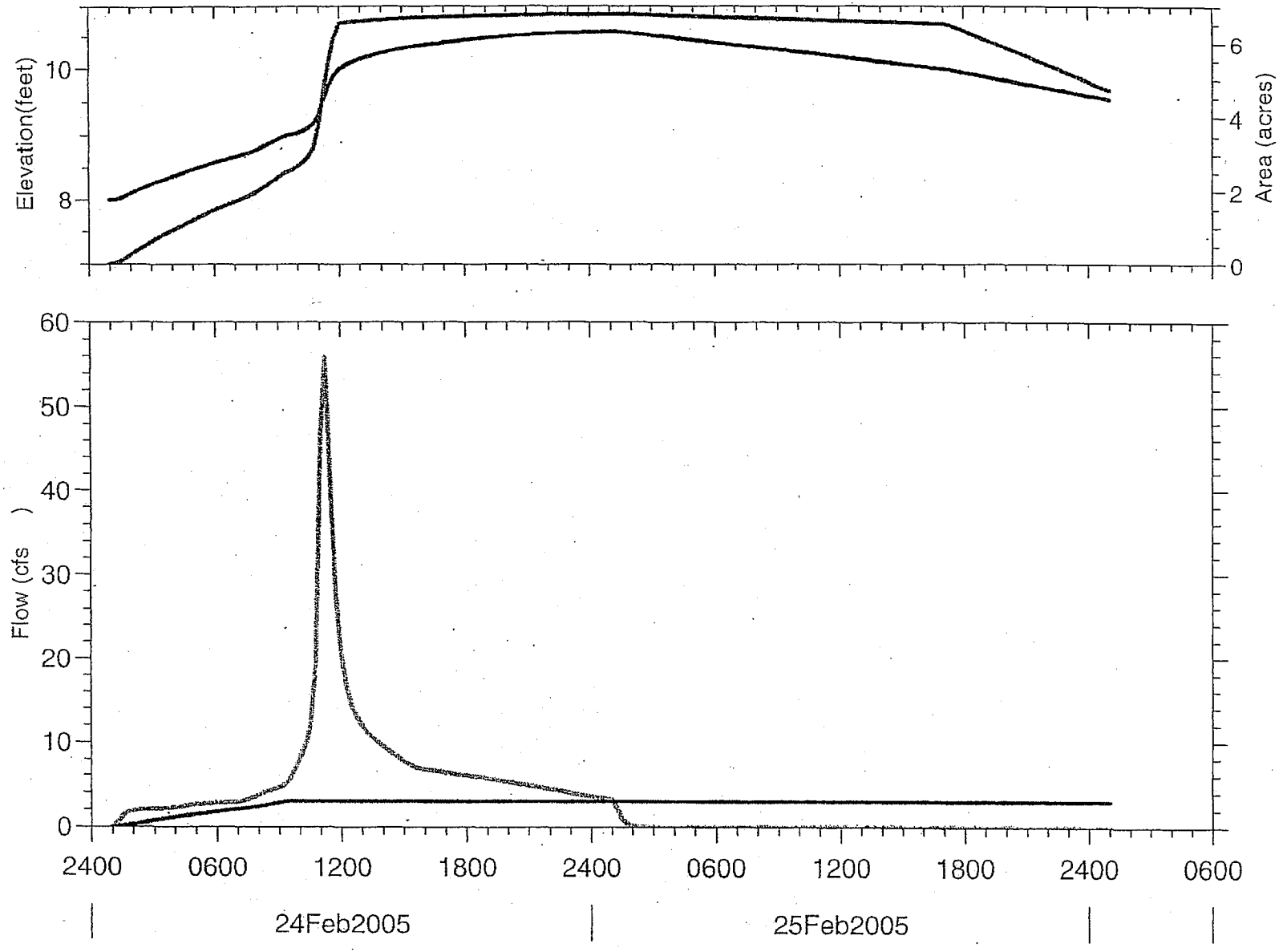
Elevation
Area
Inflow
treatment wetlands

Basin: wetlands treatment
Run: 1.8 inch
Time: 08Mar05, 10:26




E
LINEAR (@) 1" storm

LINEAR (SE) 1.5" storm

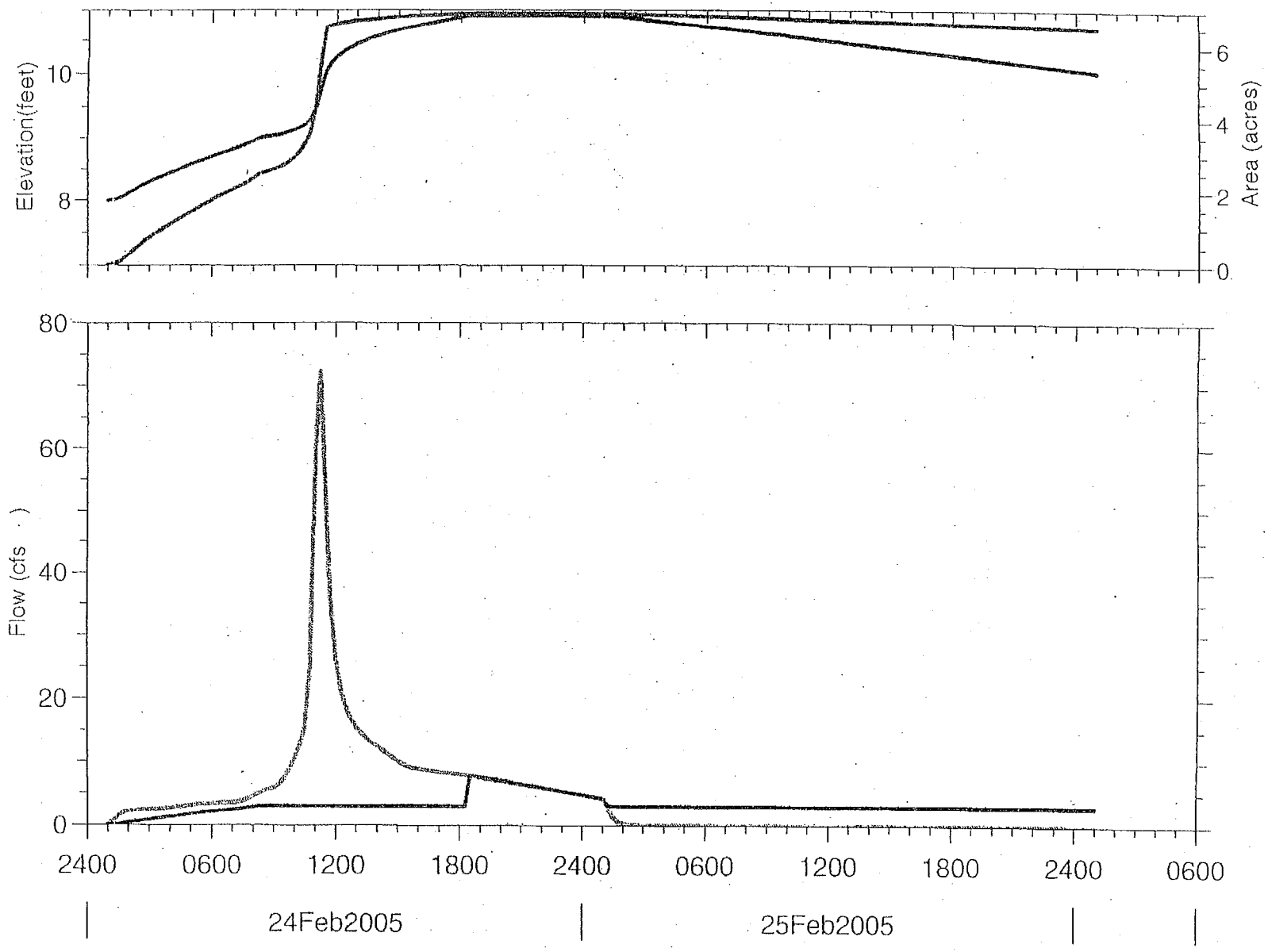



HEC HMS

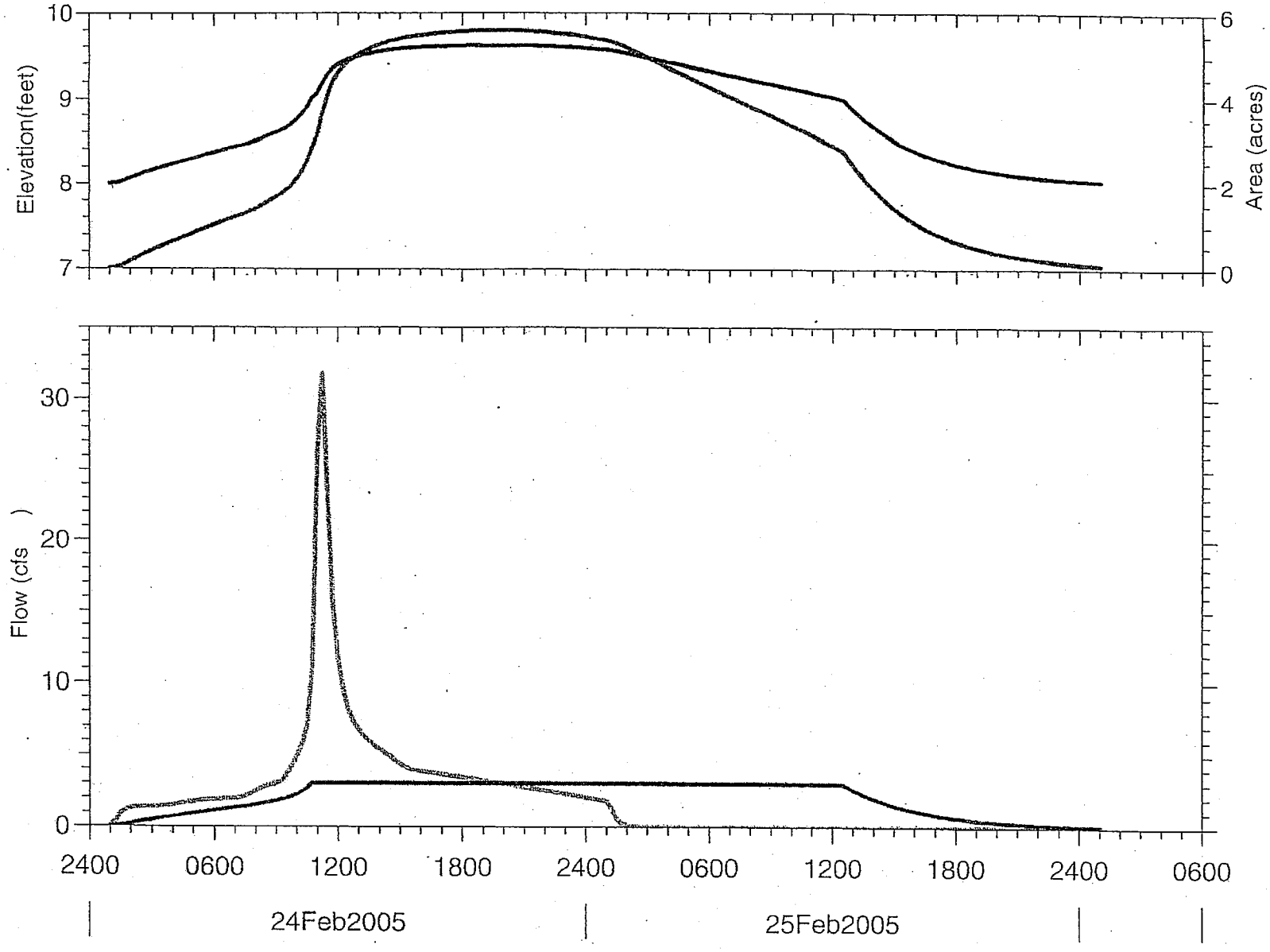
Elevation
Area
Inflow

treatment wetlands

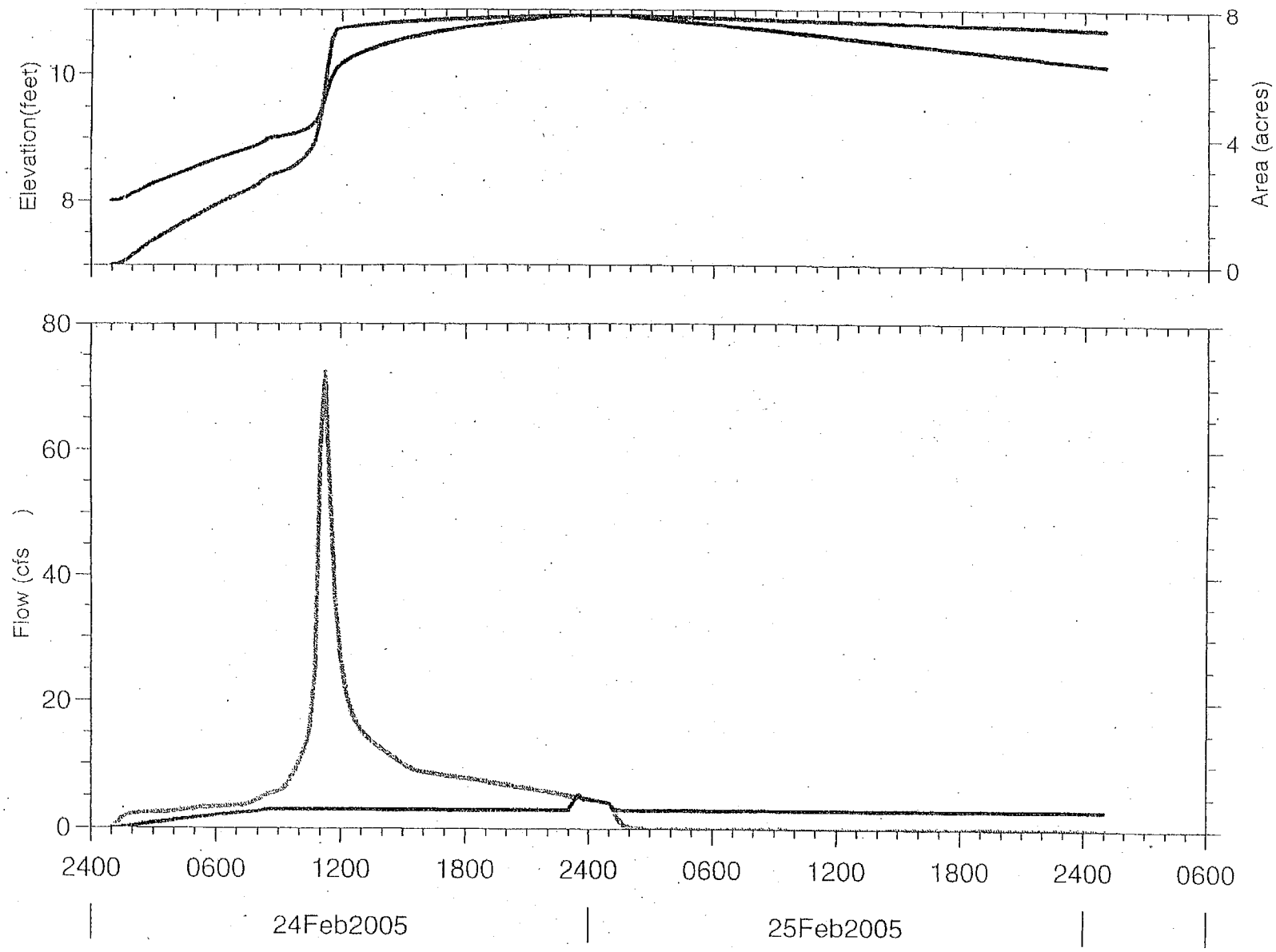
Basin: wetlands treatment
Run: 1.5 inch
Time: 08Mar05, 10:27



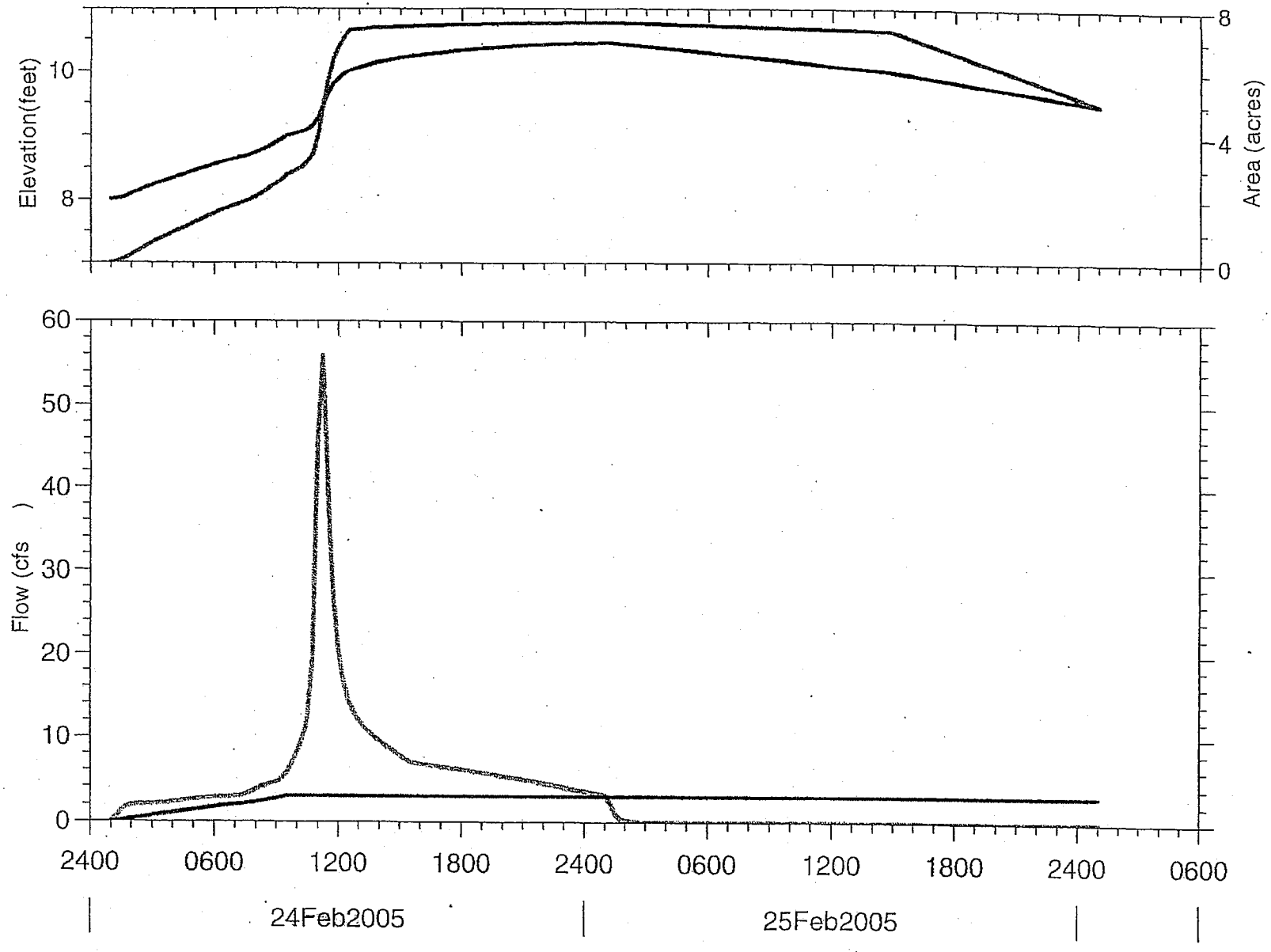

LINEAR (E) 1.8" storm




LINEAR (F) 1" storm


Elevation(feet)
10
8
8
4
0
Area (acres)
80
60
40
20
0
Flow (cfs )
2400
0600
1200
1800
2400
0600
1200
1800
2400
0600
24Feb2005
25Feb2005
HEC
HMS
Elevation
Area
Inflow
treatment wetlands
Basin: wetlands treatment
Run: 1.8 inch
Time: 08Mar05. 10:36

LINEAR (P) 1.8




LINEAR (E) 1.5" storm

## Timeline of Activities Regarding City of Malibu Wastewater Treatment

| | |
|---|---|
| March 28, 1991 | Incorporation of the City of Malibu after County of Los Angeles approval of a plan for a centralized wastewater collection system through the creation of County Improvement District No. 2640R and Integrated Financing District No. 1. |
| 1992 | City Contractor publishes Warshall report describing water quality problems in Malibu and recommending remedies. |
| July 1, 1993 | Litigation between the City of Malibu and the County of Los Angeles is settled with the stipulation that the County will cease efforts to design and construct a wastewater system to serve the residents of Malibu. The settlement was premised on the City of Malibu's commitment to adopt, implement and enforce necessary measures, ordinances and regulations, to assure that wastewater disposal and/or management practices are consistent with the public health and safety and Regional Board requirements. |
| March 2, 1998 | Baykeeper petitioned Regional Board to issue Cleanup and Abatement Order to the City of Malibu requiring (1) investigation of septic systems, (2) conduct and submit monitoring and effluent sample reports from storm drains, and (3) remedy discharges from septic systems. |
| May 18, 1998 | Regional Board adopts Resolution No. 98-11 requesting funding support from State Water Resource Control Board Cleanup and Abatement Account. |
| June 10, 1998 | Regional Board directs the City to undertake a technical study of water quality impacts from septic systems through California Water Code (CWC) section 13267. |
| June 10, 1998 | Letter from Malibu City Attorney to Regional Board denying responsibility for any septic system discharges and questioning authority to direct study pursuant to CWC section 13267. |
| July 8, 1998 | Regional Board Counsel letter reasserting claim and authority to require completion of technical investigations by the City of Malibu. |
| August 21, 1998 | Regional Board extends deadline for submittal of a workplan for technical investigations to September 30, 1998. |
| Sept. 30, 1998 | City of Malibu fails to submit workplan to the Regional Board. |
| Oct. 16, 1998 | Regional Board Executive Officer issues Notice of Violation for failure to submit workplan. |

Timeline of Activities regarding Malibu Wastewater Treatment

| | |
|---|---|
| Oct. 29, 1998 | Letter from the City Mayor to the Regional Board stating concerns on (a) technical scope, (b) Regional Board authority, (c) source of financing for the required studies. |
| Dec. 14, 1998 | Regional Board Resolution No. 98-023 directing the Executive Officer to (a) ensure AOWTS meet highest practical standards, (b) discharges do not contribute to impairments, (c) issue a complaint for civil liability against the City of Malibu, (d) to require ROWDs from multi-family and commercial septics in the Malibu Creek watershed, to require such applicants to conduct all necessary studies required to evaluate cumulative impacts on receiving waters and to required upgrades to meet Basin Plan objectives, and (e) to prepare a prohibition of all future discharges from septic systems and the termination of discharges from existing systems and following an adequate period of time to allow for the provision of an alternative wastewater disposal system. |
| 1998-2003 | Activities summarized in 2007 Regional Board Watershed Management Initiative Chapter on the Santa Monica Bay Watershed Management Area, which includes Malibu (See attachment [1] of this timeline). |
| Feb. 22, 2001 | Regional Board adopts General Waste Discharge Requirements Order R4-2001-031 allowing staff to permit commercial and multi-family subsurface sewage disposal systems in Malibu. |
| Jan 30, 2003 | Malibu Country Mart I and II WDRs and TSOs, compliance with the WDR is extended to Jan 27, 2005 pending the City's approval for advanced systems. |
| March, 21, 2003 | EPA adopts nutrient TMDL for Malibu Creek. |
| July 11, 2003 | Malibu City Council votes unanimously to pursue WWTP in Legacy Park and prepared Integrated Wastewater Management Program and continues studies. |
| June 10, 2004 | The Regional Board adopts Resolution R4-008, adopting waivers and a template Memorandum of Understanding (MOU) for residential and certain de minimus commercial septic systems. Qualified Local Agency (QLA) status was granted to Cities with Memorandum of Understandings along with the authority to permit residential and some small commercial onsite wastewater treatment systems which met State and Regional Board water quality standards. |
| August 30, 2004 | Stone report shows bacteria impacts possible (6 months travel time) from OWTS and OWTS are source of 42% of groundwater discharge into Civic Center area. |



15-157

Timeline of Activities regarding Malibu Wastewater Treatment

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|---|---|
| Nov. 6, 2004 | City of Malibu voters pass Measure S to provide educational funds and the funding necessary to purchase land in the Malibu Civic Center area that could be used, in part, to construct a centralized wastewater treatment plant. |
| Sept. 2, 2004 | RWQCB adopts General Waste Discharge Requirements Order R4-2004-0146 establishing requirements for permitting residential onsite wastewater treatment systems in jurisdictions without a MOU. |
| Sept. 17, 2004 | Malibu City Manager signs Memorandum of Understanding specified in Order R4-200400146 and receives QLA status and the authority to permit residential and some small commercial facilities according to State and Regional standards. |
| Dec 13, 2004 | RWQCB adopts TMDL for bacteria in Malibu Creek and Lagoon. |
| April 25, 2005 | Questa Engineering Report estimating that WWTP needs of 120,000 to 200,000 gpd cannot be disposed during winter mounding, at which time the capacity is 58,000 to 67,000 (Questa Engineering Report, April 28, 2005, pages 5-1, 6-1, 6-5), but that 160,000 gpd could be percolated into the subsurface through leach fields and irrigation during low water conditions. |
| Jan. 27, 2006 | In response to Malibu City voter adoption of Measure S, the Regional Board adopts TSO R4-2005-0012 and 0013, extending the deadline for compliance of AOWTS for Malibu County Mart I and II from December 1, 2004 to January 27, 2007. |
| July 15, 2006 | Compliance date for summer dry weather SMB Beaches TMDL for bacteria. |
| May 3, 2007 | Malibu Lumber submits application for waste discharge requirements (ROWD). |
| June 28, 2007 | Malibu Lumber Initial study and draft mitigated negative declaration (DMNegDec). |
| July 27, August 17, 2007, | Regional Board letters stating the cumulative effects were missing from the DMNegDec for Malibu Lumber. |
| August 21, 2007 | City of Malibu Planning Commission certifies Final Mitigated Negative Declaration for Malibu Lumber. |
| Sept. 27, 2007 | Regional Board letter stating that cumulative effects were missing from the Malibu Lumber MND. |
| June 28, July 12, Sept 10, Oct. 15, Oct. 29, 2007 | Meetings and teleconferences between Regional Board staff and Malibu Technical staff on issues including cumulative effects. |

Timeline of Activities regarding Malibu Wastewater Treatment

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|---|---|
| November 5, 2007 | Regional Board letter stating that cumulative effects were missing from the La Paz DEIR. |
| February 22, 2008 | Notice of Incomplete ROWD for Malibu Lumber stating groundwater study needed to evaluate effects of rising groundwater. |
| March 22, 2008 | Notice of Incomplete ROWD for Malibu Lumber stating system operation should be modified for periods when groundwater level rises. |
| May 16, 2008 | Conditional approval of ROWD letter for Malibu Lumber stating that additional engineering design was necessary. |
| June 16, 2008 | Email from City disclosing that a modeler had been selected for the Civic Center groundwater study. |
| June 26, 2008 | City of Malibu Planning Manager Stacy Rice provides letter of substantial conformance for the existing MND for Malibu Lumber. |
| June 27, July 2, July 7, July 8, July 14, July 16, July 24, 2008, | Emails RWQCB-City concerning missing materials in ROWD. |
| August 8, 2008 | Malibu City Manager email to Regional Board Executive Officer proposing permitting Malibu Lumber under MOU. |
| August 11, 2008, | Regional Board staff email to City of Malibu describing the development of General Waste Discharge Requirements (GWDR) for Malibu Lumber to allow it to open before the end of October and in anticipation of the Board review of the Individual WDR. It further states that MOU could not be used to permit reduced flows at Malibu Lumber. |
| August 14, 2008 | Malibu City Manager email to Regional Board staff stating that the City would not accept a GWDR for Malibu Lumber. |
| August 18, 2008 | Malibu City Manager email to Regional Board staff stating plans to discharge all Malibu Lumber waste to Legacy Park, subsurface discharge when irrigation was not possible. |
| August 20, 2008 | Email City Contractor to Regional Board staff beginning Groundwater study data collection. |
| August 27, 2008 | Additional Technical Data package received by Regional Board |
| Sept. 3, 2008 | Email from Regional Board staff to Malibu City Manager asking if new material was to support GWDR or WDR for Malibu Lumber as documents for both plans were present. |

Timeline of Activities regarding Malibu Wastewater Treatment

| | |
|---|---|
| Sept. 4, 2008 | Two NOV's sent for TSO noncompliance at Malibu Country Marts due to lack of City approval for system upgrade required in RWQCB WDR. |
| Sept. 5, 2008 | Notice of Incomplete ROWD for low-flow Malibu Lumber and stating that permitting under the MOU is not consistent with protection of water quality and beneficial uses in Civic Center. The letter from Regional Board staff further states, "Should the Weintraub Financial-Malibu Lumber Plaza open without a WDR, the Regional Board may, without further notice, take enforcement action for illegal discharge (pg 1)." |
| Sept. 12, 2008 | City of Malibu letter stating that MOU will be used to permit Malibu Lumber. |
| Sept. 15, 2008 | Groundwater study Kick-off between Regional Board and City of Malibu, followed by 5 days of data collection by City of Regional Board material, technical group agreement on study scope changes. |
| Sept, 17, 2008 | Notice of Incomplete ROWD for high-flow Malibu Lumber. |
| Sept. 22, 2008 | Regional Board staff testimony at City Council meeting describing EIR's failure to assess cumulative effects at La Paz. |
| Sept. 23, 2008, | Regional Board staff testimony at City Planning Commission describing EIR's failure to assess cumulative effects at Legacy Park. |
| Sept. 27, 2008 | City of Malibu letter stating that MOU was not yet terminated and questioning EO authority to bring the matter before the Board. |
| Nov 1, 2009 | Compliance for winter dry weather SMB Beaches TMDL for bacteria. |
| January, 2012 | Compliance with Santa Monica Bay Bacteria TMDLs load allocations. |
| July 15, 2021 | Compliance for wet weather (year-round) SMB Beaches TMDL for bacteria. |

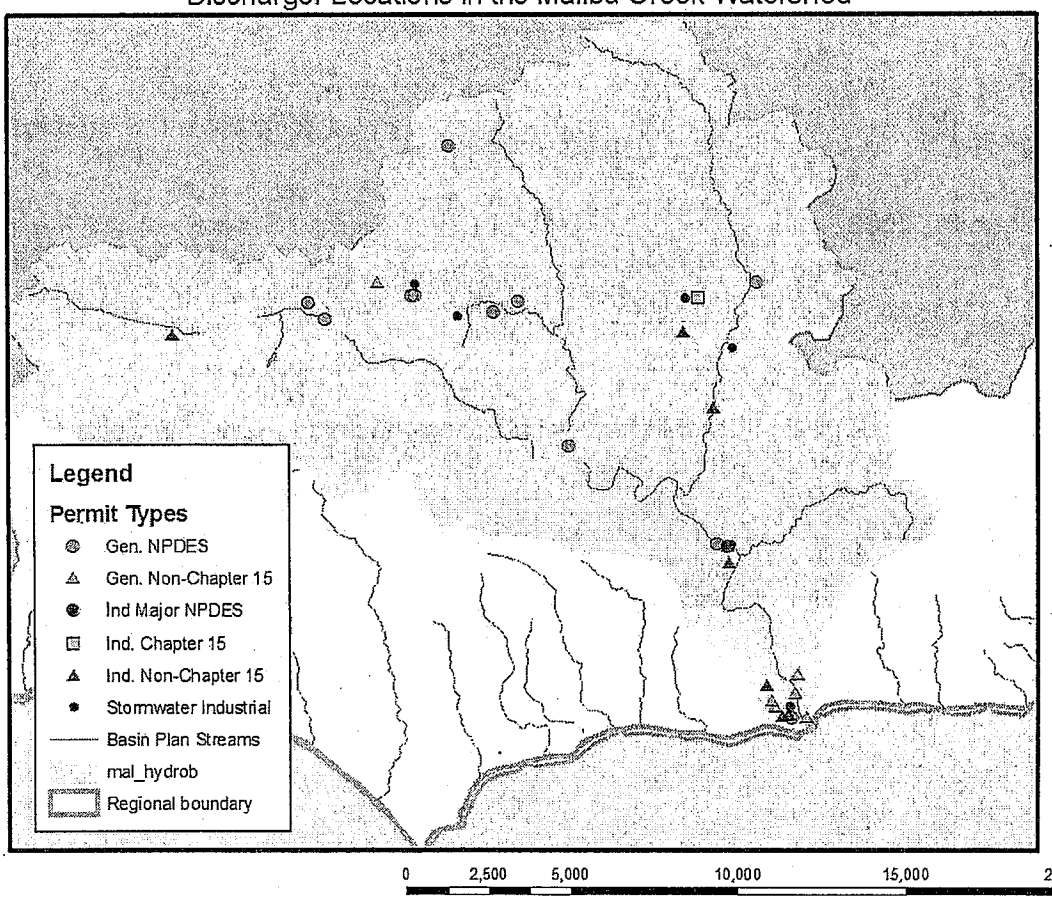
# [i] 2007 Regional Board Watershed Management Initiative Chapter on the Santa Monica Bay Watershed Management Area,

which includes Malibu

*Malibu Creek Watershed*

The most recent Water Quality Assessment Report finds water quality in some streams within the Malibu Creek Watershed is impaired by nutrients and their effects, coliform and their effects, trash, and, in some instances, metals. While natural sources contribute, nonpoint source pollution from human activities is implicated including ill-placed or malfunctioning septic systems and runoff from horse corrals. Nutrient inputs are also contributed by urban runoff and the POTW which discharges tertiary-treated effluent into the Creek about five miles upstream of Malibu Lagoon. There are relatively few discharges into the watershed which are shown in the map below:

Non-Stormwater NPDES, Non-Chapter 15, Chapter 15; and Stormwater Industrial Discharger Locations in the Malibu Creek Watershed



**Major Issues of Concern in Malibu Creek Watershed**

- Excessive freshwater, nutrients, and coliform in lagoon; contributions from POTW
- Urban runoff from upper watershed
- Impacts to swimmers/surfers from lagoon water
- Septic tanks in lower watershed
- Appropriate restoration and management of lagoon
- Access to creek and lagoon by endangered fish (steelhead trout and tidewater goby)
- Infestation by non-native species

A nutrient TMDL is being developed for the Creek by the Regional Board although ecologically-relevant nutrient objectives are still a work in-progress. A study completed by UCLA provided recommendations which should lead to more effective management of the Lagoon and its resources as the restoration process continues.

Historically, the Lagoon was much larger than its current day size. Although the flow dynamics of the Creek as well as the ocean's influence on the Lagoon in the past can only be extrapolated, it is likely Creek flow was much less than today during the dry season, partially due to increased imported water demands upstream. Marine influence may have dominated, keeping the lagoon entrance open much of the year as occurs in the larger Mugu Lagoon to the north. An open Lagoon would have facilitated migration of the now endangered steelhead trout. And though continual Creek flow was likely less, more of the watershed was available for the trouts' use, at least prior to the construction of Rindge Dam in the 1920's. Most important, during the dry season there would be access to deep shaded pools in many parts of the watershed where the fish could mature until rain created the flows needed to reach the ocean.

Today, the flow regime is quite different and now a major issue of concern. Both increased urban runoff from the more developed upper watershed and discharges from the POTW have increased baseline flows. However, the POTW which discharges to Malibu Creek is now under a discharge prohibition starting each April 15 through November 15 of each year, except during times of plant upset, storm events, or the existence of minimal streamflow conditions that require flow augmentation in Malibu Creek to sustain endangered species.

The lagoon size is much reduced from historic times and it remains closed much of the year except for during the winter when ocean influences breach the sandbar and Creek flows help maintain the opening. This had led to decreasing salinity or, at times, greatly fluctuating salinity which has disturbed efforts to restore the Lagoon. This also leads to elevated groundwater levels adjacent to the lagoon, which affects the function of septic system leachfields in the area. Additionally, surfing and swimming is popular off the beaches in the immediate area and there is considerable concern over contaminated Lagoon water reaching these people.

Riparian habitats throughout the watershed have been adversely impacted by infestation of non-native species. Major invasive plant species of concern include Arundo, castor

bean, pampas grass, fennel, tree tobacco, and tree of heaven. Major invasive animal species of concern include mudsnail and crayfish.

Several man-made structures such as a dam, an Arizona crossing, and culverts exist along the Creek and its tributaries and are barriers to steelhead trout migration. The largest such barrier on the Creek is Rindge Dam. Some segments of the tributaries have also been channelized in the more developed upper watershed.

The table below shows the list of 2006 303(d) water quality impairments in Malibu.

| Water Quality Limited Segment Name | Pollutant |
|---|---|
| Big Rock Beach | Coliform Bacteria[1]<br>DDT (Fish Consumption Advisory)<br>PCBs (Fish Consumption Advisory) |
| Carbon Beach | DDT (Fish Consumption Advisory)<br>Indicator bacteria[1]<br>PCBs (Fish Consumption Advisory) |
| Las Flores Beach | Coliform Bacteria[1]<br>DDT (Fish Consumption Advisory)<br>PCBs (Fish Consumption Advisory) |
| Malibu Beach | DDT (Fish Consumption Advisory)<br>Indicator bacteria[1] |
| Malibu Creek | Coliform Bacteria[6]<br>Fish Barriers (Fish Passage)<br>Nutrients (Algae)<br>Scum/Foam-unnatural<br>Sedimentation/Siltation<br>Selenium<br>Sulfates<br>Trash |
| Malibu Lagoon | Benthic Community Effects<br>Coliform Bacteria[6]<br>Eutrophic<br>pH<br>Shellfish Harvesting Advisory[6]<br>Swimming Restrictions[6]<br>Viruses (enteric)[6] |
| Malibu Lagoon Beach (Surfrider) | Coliform Bacteria[1]<br>DDT (Fish Consumption Advisory)<br>PCBs (Fish Consumption Advisory) |
| Paradise Cove Beach | DDT (Fish Consumption Advisory)<br>Fecal Coliform[1]<br>PCBs (Fish Consumption Advisory) |
| | PCBs (Fish Consumption Advisory) |
| | Lead[2] |
| Solstice Canyon/Dan Blocker Memorial (Coral) Beach | Indicator bacteria[1] |
| Stokes Creek | Coliform Bacteria[6] |
| Surfers Point at Seaside | Indicator bacteria[1] |
| Topanga Beach | Coliform Bacteria[1]<br>DDT (Fish Consumption Advisory) |

| | |
|---|---|
| | PCBs (Fish Consumption Advisory) |
| Topanga Canyon Creek | Lead |
| Trancas Beach (Broad Beach) | DDT (Fish Consumption Advisory) |
| Trancas Beach (Broad Beach) | Fecal Coliform[1] |
| Trancas Beach (Broad Beach) | PCBs (Fish Consumption Advisory) |
| Zuma Beach (Westward Beach) | DDT (Fish Consumption Advisory) |
| Zuma Beach (Westward Beach) | Indicator bacteria[1] |
| Zuma Beach (Westward Beach) | PCBs (Fish Consumption Advisory) |

[1]Santa Monica Bay Beaches Wet Weather and Dry Weather Bacteria TMDLs, 2003
[2]Ballona Creek Metals TMDL, 2005
[3]Ballona Creek Trash TMDL, 2002
[4]Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL, 2007
[5]Ballona Creek Estuary Toxic Pollutants, 2005
[6]Malibu Creek Bacteria TMDL, 2006
[7]Marina del Rey Harbor Toxics TMDL, 2006
[8]Marina del Rey Back Basins Bacteria TMDL, 2004

*CURRENTLY SCHEDULED TMDLS:*

- Nutrients (Malibu Creek)

***Stakeholder Groups***

- *Malibu Creek Watershed Council (with subcommittees)* A number of stakeholders began meeting in the late 1980's/early 1990's in the Malibu area. Through their efforts, a list of priority issues that need to be resolved was formulated. This lead to the development of a Natural Resources Plan for the watershed which was prepared by the U.S. Natural Resources Conservation Service. Separate task forces and subcommittees have formed over the years to address specific issues. The Watershed Council consists of members from State and local agencies and organizations, environmental groups, business and dischargers, special districts and the general public. Their mission is to oversee and implement actions that will protect, enhance and restore habitats of the watershed, as well as improve water quality. Current active committees/task forces under the Council include those focusing on habitat/species, monitoring/water quality, education, and Rindge Dam. The Council's Malibu Lagoon Task Force served as an advisory group to a recently completed lagoon restoration plan. A copy of the final lagoon restoration plan funded by the Coastal Conservancy may be found at http://www.healthebay.org/currentissues/mlhep/default.asp. The Monitoring Subcommittee also meets regularly to serve as a Technical Advisory Committee to a Proposition 13-funded watershed-wide monitoring program. A Malibu Creek Ecosystem Restoration Feasibility Study is underway. The U.S. Army Corps of Engineers and California Department of Parks and Recreation are the major partners in this effort which will evaluate, among other options, the feasibility of restoring the ecosystem through removal of Rindge Dam. The technical advisory group for the effort meets approximately monthly while a larger stakeholder focus group meets as needed. Watershed Council meetings occur every other month while subcommittees

may meet intermittently or regularly. More information may be found at http://www.malibuwatershed.org/.

- *Santa Monica Bay Restoration Commission (Watershed Council, Governing Board, Executive Committee, and Technical Advisory Committee)* The SMBRC was formed in 1989 under the National Estuary Program and was originally called the Santa Monica Bay Restoration Project; it is charged with the responsibility of assessing the Bay's problems, developing solutions, and identifying implementation procedures. A Bay Restoration Plan was developed and is in the process of being implemented. A Regional Board member and sometimes a staff member attend the bimonthly meetings of the Commission's Governing Board, while another staff member attends the bi-monthly Technical Advisory Committee meetings. More information about the SMBRC may be found at their website http://www.santamonicabay.org/

***Past Significant Activities***

*WETLANDS PROTECTION AND MANAGEMENT*

The Wetlands Recovery Project has funded a number of acquisition/planning/restoration projects in the WMA. These include:

- Topanga Lagoon Restoration Technical Assessments
- Topanga Lagoon and Watershed Restoration Feasibility Study
- Upper Zuniga Road Acquisitions
- Cross Creek Road Fish Passage
- Malibu Creek Arundo Removal project
- Solstice Creek Steelhead Enhancement Design Plans

*MONITORING AND ASSESSMENT*

*SWAMP:* This watershed was the focus of SWAMP monitoring in FY02/03 with analyses repeated at some sites in FY03/04. Approximately 30 directed sites in coastal subwatersheds (generally one site in the lower watershed and one in the upper subwatershed) were sampled for conventional water chemistry, bacteriology and bioassessment. A subset of these stations were samples for toxicity, metals and pesticide chemistry in water column. Sampling occurred during the spring in 2003 and 2004. Potential reference sites sampled during spring 2003 were resampled during spring 2004.

*TMDL Research and Monitoring:* UCLA was under contract with the State Board to provide data needed for establishment of nutrient TMDLs in several watersheds within the Region including Malibu Creek. By understanding the inter-relationships between water quality and habitat condition and the resulting effects that these interactions have on the biological communities of coastal watersheds, this research was intended to further our understanding of the ecology of southern California watersheds. Besides providing information supporting the establishment of nutrient TMDLs for these three impaired

coastal watersheds, the data collected would provide insight into how these TMDLs might be complied with in the future. The work is a continuation and extension of a Regional Environmental Monitoring and Assessment Program (R-EMAP) project in the Calleguas Creek Watershed. R-EMAP us part of a larger national effort by the USEPA to assess the condition of the nation's ecological resources.

The Southern California Coastal Water Research Project (SCCWRP) was under contract with the State Board to provide technical support for the Regional Board's TMDL development efforts. Several related tasks conducted in the Malibu Creek Watershed included: 1) an assessment of the current level of impairment to water quality from algal biomass in the Creek through dissolved oxygen measurements, 2) an assessment of the current level of impairment to water quality from algal biomass in the Creek through a survey of algal biomass and species composition at multiple locations as well as collection of water quality samples and surveys of habitat types, and 3) a determination of whether nitrogen or phosphorus limits algal growth in order to develop appropriate water quality objectives.

*NONPOINT SOURCE PROGRAM*

A number of nonpoint source control strategies have been undertaken in the Malibu Creek Watershed. Those that involved restoration of aquatic life beneficial uses include streambank and riparian corridor habitat restoration projects funded by 319(h) monies undertaken by the Resource Conservation District of the Santa Monica Mountains and the Department of Parks and Recreation. Additionally, the Resource Conservation District has prepared a manual for horse owners in the areas detailing ways to prevent nonpoint source inputs from their land (funded by 319(h) monies). Also, the City of Calabasas is using 319(h) money to develop and coordinate a watershed education center and library. Another 319(h) project involved restoration of Zuma Lagoon.

The SMBRP report, "Making Progress: Restoration of the Malibu Creek Watershed" (January 2001) includes Table 1.3, Key Watershed Projects, Studies, Stakeholder Groups and Partnerships. It lists 17 different non-point source projects that have been implemented in the Malibu Creek Watershed over the past decade to address water quality and habitat issues.

<u>*Septic Systems*</u>: In January 2000, the Santa Monica Bay Restoration Commission (SMBRC) convened a Task Force to address the issue of septic system management throughout the northern Santa Monica Bay watersheds. The area of focus covers three jurisdictions: the City of Malibu, the City of Los Angeles, and areas of unincorporated Los Angeles County. In order to bring together the various perspectives and expertise on this issue, the Task Force was composed of representatives from various stakeholder organizations including: State Department of Health Services (SDHS); Los Angeles Regional Water Quality Control Board (RWQCB); California Coastal Commission; Los Angeles County Departments of Public Works, Health Services and Regional Planning; City of Los Angeles Department of Building and Safety; City of Malibu Environmental

and Building Safety Department; Los Angeles County Board of Supervisors Office - Third District; and Heal the Bay.

The Task Force's goal was to develop solutions to the problems associated with septic systems and their impact on water quality, while at the same time identifying the obstacles that must be faced in trying to mitigate the situation. By bringing an understanding of these obstacles into the formulation of its recommendations, the Task Force tried to ensure that the solutions are implementable and still fully address the problem at hand.

After its review of the existing management and regulatory framework for septic system management in the Bay's watersheds, the Task Force's recommendations suggested that improving management of septic systems would require significantly greater oversight by both state and local agencies as well as improved coordination between them.

The Task Force recommended a comprehensive approach to septics system management in northern Santa Monica Bay that included the following elements:

- **Issue waste discharge requirements (WDRs) for all existing multi-family and commercial establishments in northern Santa Monica Bay watersheds.**
- **Establish a comprehensive permitting program for operation, inspection and monitoring of all septic systems.**
- **Design and implement a comprehensive groundwater monitoring program to improve assessments of septic system impacts to receiving waters and groundwaters.**
- **Establish a coordinated approach for oversight of septic systems, including modification/update of the WDR waivers between the RWQCB and local agencies.**
- **Develop a grants program for qualified homeowners to provide financial assistance to upgrade failing systems.**
- **Develop more stringent requirements for installation and operation of wastewater management systems in environmentally sensitive areas.**
- **Establish local septic system maintenance districts to oversee and fund the permitting, inspection and monitoring activities.**
- **Conduct public outreach to residents regarding proper operation and maintenance of septic systems.**

The SMBRC is working to incorporate these recommendations into the Bay Restoration Plan and continue to work with agencies responsible for their implementation.

***Current Activities***

The following is a summary of current regional board activities and strategies for dealing with point and nonpoint source pollution as well as other issues of concern in the Santa Monica Bay WMA.

*CORE REGULATORY*

Ongoing work related to individual NPDES permits includes review and assessment of monitoring data, conducting compliance inspections, and pursuing enforcement actions if necessary. Due to limited resources, only the basic regulatory activities are performed: review of dischargers' monitoring reports, minimum necessary inspections and sampling, issuance/renewal of permits, levels 1 and 2 enforcement actions (noncompliance and violation notification), case handling, and answering inquiries from the public.

The Santa Monica Bay Watershed Management Area falls within Los Angeles County which has been covered by a municipal storm water permit since 1990. The third five-year permit was adopted on December 13, 2001. This permit covers Los Angeles County and all the incorporated cities, except the City of Long Beach, which was issued a separate municipal storm water permit in 1999. The Los Angeles County Flood Control District is the Principal Permittee. Under the requirements of the permit, the Permittees will implement the Storm Water Quality Management Plan which includes the following components: (a) Program Management; (b) Public Information and Participation Program; (c) Industrial/Commercial Facilities Program; (d) Development Planning Program; (e) Programs for Construction Sites; (f) Public Agency Activities; and (e) Illicit Connection/Illicit Discharge Elimination Program. These programs collectively are expected to reduce pollutants in storm water discharges to the maximum extent practicable. In addition, the County will conduct a storm water monitoring program to estimate mass emissions and toxicity of pollutants in its waters, evaluate causes of toxicity, and several other components to characterize storm water discharges and measure the effectiveness of the Storm Water Quality Management Program. The permit can be downloaded from the Regional Board Storm Water website at http://www.waterboards.ca.gov/losangeles/html/programs/stormwater/la_ms4_final.html.

An important requirement of both the Los Angeles County and the City of Long Beach municipal storm water permits is implementation of the Standard Urban Storm Water Mitigation Plans (SUSMPs) and numerical design standards for Best Management Practices (BMPs), which municipalities began implementing in February 2001. The final SUSMP was issued on March 8, 2000, and amended in the permit, adopted on December 13, 2001. The SUSMP is designed to ensure that storm water pollution is addressed in one of the most effective ways possible, i.e., by incorporating BMPs in the design phase of new development and redevelopment. It provides for numerical design standards to ensure that storm water runoff is managed for water quality and quantity concerns. The purpose of the SUSMP requirements is to minimize, to the maximum extent practicable, the discharge of pollutants of concern from new and redevelopment. The requirements are very similar to the Ventura County SQUIMP.

The numerical design standard is that post-construction treatment BMPs be designed to mitigate (infiltrate or treat) storm water runoff from the first ¾ inch of rainfall, prior to its discharge to a storm water conveyance system.



15-168

*MONITORING AND ASSESSMENT*

Portions of a regional ocean monitoring program are being implemented through the receiving water monitoring programs of the major dischargers as well as through the Bight-wide monitoring (see Region-wide Section for additional details). A watershed-wide monitoring program is currently being implemented in the Malibu Creek Watershed.

The SMBRC in 2006 developed a *Comprehensive Monitoring Program* which lays out new monitoring designs for five major habitat types within the Bay. Each includes a core motivating question, a number of related objectives, specific monitoring approaches, indicators, and data products, and sampling designs detailing number and locations of stations, sampling frequency, and measurements to be collected. The Program incorporates key monitoring efforts that extend from the outer Bay to the high tide line along the shore. While this is the scope of the Program, it is intended to complement other efforts, such as TMDLs, that link land and marine environments.

The five major habitat (or ecosystem) types covered in the Comprehensive Monitoring Program:

– Pelagic Ecosystem
– Soft Bottom Ecosystem
– Hard Bottom Ecosystem
– Rocky and Sandy Intertidal
– Wetlands

The new Comprehensive Monitoring Program also includes an implementation plan with a detailed schedule, cost estimates for individual Program elements, and recommendations on the Program's management structure, including data management and assessment strategies.

In 2005, the SMBRC conducted an assessment of information needs for protection of the Bay's habitats and living resources. A new inventory of existing information on the Bay's habitats and living resources was developed as part of this assessment effort. In 2007, the Bay Restoration Commission formed a Marine Protected Area (MPA) Technical Advisory Committee to facilitate filling gaps in data that are critical in the upcoming State process for establishing MPAs in Southern California. The Commission's MPA TAC (MTAC) has worked on identifying key habitat areas and species of concern, updating the existing information inventory, identifying key data gaps, and overseeing research and monitoring projects. To date, key data gaps identified by the MTAC include

- Completion of seafloor mapping and development of GIS-based habitat mapping and information system

- Study of larval and juvenile fish dispersal rate
- Comprehensive assessment of subtidal habitats and communities
- Comprehensive assessment of intertidal habitats and communities
- Assessment of marine mammal and seabird communities
- Reconnaissance of deep reef habitats
- Study of the impacts of resource extraction on fish and invertebrate populations
- Socioeconomic impacts of ecosystem health - funded by the SMBRC's Habitats Assessment Trust Fund Study of socioeconomic impacts and assessment of subtidal habitats are currently underway.

The adoption of the Marina del Rey Harbor back basins toxics TMDL included a requirement that the five responsible parties (Los Angeles County Department of Public Works, Los Angeles County Department of Beaches and Harbors, the City of Los Angeles, Culver City, and the California Department of Transportation) do a sediment characterization study of the entire marina.

Because it is not practical to continuously monitor every stream/storm drain, the monitoring approach adopted by the municipal storm water permit is to rely on sampling of a set of mass loading stations in combination with a set of land use stations. Data collected through sampling of these stations will then be used to calibrate models that produce mass loading estimates for a specific watershed/subwatershed. The USACE has worked with UCLA to collect storm water samples in Ballona Creek to calculate relative contributions of pollutant loadings from each tributary and major land use types. SCCWRP also has on-going efforts to investigate the loading and impacts of storm water runoff throughout the Southern California region, including creeks in the Santa Monica Mountains.

Besides information provided by these existing efforts, there are still information gaps that hinder the fulfillment of the identified monitoring objectives, including:

- A project that develops methodology for and conducts status and trend analysis using stormwater monitoring data collected under the municipal NPDES permit.
- A study that uses more frequent monitoring during different periods of a storm to generate a "pollutograph." This information will greatly improve the accuracy of pollutant loading estimates generated by modeling efforts.
- A project that resolves the issue of consistency in detection limits used by different dischargers. The Regional Board needs recommendations and rationale on the proper detection limits for each measured constituent to estimate and make comparisons of loadings from various sources (point and nonpoint sources).
- The study and application of molecular markers for storm water runoff. The marker can be used to identify the area of storm water influence and therefore aid further study if the runoff impacts in receiving water sediments.
- Toxicity Identification Evaluations to identify the sources of storm water/urban runoff toxicity.
- A study of the effectiveness of structural BMPs that are implemented using Proposition A grant money funds. Since many pollution control devices are new and considered to be pilots in the Region, the review panel for the Proposition A funds recommended that the regional Board should take on the

responsibility to both monitor the progress in implementing these projects and to evaluate the effectiveness of installed devices for regional applicability.

- A study of the effectiveness of non-structural BMPs (e.g. public outreach) implemented under the municipal storm water permit. The information will be useful for developing future storm water pollution control strategies.
- Development of practical sanitation survey tools.

These projects would require either additional staff time or need to receive funding from various grant sources.

There are also a number of ongoing volunteer monitoring efforts underway in the WMA. They include storm event sampling at over 30 Bay storm drains coordinated by the Santa Monica BayKeeper, gutter patrol monitoring in inland neighborhoods and monitoring of Malibu Lagoon and the lower Creek for water quality and biological parameters coordinated by Heal the Bay, water quality and biological monitoring and surveys of Malibu Lagoon, as well as Topanga Creek, coordinated by the Resource Conservation District of the Santa Monica Mountains, monitoring of the upper Malibu Creek Watershed, and coliform monitoring of the surf zone off of Malibu coordinated by the Malibu Chapter of the Surfrider Foundation.

*WETLANDS PROTECTION AND MANAGEMENT*

The Wetlands Recovery Project considers the Ballona Wetlands Restoration Planning a high priority on the current workplan and is underway. The State Coastal Conservancy in partnership with the California Department of Fish and Game and State Lands Commission is developing a restoration plan for Ballona Wetlands. More information about this work may be found at http://www.scc.ca.gov/Ballona/index.html. A US Army Corps-funded Ecosystem Restoration Feasibility Study is also being conducted in coordination with the Coastal Conservancy work. More information about this study may be found at http://www.spl.usace.army.mil/cms/index.php?option=com_content&task=view&id=64&Itemid=31.

Other projects in the WMA listed on the Wetlands Recovery Project's workplan include:

- The Topanga Creek Restoration Program listed as a high priority,
- Las Flores Creek Restoration,
- The Malibu Lagoon Habitat Enhancement Program which is ongoing,
- The Upper Malibu Creek Feasibility Study (Rindge Dam) which is ongoing,
- Cold Creek Riparian Acquisitions, Part 2,
- La Sierra Riparian Acquisitions,
- Nicholas Canyon Watershed Acquisition, and
- Solstice Creek Steelhead Access Implementation which is ongoing

Being listed on the workplan is not a guarantee of funding however. More information about the workplan may be found at http://www.scwrp.org.

The Santa Monica Mountains Conservancy is a state agency created by the Legislature in 1979 charged with primary responsibility for acquiring property with statewide and regional significance, and making those properties accessible to the general public. The Conservancy manages parkland in the Santa Monica Mountains, Santa Susana Mountains, the Simi Hills, the Santa Clarita Woodlands, the Whittier-Puente Hills, the Sierra Pelona, the Los Angeles River Greenway, the Rio Hondo, the Verdugo Mountains, the San Gabriel Mountains, and the San Rafael Hills. The agency's goals are to: 1) implement the Santa Monica Mountains Comprehensive Plan, 2) implement the Rim of the Valley Trails Corridor Master Plan, 3) implement the Los Angeles County River Master Plan, 4) further cooperation with local governments in the region to secure open space and parkland, and 5) expand education, public access, and resource stewardship components in a manner that best serves the public, protects habitat, and provides recreational opportunities. More information on this agency's goals may be found at http://www.smmc.ca.gov.

*SMBRC Proposition 12 Grant Program:* The *Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act (Proposition 12)*, passed in March 2000, provides a total of $25 million to projects that clean up or rehabilitate the resources of Santa Monica Bay. It was the first significant source of state funding to carry out the goals of the 1995 Santa Monica Bay Restoration Plan. By late 2007, forty projects, totaling approximate $19 million, representing the first phase of the bond money support, had been awarded funding under this grant program. The projects included a wide array of actions that address pollution prevention, habitat restoration, as well as critical research and educational needs of the watershed. Many of the projects address information and action needs identified in this document.

*SMBRC Proposition 50 Grant Program:* The *Water Quality, Supply and Safe Drinking Water Projects, Coastal Wetlands Purchase and Protection Act (Proposition 50)* passed in November 2002, provides a total of $20 million for projects that control pollutant loading to Santa Monica Bay and restore habitats in the Bay watershed. It was the second significant source of state funding to carry out the goals of the Bay Restoration Plan. By late 2007, approximately $18 million had been awarded to implement sixteen pollution control and habitat restoration capital outlay projects.

*NONPOINT SOURCE PROGRAM*

Nonpoint source pollution to the ocean (greater Santa Monica Bay) includes urban runoff, aerial fallout, spills, sediment resuspension, oil seeps, vessel traffic, and advection. Strategies for dealing with urban and storm runoff were discussed under the Core Regulatory section. In addition, a priority over the last five years has been to divert dry weather flows from all problematic storm drains to the sewer system. As of September 2007, more than twenty dry-weather diversion projects have been funded and completed through Proposition A, Proposition 12, Proposition 40, and Proposition 50 grant funds awarded by the Santa Monica Bay Restoration Commission and/or the

SWRCB under the State Clean Beach Initiative (CBI). Recent attention and new funding from the State CBI program has been shifted to upgrade the existing diversion projects to make them work year-round (diverting first flush and non-storm runoff during the wet season), identify and control sources of contamination from municipal Piers, and implement measures to improve water circulation in enclosed beach areas. More information on the CBI may be found at http://www.waterboards.ca.gov/cwphome/beaches/index.html.

Strategies have been developed and efforts are underway to address aerial fallout, sediment resuspension, septic systems, marinas, and vessel traffic.

Malibu Creek is identified as Critical Coastal Area (CCA) #60 in the State Water Resources Control Board's and California Coastal Commission's Critical Coastal Area Draft Strategic Plan. It has been identified as such since it flows into a Marine Protected Area and is an impaired water body. The major efforts listed to implement NPS management measures include: work by the Malibu Creek Watershed Advisory Council, various efforts to manage septic systems near Surfrider Beach, projects to capture and treat runoff from Malibu Creek and storm drains in the area, the Assessment of Water Quality and Loadings From Natural Landscapes project being conducted by SCCWRP, and implementation of the Santa Monica bay Restoration Plan.

Topanga Canyon Creek is identified as CCA #61 in the Draft Strategic Plan since it flows into a Marine Protected Area and is an impaired water body. The major efforts listed to implement NPS management measures include: work by the Malibu Creek Watershed Advisory Council (the small Topanga watershed is adjacent to the much larger Malibu watershed), various efforts to manage septic systems, participation with the Topanga Watershed Committee, implementation of the watershed management plan, and continuance of creek monitoring.

Santa Monica Canyon is identified as CCA #62 in the Draft Strategic Plan; it is an impaired water body that flows into a Marine Protected Area. Santa Monica Canyon is formed by the confluence of three major watersheds. Approached from the shoreline it extends upstream for a couple of miles to include lower Rustic Canyon and lower Sullivan Canyon, both entering tangentially from the northwest and ends at the entrance to Mandeville Canyon which extends six miles farther north to the crest of the Santa Monica Mountain. The major efforts listed to implement NPS management measures include: work by the Malibu Creek Watershed Advisory Council; dry weather diversions ate Will Rogers State Beach; and participation with the North Santa Monica Bay Water Quality Improvement Project.

*Aerial Fallout:* Funded by USEPA , the SMBRC, and the Los Angeles County Department of Public Works, researchers at UCLA and SCCWRP completed a three-phase study in 2005on air transport/deposition of toxic contaminants to the Bay. The study sought to establish what the total annual pollutant load from air deposition is to both Santa Monica Bay and the Bay watershed, assess how large the load is compared to other sources, and determine how the loads varies spatially and temporally. The Regional Board can use this information to evaluate the effectiveness of air pollution control measures. The study's findings indicate that:

- Aerial deposition is a significant contributor to the overall pollutant load to the Bay for trace metals such as lead, chromium, and zinc, and less so for copper and nickel. The atmospheric portion of inputs

for the five metals varied from 13 – 99% of the total trace metal inputs to Santa Monica Bay considering both atmospheric and non-atmospheric sources.

- On an annual basis, daily dry deposition of metals on Santa Monica Bay and its watershed far exceeds the amount deposited during rain events. Also, chronic daily dry deposition is far greater than deposition occurring during Santa Ana conditions when large volumes of polluted air blows from inland out to sea. Daily quantities of metals deposited during Santa Ana and rainfall events are comparable to the chronic daily deposition, however, since rainfall and Santa Anas are infrequent events, they are not significant factors in determining the total deposition load.
- Most of the mass of metals deposited by dry deposition on Santa Monica Bay and its watershed originates as relatively large aerosols from area sources (off-highway vehicles such as construction equipment and small businesses) in the Santa Monica Bay watershed.

The study's implications for management of nonpoint source pollution are several and include:

- Daily chronic dry deposition of metals must be a significant nonpoint source in establishing TMDLs for Santa Monica Bay.
- Reductions of nonpoint source inputs may require coupling between air quality and water quality regulatory actions and policies.

*Sediment Resuspension*: Currently, there is no study specifically planned to examine sediment resuspension as a source of pollutant loading to the Bay. However, the USEPA Superfund investigation on the Palos Verdes Shelf evaluated the feasibility of capping DDT-contaminated sediments as a remediation measure. USEPA conducted a pilot project in September 2000 to evaluate cap placement methods and cap stability at three test cells on the Palos Verdes Shelf. Based on the results of this pilot capping project as well as other technical studies, USEPA recently (2007) developed and released a remedial investigation (RI) report which characterizes the PV Shelf Study Area, compiles and evaluates information on the nature and extent of DDT and PCB contamination, and discusses the long-term transport and fate of the contaminants. Additionally, the RI assesses the risks to human health and the environment from the effluent-affected sediments. EPA will use the information and analysis provided by the RI report to develop, evaluate, and select appropriate response alternatives in the coming years.

Meanwhile, since 2002, EPA has implemented an institutional control program to address the significant human health risks associated with consumption of fish, particularly white croaker, contaminated by exposure to DDT and PCBs in the sediment. The institutional controls (IC) program has three components: (1) public outreach and education, (2) fish monitoring, and (3) enforcement.

As part of the IC Program, EPA and the Montrose Settlements Restoration Program (natural resources trustees) in 2006 completed a comprehensive sampling and analysis chemical levels in fish caught off the coast of Los Angeles and Orange Counties.

Also as part of the IC Program, a Fish Contamination and Education Collaborative (FCEC) has been established under the IC program. The FCEC is composed of federal and state governments, local health departments, community-based organizations and other local institutions. The FCEC has been assisting EPA to conduct and coordinate efforts to educate the most affected population through outreach at fishing piers, community-gathering, and through media as well as outreach and inspection at fish markets and restaurants.

*Marinas and Vessel Traffic:* Boating wastes (vessel traffic) are potentially a significant source of loadings into the Bay as well as into harbors of pathogens, trash, and some heavy metals. Launched in 1996, the SMBRC has implemented a comprehensive boater education program for the southern California counties. Their program addresses non-point source pollution generated from boat maintenance and activities. This includes sewage, used motor oil, trash and debris, fuel, heavy metals and cleaning agents. One of the SMBRC's focuses is to promote clean marinas. Their Clean Marina 319(h) grant, awarded by the SWRCB, will further help educate boaters, facilitate clean-out practices, and promote recognition of successes.

*CWA Section 319(h)-funded Activities:* A 319(h)-funded nonpoint source control strategy being undertaken in the Malibu Creek Watershed is evaluation of BMPs for horse stables and continuation of volunteer Stream Team monitoring by Heal the Bay. The Santa Monica BayKeeper also received 319(h) grant funds in 2001 to continue a citizen monitoring program involving storm drains flowing into Santa Monica Bay and to add in additional monitoring of Ballona Creek.

We continue to support as a high priority for 319(h) program funding in FY2002/03 projects to restore wetlands in Malibu, Topanga, and Trancas Lagoons.

*Proposition 13-funded Activities*: The Southern California Coastal Water Research Project (SCCWRP) received Proposition 13 funding (Coastal Subaccount) in 2001 for two projects affecting Santa Monica Bay. One is "Implementation and Evaluation of BMPs for Improving Coastal Water Quality." This is a multi-regional project which will conduct enhanced BMP effectiveness monitoring through use of more relevant indicators such as toxicity removal and reduction of pesticides and biologically-available metals. Samples will be collected during storm events. The other funded project is "Implementation of Coliform TMDL for Santa Monica Bay Beaches Using Standard Methods and Rapid Indicator Detection Techniques." AB411 requires weekly bacterial indicator monitoring and posting of beaches with chronic contamination. AB538 requires source identification at beaches with storm drains that have chronic contamination. This project will identify sources of fecal contamination to characterize the presence of human versus animal contamination.

*BASIN PLANNING*

Several high priority issues were identified in the 2005 - 2007 Triennial Review which affect this watershed management area and will require Basin Planning resources. As in all watersheds, adopting TMDLs as Basin Plan amendments is required under the Consent Decree with an estimated resource need of 0.5 PY/TMDL. This is considered a currently funded activity. The ongoing Tiered Aquatic Life Uses Pilot Project may affect many watersheds in the Region. The purpose of tiered aquatic life uses (TALUs) is to have more appropriate goals for protecting aquatic life that account for these inherent physical limitations. The purpose of this pilot project is to develop more tailored water quality standards (through beneficial use designations and associated biocriteria) to

protect the biological communities of semi-arid urban coastal streams and, If deemed appropriate, recommend appropriate tiered aquatic life uses for these semi-arid urban coastal streams. Other high priority issues identified by the Triennial Review common to multiple watersheds may be found in the Region-wide Section.

Review and comment on EIRs for the highest priority projects within the watershed will continue; however, there is currently no funding for this program.

***Near-term Activities***

Specific resource needs are described in the Region-wide Section of this document.

Core regulatory activities will focus on permit compliance, monitoring report review, and enforcement as needed. Work continues on lower Malibu Creek issues as well as on the watershed-wide monitoring program. Periodic updates of the State of the Watershed Report will occur.

Regarding resources needed to continue oversight of the Los Angeles County storm water permit (regulatory-based BMP management), regulatory personnel will be revising the annual program report format, auditing the permittees, evaluating the revised model programs, and reviewing reports and alternate programs submitted by permittees. The eighteen municipal program audits must be completed and matched with BMPs selected to address the pollutants of concern to facilitate development of TMDLs. The Caltrans storm water management program BMPs must be matched with pollutants of concern to facilitate TMDLs impacted by transportation land use. In addition, SWPPPs for all industrial storm water facilities in the WMA must be reviewed and BMPs matched with pollutants of concern to facilitate TMDL development.

A preliminary review of resources for core regulatory activities against cost factors has determined that our region is seriously underfunded for our baseline program. We will be seeking more funding for our core program activities.

Issuing waste discharge requirements for all existing multi-family and commercial establishments in northern Santa Monica Bay watersheds not currently under permit (with any necessary followup work), as recommended by the Santa Monica Bay Restoration Commission septic systems task force, will entail requiring **an additional 2 – 4 PYs per year for at least the next five years.**

There are a number of activities that need to be conducted over the next few years such as:

- Collect baseline information on biological conditions of subtidal rocky reef habitats in the Region, including ASBS.
- Update information on seafood consumption rates by anglers in the Santa Monica Bay region.
- Analyze the link between contaminants in fish and biological impacts to shore birds, sea birds, and marine mammals.

- Study the potential causes and sources of harmful algal bloom (HABs)
- Assess the loading and potential impacts of emerging contaminants (pharmaceuticals)
- Continued involvement in updates to the baseline State of the Watershed Report, focusing on filling data gaps and evaluating cumulative impacts as monitoring data become available from dischargers.
- Regional Board ambient monitoring, and evaluation of monitoring data from the municipal storm water program.
- An important issue to address at some point in the future is the need to protect the populations of threatened and endangered species in the Bay which include the California least tern, Belding's savannah sparrow, western snowy plover, California red-legged frog, California brown pelican, El Segundo blue butterfly, steelhead trout, and tidewater goby. Depending on the level of existing efforts, the needs for each species range from monitoring and assessing current conditions, to developing or implementing strategies for population recovery.
- In the Malibu Creek Watershed, a number of long-term projects are being considered or are in progress which the Regional Board will be involved with to some extent. The Department of Parks and Recreation and the City of Malibu are investigating development of a plan to reduce unseasonal breaching of the lagoon. Also, the Rindge Dam Task Force is investigating the possibility and alternative ways to remove the dam in order to facilitate access to the upper watershed by steelhead trout. There is no projected end date for this project. Additionally, the POTW which discharges to Malibu Creek is under a discharge prohibition starting each April 15 through November 15 of each year, except during times of plant upset, storm events, or the existence of minimal streamflow conditions that require flow augmentation in Malibu Creek to sustain endangered species. In the long-run, this discharge prohibition may have many other implications on water quality and quantity in the Creek and Lagoon.
- Develop a strategy for regulating septic systems in the Malibu area.
- A priority planning issue is to define water quality standards for nutrients in Malibu Lagoon and Creek.
- Develop inventory and establish monitoring stations for invasive exotic and sensitive plant species in riparian areas of northern Santa Monica Bay watershed.
- Develop strategy to control/eradicate invasive plant and animal species such as Arundo, crayfish, and mudsnails.
- Conduct the technical background work needed to understand local hydrology and develop regional curves for local streams
- Develop water budget for Santa Monica Bay watershed starting with Ballona Creek
- We will also continue our involvement with stakeholder activities and the pursuit of funding options, especially those involving implementation of nonpoint source measures (coordinate grant activities) as well as other outreach activities such as speeches, meetings, and participation in environmental events. As resources permit, we will also work with stakeholders to implement provisions of the Coastal Zone Act Reauthorization Amendments.
- Comments on watershed issues in CEQA documents (for the highest priority projects) will continue to be prepared; however, there is currently no funding for this program.
- Implement biological monitoring in priority watersheds (e.g. Malibu, Topanga).
- As a followup to the aerial deposition study recently completed:
  - Pinpoint sources of aerial deposition in the watershed
  - Study the deposition of other pollutants of concern (nutrients, pesticides, mercury)
  - Determine how aerial deposition is transformed into urban runoff, and how much of it is transformed into runoff

## ***Potential Long-term Activities***

A wetlands management issue that will continue to impact core regulatory activities in Malibu Creek is the listing of the creek as critical habitat for the endangered steelhead trout. Water quantity will continue to play as critical a role as water quality in the issue.

We will continue to develop strategies for the implementation of priority actions identified under the Santa Monica Bay Restoration Plan, including protection of the Ballona Wetlands, as well as additional actions targeted by the SMBRC's Governing Board for action. We will also integrate these into the Watershed Council's Plan and implementation activities. Additional issues may include: 1) conduct or review studies to evaluate and refine (if necessary) the designated beneficial uses for certain waterbodies, 2) consider the establishment of wet weather criteria in some areas, 3) integrate water supply and quality issues with local land use planning and management, and 4) institute better coordination of multi-agency reviews of environmental impacts for flood control and development projects, including the consideration of regional mitigation programs.

# MALIBU CIVIC CENTER

# INTEGRATED WATER MANAGEMENT CONCEPT PLAN

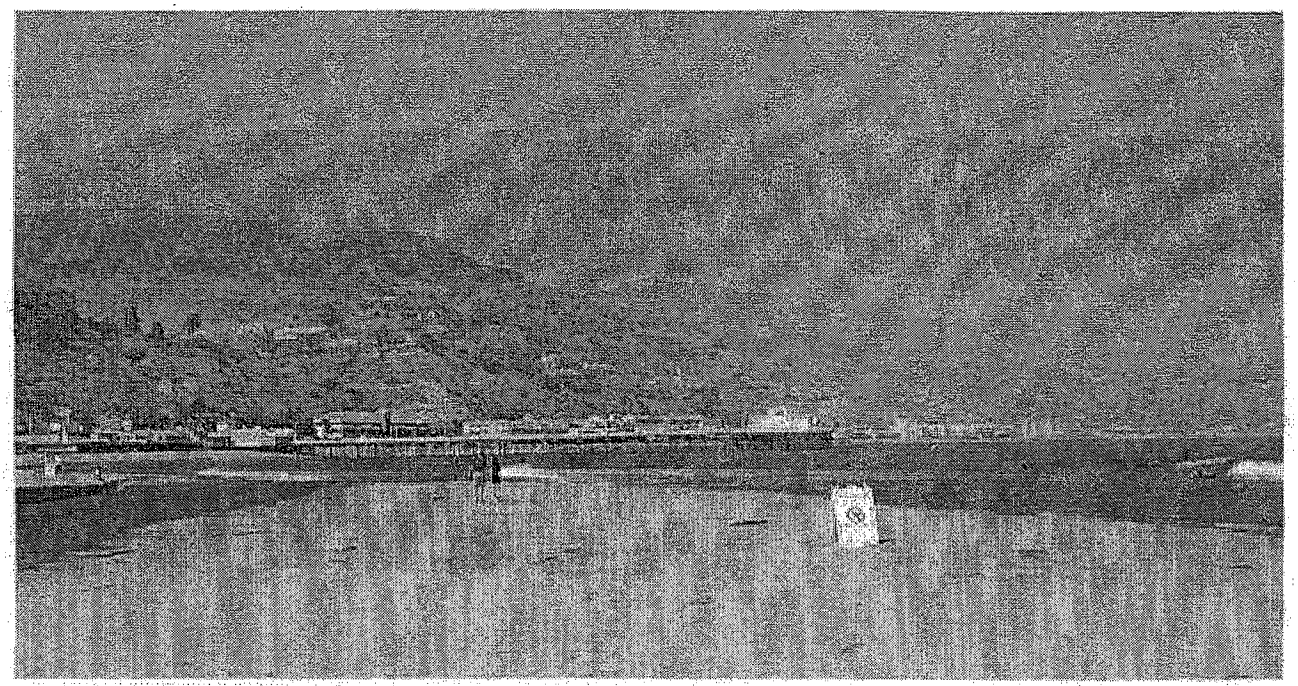


Photo: Mark Abramson, Heal the Bay

CITY OF MALIBU

July 2003

# Malibu Civic Center Integrated Water Management Project

The purpose of the project is to integrate water resource management in the Malibu Civic Center area in the City of Malibu by acquisition of commercially zoned land and planning, design and construction of appropriate non-point source wastewater and stormwater management systems.

The project described below includes three integral components that will ensure water quality improvements, habitat protection, public health safety and water conservation. The project is supported by elected officials as well as by state, regional and local agencies and nonprofit environmental groups. The project's goals are consistent with enabling legislation for state bond money that has been identified as possible funding sources to accomplish the vision and objectives of the California Environmental Protection Agency and Resources Agency. The financial support and participation of the agencies are critical for the success of this project in order to achieve state, regional and local goals. This project is consistent with planning and management policies of other agencies with regulatory responsibilities in the Malibu Creek Watershed.

**Project Description**

There are three interrelated components to the proposal required:

- Purchase two parcels in the Malibu Civic Center from a willing seller for $25 million to achieve significant measurable environmental gains.
- Use the purchased land for the development of a state of the art wastewater reclamation facility and the integral features required for the dispersal and reuse of Title 22 tertiary treated water.
- Create a separate stormdrain retention system to collect urban runoff from three storm drain systems in the Malibu Civic Center area and increase the water volumes treated in an end-of-pipe stormwater filtration and disinfection facility.

The City of Malibu will purchase the developed portion of the property, known as the Chili Cook-Off parcels, and is seeking grants to purchase the undeveloped portion for the implementation of the water quality and habitat protection facilities. The City of Malibu proposes the formation of an assessment district to finance the costs of construction and future operation and maintenance of the Wastewater Reclamation Facilities through a loan from the State Revolving Fund Loan Program. The participants of the district would be comprised of existing or new developments that may contribute contaminants to the Malibu Creek, Malibu Lagoon or near-by Surfzone listed as impaired on the State's 303(d) list.

**Project Background**

The nearly twenty acres of the Chili Cook-Off site are comprised of approximately 2.3 acres of existing commercial development and 17.3 acres of undeveloped commercially zoned land in the close proximity of Malibu Creek and Lagoon fronting on Pacific Coast Highway. All existing development is served by individual on-site waste water treatment systems (commonly known as septic systems). The environmental and human health impacts of existing and future development in the Civic Center area have been of concern to various regulatory agencies and environmental groups for more than three decades. The subject area has been the object of many studies, testing and land use planning tasks conducted by local and state agencies/groups to address the source of impairment to these critical water bodies.

The introduction to the Santa Monica Bay Restoration Project's *Making Progress: Restoration of Malibu Creek Watershed* Final Report, 2001 summarizes the importance of this project: The 109 $mi^2$ Malibu Creek watershed is the second largest subwatershed within the larger 414 $mi^2$ Santa Monica Bay watershed. It provides a wide variety of habitats for countless species (marine, animal and plant) and has long been a popular place for surfers, hikers and other outdoor enthusiasts. Surfrider Beach, famous for it's surfing break and visited by 1.2 million people annually, is one of the most popular tourist destinations in the area. The watershed is also home to two federally endangered species-the tidewater goby and the steelhead trout. As one of the few remaining coastal wetlands in Southern California, Malibu Lagoon is a critical stopover for migrating birds along the Pacific flyway.

The City is in the midst of a long-term project to characterize the potential impact of existing onsite wastewater treatment and dispersal systems on water quality. The Risk Assessment study began October, 2001 with a final report due July, 2004. The study results will become a key factor in determining the wastewater facility participants.

A detailed analysis of wastewater collection, reclamation and reuse alternatives for the Malibu Civic Center area was performed by Fuog Water Resources, Inc. (Draft *Civic Center Specific Plan City of Malibu*, 1997). This analysis determined that a community wastewater reclamation system for the Civic Center area was feasible and could provide significant environmental benefits.

The City was awarded $1,000,000 from the Los Angeles County Park, Beach, and Recreation Act of 1992 to create a trail system in the Malibu Civic Center area and to restore wetlands and to treat nonpoint source pollution through best management practices.

**Project Objectives**

When fully implemented, these projects are expected to restore the beneficial uses of Malibu Creek and Lagoon to the greatest extent possible including but not limited to warm and freshwater habitat, wildlife habitat, fish migration and spawning in the tidal prism, preservation of rare and endangered species, marine habitat, saline water habitat, and contact and noncontact water recreation. These uses are affected by contributions from all point and non-point sources in the 109 square-mile Malibu Creek Watershed. This project proposal is not expected to remove all impacts from nutrients, sediments, animal waste, septic tank-leach field effluent, herbicides, road runoff and bacteria, but the project will greatly reduce inputs that directly affect the Creek and Lagoon without dilution or reduction during the transport time associated with contaminants coming from the upper watershed. It is expected to greatly reduce the cumulative impacts of development in the Malibu Civic Center area.

The Civic Center area is particularly critical due to the relatively large concentration of commercial uses. The project objective is to develop an area-wide wastewater facility to treat effluent that currently is treated with individual onsite primary and secondary methods and any new development in the Risk Assessment Study area to reduce (or prevent) bacterial and nutrient contributions to Malibu Creek, Lagoon and Surfzone. The objective is to design a system with no surface discharge of treated wastewater to add to the already problematic human-augmented fresh water inputs from multiple watershed sources. Preliminary results provided by Questa Engineering show that the Chili Cook-Off property is a suitable site to provide capacity for the treatment, reuse and dispersal of the wastewater effluent produced in the study area when combined with recycling of the treated wastewater to the greatest extent feasible, groundwater recharge/percolation systems in the study area and irrigation of landscape/open space areas to

maximize evapo-transpiration. The recycling/water conservation opportunities provided by the reclamation facility will reduce the areas dependence on imported potable water and may potentially provide water storage capacity for fire fighting purposes.

The purchase of the Chili Cook-Off parcels will reduce the potential for 155,000 square-feet of commercial development in close proximity to Malibu Creek and Lagoon. Impacts from traffic, air, noise, urban runoff and potential groundwater contamination associated with this proposed development would be eliminated.

**Project Consistency with State and Regional Goals & Plans**

Santa Monica Bay Restoration Project's *Bay Restoration Plan* – Malibu Creek Pilot Watershed Project of1995 and the 1995 Natural Resources Conservation Service's *Malibu Creek Watershed Natural Resources Plan* serve as the guiding principals for restoration and habitat protection activities by the participating stakeholders in the Malibu Creek Watershed Executive Council and Task Forces who have met since the early 1990s. An overabundance of nutrients from a variety of sources contributes to algal blooms and low dissolved oxygen levels. The presence of pathogens and bacteria is a significant human health problem. Due to lack of funding and willing sellers of property needed to achieve the human health and environmental objectives, minimal progress has been made on actions identified to prevent/reduce pollutants from entering and impairing the watershed and ensuring habitat restoration and protection. A 2001 amendment to the *Plan, Improving Septic System Management in the Santa Monica Bay Watershed* notes there has long been public concern about the human health risks associated with high bacterial levels in near shore waters. This concern was validated in the 1996 *Santa Monica Bay Epidemiological Study* (Haile *et al.*, 1996) that correlated rates of illness in swimmers and surfers at Malibu's Surfrider Beach with distance to stormdrain outlets and bacterial levels in ocean waters. The Malibu Civic Center project proposals address many of the report's listed potential causes and sources of these high bacterial contamination including urban runoff, wildlife and domestic animal wastes and the use of failing, deteriorating or improperly sited septic systems.

The *Water Quality Control Plan LA Region (Basin Plan), 1994* RWQCB identifies water quality impairments in Malibu Creek, Malibu Lagoon, Surfrider and Malibu Beaches ranging from beach closures, benthic effects, DDT, enteric viruses, eutrophic, high coliform counts, nutrients (algae), and PCBs. The *Santa Monica Bay Watershed Management Area Plan, 2001* identifies a primary, and also the best documented, problem which is acute health risks associated with swimming in runoff-contaminated surfzone waters. The ability for people to enjoy swimming, surfing and diving in the surfzone of Malibu Creek outfall is lost when Malibu Lagoon is breached. Major issues of concern in the Malibu Creek Watershed identified in the report are excessive freshwater, nutrients, and coliform in the lagoon; urban runoff from the upper watershed; impacts to swimmers/surfers from lagoon water; septic tanks in the lower watershed; appropriate restoration and management of lagoon and; access to creek and lagoon by endangered fish (steelhead trout and tidewater goby).

In an abstract (Schiff *et al.* 2001) included with the LA RWQCB report of 2002, *Total Maximum Daily Load to Reduce Bacterial Indicator Densities during Dry Weather at Santa Monica Bay Beaches,* it is noted that SM Bay beaches are the most heavily used in the country, despite an increased number of water quality postings. The abstract identifies Surfrider Beach at Malibu Creek and Malibu Pier as having the highest percent of shoreline mile-days that exceeded water quality thresholds during wet and dry weather between January 1995 and December 1999 for each of the monitored beaches in Santa Monica Bay. Malibu Creek was one of five drainage systems that accounted for over half of the shoreline mile-day exceedences during dry-weather

conditions over the five year study period and 36% exceedences during wet-weather. The abstract noted that the water quality exceedences were almost triple that found in regional beach water quality throughout Southern California (Noble *et al.* 2000). Los Angeles County Health Department Beach Warnings reported postings for Surfrider Beach for 2002 at 31 days and 6 beach mile-days (bmd) – a very dry year; for 2001 at 99 days and 11 bmd; and for 2000 at 154 days posted and 17 bmd. For a heavily used tourist attraction, the recreation opportunities are severely impacted by bacterial contamination mostly during wet weather but also during dry weather. The number of warnings is expected to continue to decrease during the dry weather because of the recently enforced no-discharge requirement imposed on the Las Virgenes Wastewater Reclamation Facility in the upper watershed. However, Surfrider Beach does have warnings posted when the lagoon is open and is used by millions of swimmers and surfers throughout the year.

The draft *Watershed Management Area Plan for the Malibu Creek Watershed*, 2001 prepared for the Las Virgenes Malibu Conejo Council of Governments made up of the Cities of Malibu, Calabasas, Westlake, Agoura and the County of Los Angeles identifies actions in the watershed needed to preserve and enhance beneficial uses and restore natural processes including acquisition of vacant lands, alternatives to use of potable water, storm drain pollution reduction and protection of wetland and riparian habitats.

The *Lower Malibu Creek and Lagoon Resource Enhancement & Management Report* by Drs. Rich Ambrose and Tony Orme, 2000 for the State Coastal Conservancy identifies the reduction of nutrient and pathogen inputs to the Malibu Lagoon as a very high priority which can be accomplished by the proposed projects, including the elimination of onsite septic systems in the Civic Center area and diverting the effluent to a treatment facility, and by developing a system to treat urban runoff before it reaches the Lagoon by the constructing of treatment wetlands/retention basins, filtration basins, and end-of-the-pipe disinfection devises. The recommendations favor source reduction techniques that are expected to work over the long-term. This report was undertaken with federal and state financing at the request of the Malibu Creek Watershed Executive Advisory Council and its Lagoon Task Force. The Council has been meeting regularly since the early 1990's and consists of members from State and local agencies and organizations, environmental groups, business and dischargers, special districts and the general public with its goal to protect, enhance and restore habitats of the watershed, as well as improve water quality.

US Environmental Protection Agency- Region 9 – *TMDLs for Bacteria in the Malibu Creek Watershed,* 2003 report setting the water quality standards for Malibu Creek and Lagoon recently submitted to the Los Angeles Regional Water Quality Control Board identifies contaminants from septic systems as a major contributor of bacteria to the state waters. While there are thousands of systems throughout the watershed, the close proximity of onsite systems potentially short-circuit the treatment from sites close to the high groundwater. The depth of existing leach fields and their proximity to surface waters near Malibu Lagoon are also potentially adding to the contaminant load. The report also identifies urban runoff and waterfoul as significant contributors of bacteria and nutrient loads to Malibu Lagoon. During the dry season, urban runoff is the largest source of fecal coliform but the loads associated with birds and failing septic systems are comparable in magnitude. The City of Malibu's Risk Assessment Study currently underway will better define the parameters of potential contamination to the alluvial aquifer in the vicinity of Malibu Creek and Malibu Lagoon.

The California Resources Agency Legacy Project's *Spotlight on Conservation "North" South Coast Workshop*, Interim Report April 2003 states that land acquisition is mentioned thirty eight more times than other needed actions in this region. The Malibu projects serve the number one criteria for Working Landscapes' conservation because it protects watershed health and processes (floodplain management and water quality) and other high priority conservation criteria especially aquatic habitat and wetland protection.

The 2000 *California Environmental Protection Agency Office of the Secretary Strategic Vision* identifies eight strategic goals of which the first four goals are met with this project:

- Goal 1 - Air that is healthy to breathe, sustains and improves our ecosystems, and preserves natural and cultural resources.
- Goal 2 - Rivers, lakes, estuaries and marine waters that are fishable, swimmable, support healthy ecosystems and other beneficial uses.
- Goal 3 - Groundwater that is safe for drinking and other beneficial uses.
- Goal 4 - Communities that are free from unacceptable human health and ecological risks due to exposure from hazardous substances and other potential harmful agents.

Another important aspect of CalEPA priorities is the building and strengthening of partnerships between the City of Malibu and other regulatory and environmental partners in solving the degradation sources and habitat and human health protection opportunities.

**Project Consistency with State Funding Sources Administered by the California Resources Agency and Environmental Protection Agency**

1) Proposition 13 – Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Act legislated requirements:

Watershed Protection

- Improve water quality, protect and enhance riparian and wetland habitats, improve aquatic and terrestrial species habitats and to restore beneficial uses of waters of the state in watersheds. It will also prevent soil erosion and sedimentation of surface waters and reduce the discharge of pollutants to state waters from storm water or nonpoint sources.
- The project is consistent with a long-established local watershed group, the Malibu Creek Watershed Executive Advisory Council under the direction of the Santa Monica Bay Restoration Project/Commission with a local watershed management plan.
- The project proposal is consistent with local watershed management and regional water quality control plans for implementation of the SM Bay Restoration Plan.
- The activities funded by the grant will be coordinated with activities undertaken by state and federal agencies, and with other appropriate watershed efforts.
- The projects are consistent with recovery plans for steelhead trout and tidewater goby and implement recommended actions.
- The projects will provide watershed benefits for more than 20 years.
- The proposal includes the intention of the City to utilize the California Conservation Corps for implementation of the project.
- Limitations: no more than $5 million per project, no more than 25% can be awarded in advance of actual expenditures.

Clean Water and Water Recycling Program

Nonpoint Source Pollution Control

- Protects beneficial uses of state waters
- Consistent with local watershed and regional water quality control management plans
- Consistent with "Initiatives in NPS Management" dated September 1995

- Expected to be consistent with the "Integrated Plan for Implementation of the Watershed Management Initiative" prepared by the State and Regional Water Boards.
- This project implements management measures and practices or other needed projects identified by the SWRCB pursuant to its Nonpoint Source Pollution Control Program's 15-year implementation strategy and 5-year implementation plan that meets the requirements of Section 67129(g) of the federal Coastal Zone Reauthorizations Amendments of 1990.
- The projects will provide clean water and recycling benefits for more than 20 years.
- Pollution sources addressed by the project includes urban runoff and onsite disposal systems and may include installation of vegetative systems to filter or retard pollution loading and engineered features to minimize impacts of nonpoint source pollution.
- The proposal incorporates the use of best management practices and management measures.
- Limitations: no more than $5 million per project, no more than 25% can be awarded in advance of actual expenditures. 20% match requirement for acquisition of the properties. Projects cannot be funded from this account if it receives funds under the Coastal Nonpoint Source Pollution account.

<u>Clean Water Program – State Revolving Fund Loan Program</u>

- Necessary to prevent water pollution, reclaim water or improve water quality.
- Eligible for State Revolving Fund Loans
- Placed on the Priority List by the SWRCB
- Complies with applicable water quality standards, policies and plans.

<u>Water Recycling Program</u>

- Grants for design and construction for up to 100% of project costs
- Limitations: No deferral of payment of principal or interest on loans

<u>Coastal Nonpoint Source Pollution</u>

- Project that restores or protects the water quality and environment of coastal waters, estuaries and near shore waters and groundwaters.
- Project that is designed to improve water quality at public beaches and that will make improvements for the purpose of ensuring that coastal waters adjacent to public beaches meet bacteriological standards of the Health and Safety Code.
- Project proposes to use proven techniques to reduce bacteria in state waters in an area with the greatest need for bacteria reduction.
- Project addresses the causes of degradation rather than the symptoms.
- Project that improves existing septic systems for the restoration and protection of coastal water quality.
- Project designed to implement storm water and runoff pollution reduction and prevention programs for the restoration and protection of coastal water quality.
- Project that is consistent with the state's nonpoint source control program that meets the federal Clean Water Act.
- Project contributes to the long-term water quality or environmental restoration or protection benefits for more than 20 years.
- The projects are consistent with recovery plans for steelhead trout and tidewater goby and implement recommended actions.
- Limitations: no more than $5 million per project, no more than 25% can be awarded in advance of actual expenditures. 20% match requirement for acquisition of the properties. Projects cannot be funded from this account if it receives funds under the Nonpoint Source Pollution account.

2) Proposition 40 – California Clean Water, Clean Air, Safe Neighborhood Parks and Coastal Protection Act of 2002

Consistent with the Clean Beaches Program, Nonpoint Source Pollution Control Program, Integrated Watershed Management Program of the SWRCB and the Watershed Restoration Projects of the State Coastal Conservancy.

- Project reduces contamination of waters within the coastal zone.
- Project protects fish and wildlife habitat within coastal watersheds and coastal waters.
- Project reduces erosion and sedimentation of coastal watersheds and permits coordination of projects for watershed restoration.
- Protects coastal wetlands and riparian areas.
- Project is consistent with local and regional watershed management plans.

3) Proposition 50 Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002

- Improves practices within watersheds to improve water quality, reduce pollution, capture additional storm water runoff, protect and manage groundwater better, and increase water use efficiency.
- Reduces dependence on imported water, reduces pollution of streams and coastal waters and provides safe habitat for fish and wildlife.
- Protects wetlands and watershed lands along the coast.
- Project is consistent with local and regional watershed management plans.
- Prevents water pollution, reclaims water, and improves water quality.
- Assists in meeting water quality standards adopted by the SWRCB.
- Projects implement priority actions specified in the Santa Monica Bay Restoration Plan.

<u>Integrated Regional Water Management</u>

- Increases water conservation and water use efficiency.
- Increases storm water capture, storage, treatment and management.
- Increases nonpoint source pollution reduction, management and monitoring.
- Increases water reclamation and improvement of water quality.
- Implements watershed plans with broad stakeholder participation and support.
- Consistent with adopted integrated water management plan.
- Limitations: Matching funds or donated services required from non-state sources.

<u>Coastal Watershed and Wetland Protection</u>

- Increases public access to Surfrider Beach, one of the most popular tourist destinations in Los Angeles County, by reducing the number of beach mile days subject to contaminant warnings to stay out of the ocean and lagoon.
- Protects Santa Monica Bay from pollution impacts.
- Malibu Civic Center property and Malibu Lagoon wetlands have been identified for acquisition and protection on the Southern California Wetlands Recovery Project as of January 1, 2001 and the Santa Monica Mountains Conservancy acquisition work plan.
- Note: $750 million to the Wildlife Conservation Board
- Note: No project cap limitations in the legislation.
- Limitations: If money for this project is used from Coastal NPS of Prop. 13, then there may be limits on one portion of Prop. 50 funding.

**Attachments**

Questa Engineering Risk Assessment Study Area Map
Malibu Creek Watershed Map – Sources of Urban Runoff Pollution
Malibu Creek Watershed Map – Land Uses
Malibu Civic Center Development Map & Data
Questa Engineering Preliminary Conceptual Plan



16-187

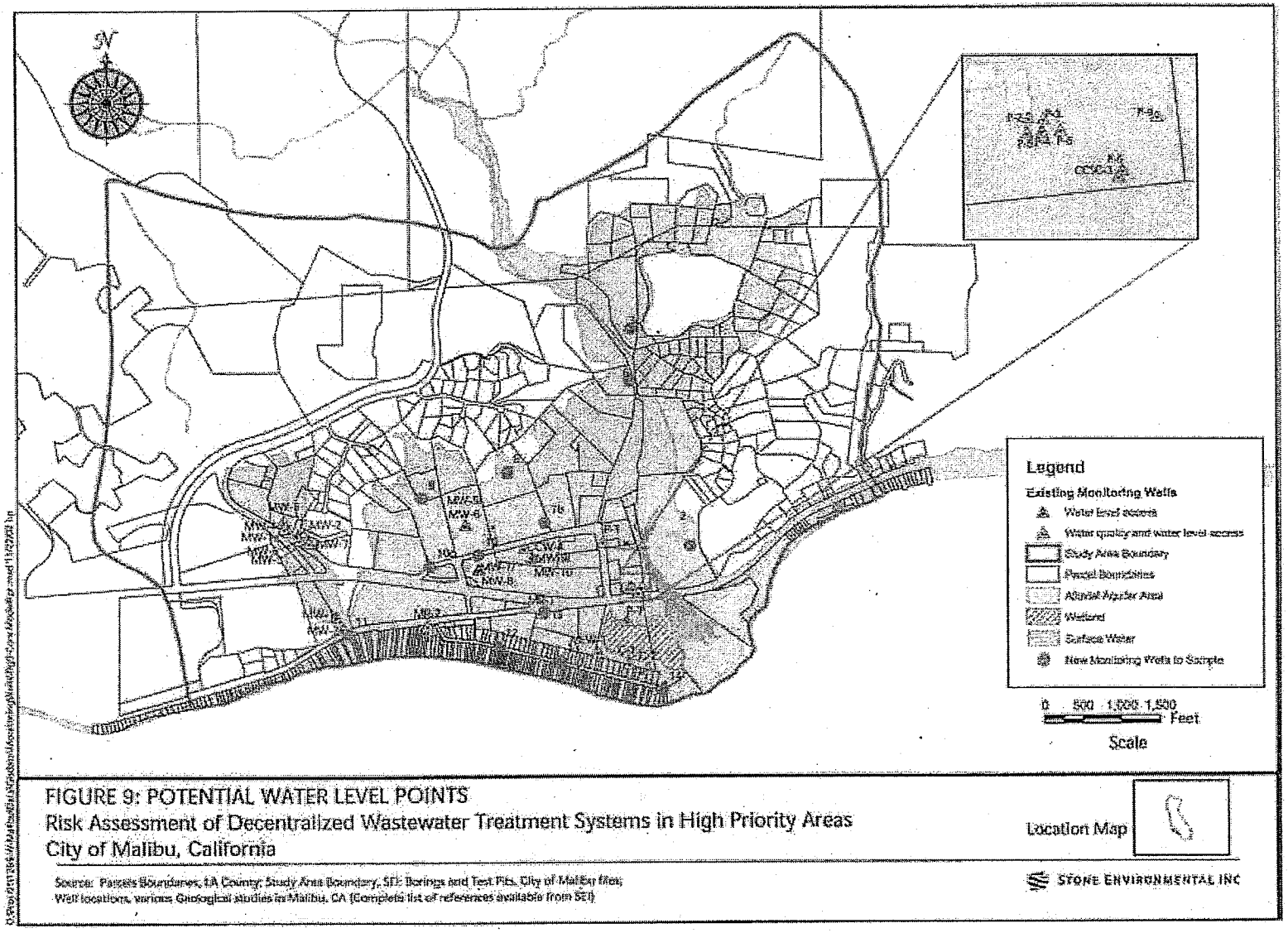



FIGURE 9: POTENTIAL WATER LEVEL POINTS
Risk Assessment of Decentralized Wastewater Treatment Systems in High Priority Areas
City of Malibu, California

Source: Parcels Boundaries, LA County; Study Area Boundary, SEI; Borings and Test Pits, City of Malibu files;
Well locations, various Geological studies in Malibu, CA (Complete list of references available from SEI)

STONE ENVIRONMENTAL INC

EXHIBIT 5
CDP 4-19-0951

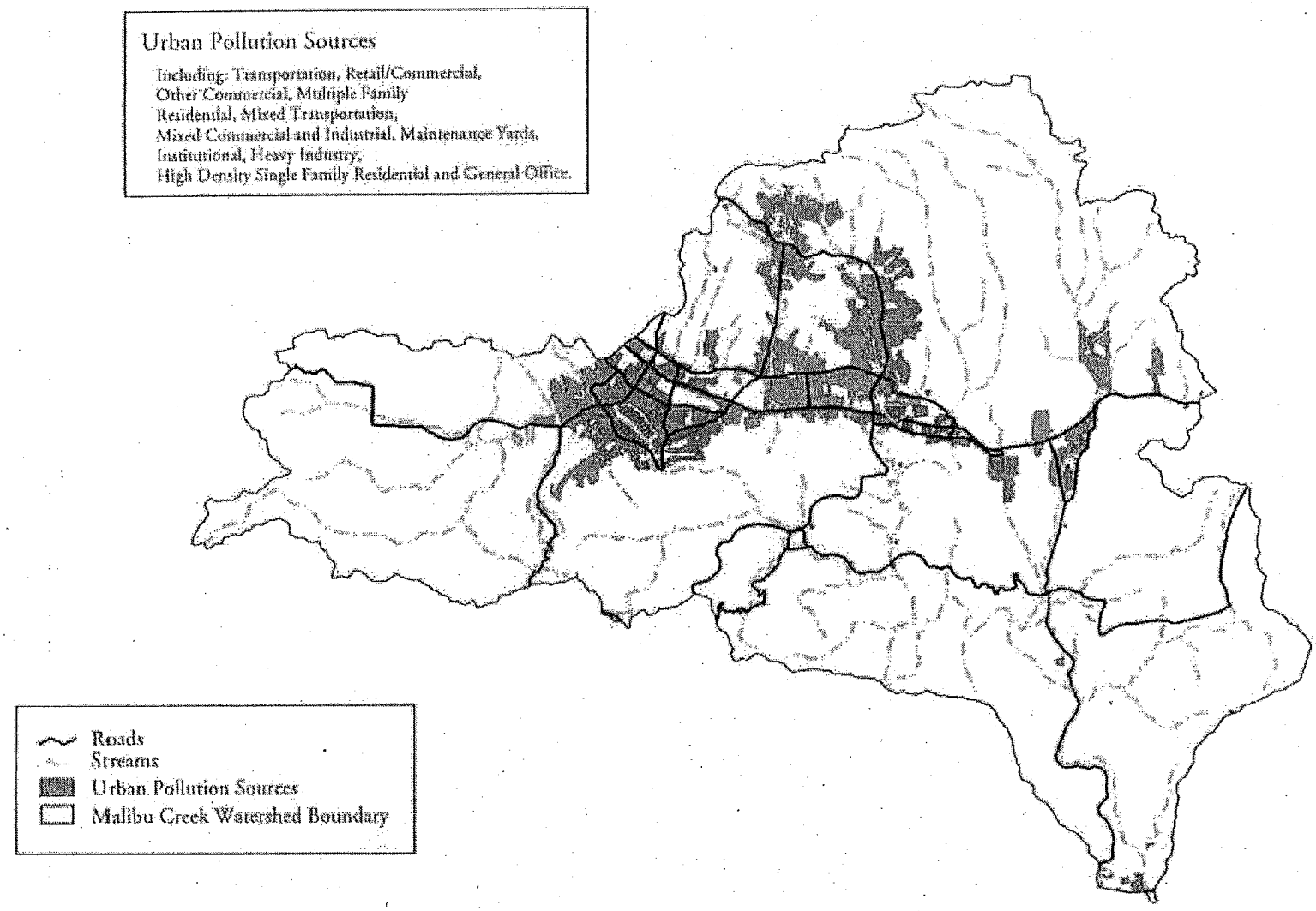
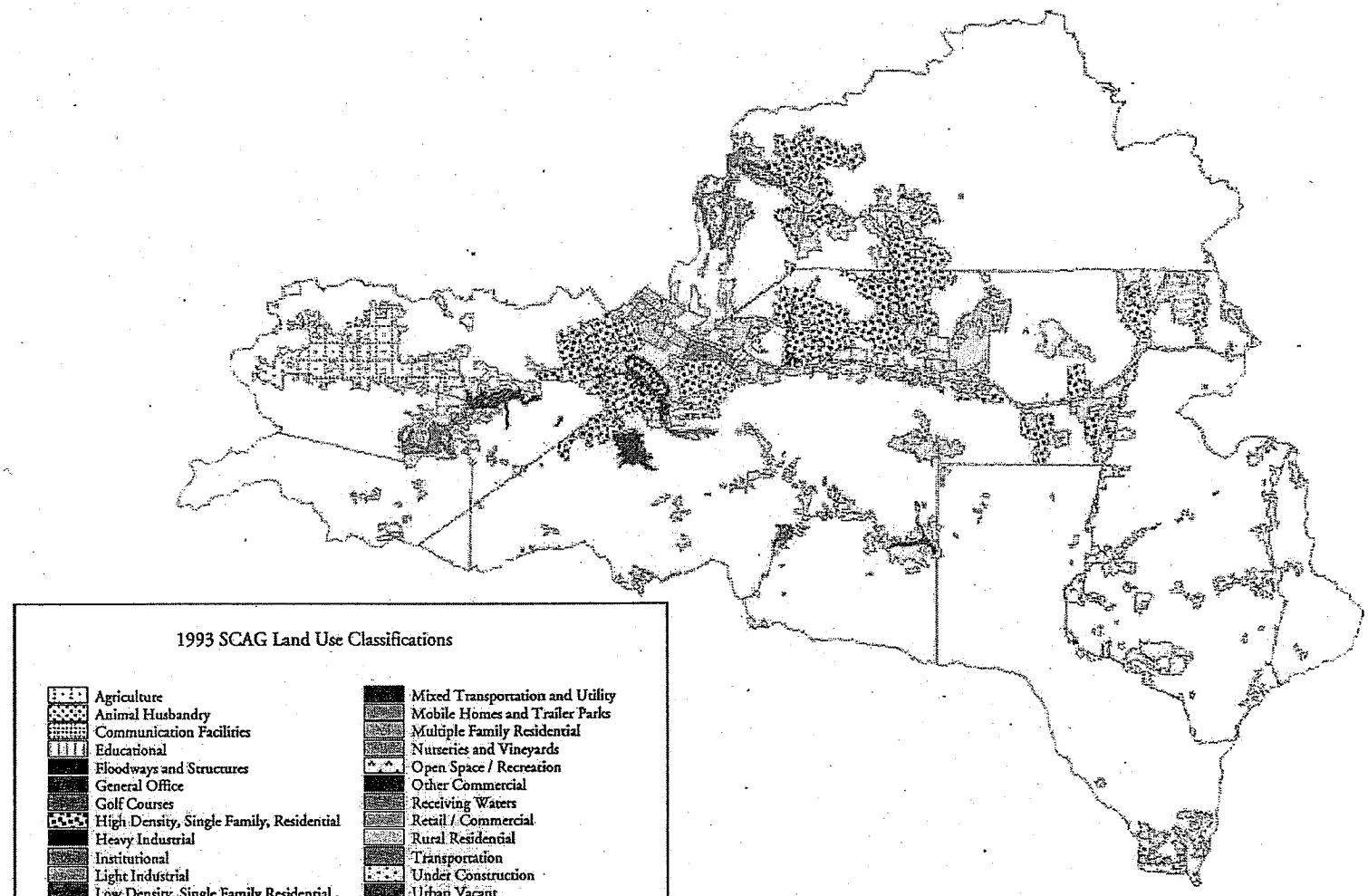



Figure 9
Urban Runoff Pollution Sources
Malibu Creek Watershed




PCR

WaterCycle LLC

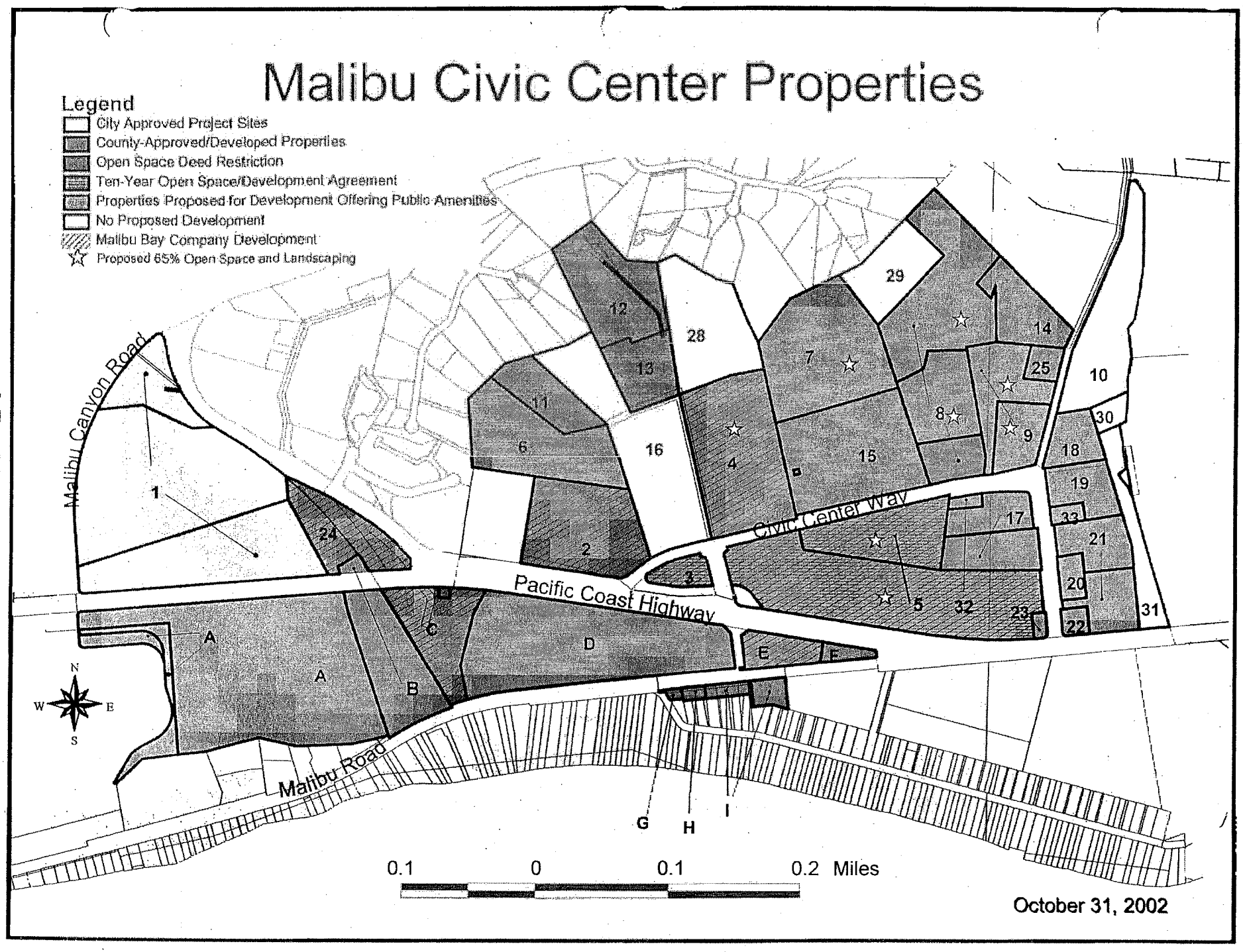
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5000 0 5000 10000 15000 Feet

Source: SCAG 1993

Figure 7
Land Use
Malibu Creek Watershed

# Malibu Civic Center Properties



# Malibu Civic Center

September 9, 2002



## Existing Commercial North of Pacific Coast Highway

| | Development | FAR | Acreage | Square Footage | % Visitor Serving | Use |
|---|---|---|---|---|---|---|
| 14 | Jean Phillips | 0.04 | 3.00 | 5,000 | 10% | Horse Stables, Residence |
| 15 | LA County Municipal | 0.12 | 9.39 | 50,000 | 10% | Library, courts, County Building |
| 21 | Malibu Cross Creek- 2 Parcels | 0.29 | 4.76 | 60,000 | 50% | Restaurants, Theater, Retail |
| 17 | Malibu Country Mart | 0.24 | 5.00 | 52,000 | 80% | Restaurants, Visitor Serving Retail |
| 17 | Malibu Country Shops | 0.40 | 2.10 | 36,284 | 50% | Restaurant, Retail shops |
| 20 | Cross Creek Shops | 0.22 | 0.82 | 7,956 | 25% | Retail, Food |
| 10 & 18 | Mariposa Land - Not Storage | 0.03 | 3.00 | 3,330 | 0% | Light Industrial, Masonry, Auto Repair |
| 22 | Texaco Service Station | 0.05 | 0.50 | 1,000 | 50% | Auto Service |
| 19 | Shultz Office | 0.11 | 2.20 | 10,612 | 0% | Charter Communications, Offices |
| 5 | MBC Chili Cookoff | 0.29 | 2.40 | 30,000 | 30% | Malibu Lumber, Vet, Coldwell Banker |
| 23 | Malibu Realty | 0.20 | 0.24 | 2,102 | 0% | Real Estate |
| 25 | GTE | 0.01 | 3.20 | 1,514 | 0% | Utility |
| 11 | Malibu Racquet Club | 0.03 | 2.80 | 3,900 | 10% | Tennis Club, Restaurant |
| 32 | Roseville Offices | 0.97 | 0.30 | 12,644 | 0% | Office, Doctors, Dentists |
| 33 | So. Cal. Edison | N/A | 0.44 | N/A | 0% | Utility |
| 13 | Miramar Offices | 0.35 | 2.66 | 40,528 | 0% | Office, Municipal Offices |
| 12 | Vineyard Church | 0.21 | 4.00 | 37,359 | 10% | Church & Proposed School |
| | Sub-Total | | 47 | 354,229 | Average CV | |
| | **Commercial Visitor Serving** | | **9** | **67,720** | **19%** | **Existing CV Square Footage** |

## Proposed Commercial North of Pacific Coast Highway

| | Development | FAR | Acreage | Square Footage | % Visitor Serving | Use |
|---|---|---|---|---|---|---|
| 1 | Rancho Malibu - Adamson Hotel | 0.15 | 27.80 | 181,000 | 100% | 146 rooms, Restaurant, Cultural Center |
| 5 | MBC Chili-Cookoff Additions | 0.21 | 19.61 | 155,000 | 40% | Restaurants, Theaters, Retail |
| 4 | MBC Ioki | 0.21 | 9.28 | 85,000 | 0% | Child care, Post Office, Office |
| 2 | MBC Smith | N/A | 7.10 | Open Space | 0% | Open Space, Constructed Wetlands |
| 3 | MBC Island Parcel | 0.25 | 1.11 | 12,088 | 30% | Retail and/or Office |
| 24 | Winter Canyon | N/A | 4.21 | Open Space | 0% | Open Space |
| 10 | Mariposa Land Storage Facility | 0.20 | 6.46 | 56,600 | 0% | DA= Civic Center Wetland/Malibu Creek Connectio |
| 8 | Malibu La Paz- 2 Parcels | 0.22 | 15.29 | 143,613 | 40% | Child Care, Retail, Office |
| 7 | Wave Property - Office | 0.16 | 9.16 | 65,000 | 0% | Office |
| 6 | Wave Property - Senior Housing | 0.20 | 7.10 | 61,300 | 0% | 36 Senior Housing Units |
| 9 | Shultz Properties- 2 Parcels | 0.19 | 5.64 | 46,533 | 40% | Retail, City Skateboard Park, Office |
| | Sub-Total | | 113 | 806,134 | | |
| | **Commercial Vistor Serving** | | **53** | **322,685** | **40% Square Footage CV Proposed** | |

## Commercial North of Pacific Coast Highway with No Applications

| | | Acres | Sq. Feet At .15 FAR | Sq. Feet At .20 or .25 FAR | City of Malibu Land Use Designation |
|---|---|---|---|---|---|
| 29 | Knapp CC | 3.60 | 23,522 | 31,363 | Community Commercial |
| 16 | Yamaguchi - Old Greenhouses | 6.67 | 43,582 | 58,109 | Community Commercial |
| 28 | Yamaguchi Nursery | 6.39 | 41,752 | 55,670 | Community Commercial + (1 existing SFD) |
| 30 | Mariposa Creekside | 0.70 | 4,574 | 6,098 | Community General |
| 31 | Mariposa Creekside | 2.68 | 17,511 | 23,348 | Community General |
| | **Sub-Total** | **20** | **130,941** | **174,588** | |

**Complete Buildout Square Footage See Public Amenity Attachment**

| | Acres | Minimum Without Amenities | Maximum With Amenities |
|---|---|---|---|
| **Totals North of PCH** | | | |
| **Existing + Proposed + No Applications** | **180** | **1,291,304** | **1,334,951** |

Complete Buildout Minimum FAR Average .16

Complete Buildout Maximum FAR Average .17

## South of Pacific Coast Highway

### Existing Commercial South of Pacific Coast Highway

| Development | FAR | Acreage | Square Footage | % Visitor Serving | Use |
|---|---|---|---|---|---|
| D Malibu Colony Plaza | 0.17 | 16.00 | 115,072 | 29% | Restaurants, surf shop, market |
| E St. John Urgent Care Center | 0.14 | 1.67 | 10,000 | 50% | Health care, Auto Service |
| 76 Union Oil Service Station | | | | | |
| F Chevron Service Station | 0.05 | 0.50 | 1,000 | 50% | Auto service |
| G Malibu Road Offices - Gerson | 0.57 | 0.13 | 3,224 | 0% | Offices |
| H Malibu Road Fire Station | N/A | 0.21 | N/A | 0% | Los Angeles County |
| I Malibu Road LLC | 0.69 | 0.40 | 12,050 | 0% | Medical, Real Estate Offices |
| I Malibu Road LLC | 0.88 | 0.65 | 25,000 | 0% | Real Estate, Offices |
| B Cataldo Trust | 0.02 | 5.15 | 3,525 | 10% | Vet, Auto Towing Yard |
| Sub-Total | | 25 | 169,871 | | |
| Commercial Visitor Serving | | 6 | **39,353** | **23%** | |

### Proposed Development South of Pacific Coast Highway

| Development | FAR | Acreage | Square Footage | % Visitor Serving | Use |
|---|---|---|---|---|---|
| C MBC Knoll Parcel | | 4.36 | Open Space | 0% | Open Space |
| E MBC St. John's Addition | | Inc. Above | 4,000 | 50% | Urgent Care Center Expansion |
| Sub-Total | | 4 | 4,000 | | |
| Commercial Visitor Serving | | 0.05 | 2,000 | 50% | |
| | | Acres | Commercial | | |
| **Total South of PCH** | | **29** | **173,871** | **24%** | Commercial Visitor Serving Square Footage |

### SUMMARY OF MALIBU CIVIC CENTER - EXISTING, PROPOSED & WITHOUT PROPOSALS

**NORTH of PCH**

| | | |
|---|---|---|
| Acreage | 180 | |
| Acreage Visitor Serving | **62** | 20 Acres unknown CV uses- Without development proposals |
| Square Footage Minimum | 1,291,304 | With 20 acres at minimum buildout |
| Square Footage Maximum | 1,334,951 | With 20 acres at maximum buildout |
| Square Footage Visitor Serving | 390,405 | Does not include any new CV on 20 acres w/o proposals |
| | **34%** | Acreage Commercial Visitor Serving Existing & Proposed |
| | **30%** | Square Footage Visitor Serving Existing & Proposed |
| | **0.16** | Average FAR Minimum at complete buildout |
| | **0.17** | Average FAR Maximum at complete buildout |

**SOUTH of PCH**

| | | |
|---|---|---|
| Acreage | 29 | |
| Acreage Visitor Serving | **6** | |
| Square Footage Minimum | N/A | |
| Square Footage Maximum | 173,871 | |
| Square Footage Visitor Serving | 41,353 | |
| | 22% | Acreage Commercial Visitor Serving Existing & Proposed |
| | 24% | Square Footage Visitor Serving Existing & Proposed |

**COMBINED CIVIC CENTER - NORTH & SOUTH OF PCH**

| | |
|---|---|
| **209** | Acreage - Developable acres w/o public road easements |
| **68** | Acreage Commercial Visitor Serving |
| 1,465,175 | Square Footage Minimum |
| 1,508,822 | Square Footage Maximum |
| 431,758 | Square Footage Commercial Visitor Serving |
| **33%** | Acreage Visitor Serving |
| **29%** | Square Footage Visitor Serving at Maximum Buildout |

# *Preliminary Conceptual Plan for Wastewater Reclamation in the Civic Center Area, Malibu, California*

---

*Submitted to:*

***City of Malibu***

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*City of Malibu*
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*Malibu California 90265*

*Submitted by:*

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*Questa Project No. 230103*

***July 7, 2003***

# TABLE OF CONTENTS


Executive Summary ..... 4

1.0 Introduction ..... 6

2.0 Background ..... 6

3.0 Purpose and Scope of Study ..... 7

3.1 Objectives and Approach ..... 7
3.2 Assumptions ..... 7

4.0 Environmental Setting ..... 8

4.1 Civic Center Area ..... 8
4.2 Chili Cook-Off Site ..... 11

5.0 Service Area ..... 13

5.1 Core Commercial Area ..... 13
5.2 Wastewater Flow Estimates ..... 13

6.0 Wastewater Reuse and Dispersion ..... 16

6.1 Chili Cook-Off Site - Estimated Capacity ..... 16
6.2 Distributed Wastewater Reuse & Dispersal Capacities ..... 18

7.0 Preliminary Conceptual Project Description ..... 21

7.1 Collection System ..... 21
7.2 Reclamation Facility ..... 22
7.3 Chili Cook-off Irrigation Reuse and Dispersal Facilities ..... 22
7.4 Distributed Water Recycling/Reuse and Dispersal ..... 22

8.0 Estimated Costs ..... 23

8.1 Capital Costs ..... 23
8.2 Operation and Maintenance and Monitoring Costs ..... 25

9.0 Environmental Benefits, Impacts and Design Issues ..... 25

9.1 Environmental Benefits ..... 25
9.2 Environmental Impacts and Design Issues ..... 26

10.0 Limitations of Assessment ..... 29

11.0 Next Steps and Timeline ..... 30

12.0 Summary and Conclusion ..... 30

Appendix A References ..... 32

Appendix B Questa Engineering Corporation Qualifications ..... 33

**List of Tables**

Table 1 Core Commercial Service Area – Preliminary Estimates of Existing and Proposed Wastewater Flow

Table 2 Preliminary Estimates For Civic Center Open Space And Landscape Areas In Core Service Area Of Wastewater Feasibility Analysis

Table 3 Preliminary Cost Estimates For Civic Center Wastewater Reclamation Facilities

Table 4 Preliminary Schedule for Civic Center Water Reclamation Project

**List of Figures**

Figure 1 Site Location

Figure 2 Civic Center Area

Figure 3 Chili Cook-Off Site Location

Figure 4 Preliminary Core Service Area

Figure 5 Community Wastewater Reclamation System Schematic

## Executive Summary

Questa Engineering Corporation was retained by the City of Malibu to provide a preliminary assessment of the feasibility of utilizing the Chili Cook-Off property for a community wastewater reclamation facility that would serve the existing commercial properties and the currently proposed new commercial developments in the Civic Center area. The purpose of the assessment was to provide planning-level information regarding an opportunity for a community wastewater reclamation facility project associated with the possible acquisition of the Chili Cook-Off property that is currently owned by the Malibu Bay Company.

The following is a list of study objectives:

a) Evaluate the wastewater reuse and groundwater recharge capacity of the Chili Cook-Off site, assuming 15 to 17 acres of open space are available;
b) Estimate the existing and potential flows for the core commercial service area including: Cross Creek Road, Civic Center Way from Cross Creek Road to Stuart Ranch Road, Webb Way, as well as both Malibu Road and Pacific Coast Highway from Malibu Lagoon to (and including) Malibu Colony Plaza.
c) Develop a conceptual plan and description of a community wastewater reclamation facility, including collection, treatment and dispersal/reuse elements;
d) Develop preliminary (planning-level) estimates of the capital, operation, maintenance and monitoring costs for the reclamation system;
e) Characterize the environmental benefits and issues associated with such a system, in terms of groundwater recharge effects, water quality impacts and water conservation for comparison with existing conditions or other wastewater management approaches;
f) Identify the potential for expansion of the system to accommodate an expanded service area as the wastewater needs of the Civic Center and adjacent areas become evident due to results of ongoing studies.

The following are the conclusions of this preliminary analysis:

Water conservation, reclamation and reuse appear to be necessary components of a community wastewater system due to the finite environmental capacity to assimilate water using groundwater recharge from onsite wastewater systems in the Malibu Civic Center Area.

An environmentally sound approach of utilizing one site for a water reclamation facility with redistribution of the reclaimed water back to the commercial properties where it was generated appears to be feasible for flows on the order of at least 200,000 gallons per day. The ultimate flow and capacity will depend on the details of the reclamation program, the service area and the water quality limits that will be set by the Los Angeles Regional Water Quality Control Board (RWQCB) for the Malibu Creek watershed. The environmental outcome would be a cumulative decrease in the bacteria and nitrogen that may be contributing to water quality impairment of the Creek, Lagoon and Surfzone.

Under this water reclamation approach, the existing and proposed commercial areas in the Civic Center area will have two sets of wastewater conduits connected to the reclamation facility. One pipe collecting the septic tank effluent and one pipe returning highly treated wastewater for onsite reuse, via landscape irrigation, toilet flushing and groundwater recharge.

Wastewater will be treated to Title 22 – Tertiary 2.2, California's highest standard for wastewater reclamation. The discharge of Title 22 water is not subject to the same vertical separations to groundwater as required for secondary treated wastewater by the Regional Board. Tertiary 2.2 standards are higher

than the City of Malibu's current "tertiary" wastewater treatment standards. The reclamation facility would include disinfection and nitrogen removal (denitrification). Based on a preliminary evaluation of available information, the facility may be located in the southeastern corner of the Chili Cook-Off site.

The Chili Cook-Off site has an apparent capacity to assimilate an average of up to approximately 44,000 gallons per day of reclaimed water through drip irrigation and groundwater recharge. This capacity is based on preliminary estimates, using available data and assuming that 15 to 17 acres are available for landscaping with trees, shrubs and ground cover. This estimate of capacity will need to be confirmed by site specific testing.

The reclaimed water not utilized at the Chili Cook-Off site would be redistributed to properties in the service area for reuse through irrigation and toilet flushing, and percolation systems as necessary. Reuse capacities for irrigation will vary throughout the year. When the maximum amount for irrigation on the property is exceeded, the reclaimed water can be dispersed via onsite groundwater recharge/percolation systems. The program should include incentives to maximize water conservation and reuse to the maximum extent possible.

The concept is expandable within the confines of the overall water balance of the Civic Center area and the nitrogen loading limitations of the Malibu Creek and Malibu Lagoon watershed.

The costs of the collection, treatment, and redistribution for the core commercial service area with a design flow of approximately 200,000 gallons per day are likely to be on the order of 12 million dollars. The estimated annual costs for operation, maintenance and monitoring of the system are approximately $700,000. This does not include the costs of private onsite wastewater reuse and dispersal systems. These costs will vary from site to site and will be born by the respective property owners.

Aesthetic considerations such as visual appearance and odor control can be incorporated into the reclamation facility and reuse program. These elements will need to be compatible with an urban open space and commercial setting of a residential scale. Other environmental and design issues will need to be evaluated and addressed through appropriate facilities planning, environmental impact and design studies.

Two of the benefits of maximizing water conservation and reuse are: 1) a decrease in the existing potential water quality impacts and a reduction in the groundwater recharge; and 2) potential cumulative impacts of new development on the groundwater quality in the Civic Center area.

The reclamation approach can be compatible with water features and stormwater retention on the Chili Cook-Off Site, although these components were not part of the preliminary analysis.

This preliminary study shows this wastewater management approach is viable and can be effective in addressing water quality and environmental protection in the Civic Center area.

## 1.0 Introduction

Presented here are the results of a preliminary feasibility analysis completed by Questa Engineering Corporation regarding the potential development of a community wastewater reclamation facility to serve the Civic Center Area of Malibu. A brief summary of Questa Engineering Corporation's background and experience is attached. The wastewater reclamation facilities would be centered at the "Chili Cook-Off Site", which consists of two parcels, including nearly 17.3 acres of open field, located between Pacific Coast Highway, Webb Way and Civic Center Way. The property owner has recently indicated an interest in making this land available to the City of Malibu for possible community wastewater management uses. This analysis was prepared in response to a request by the City of Malibu for preliminary feasibility information that could be used to advance negotiations with the property owner and to serve as a basis for developing a wastewater reclamation facilities plan for the Civic Center Area.

## 2.0 Background

Wastewater management is an important issue for the City of Malibu. The City is currently engaged in a number of activities aimed at improving wastewater management practices for existing and future development. These include changes to City ordinances, a joint effort with the Los Angeles Regional Water Quality Control Board (RWQCB) to develop and institute a coordinated management and monitoring system for the area, and water quality (Risk Assessment) investigation. The Civic Center is a particularly critical area due to the relatively large concentration of commercial uses and the proximity to Malibu Creek, Malibu Lagoon and the near-shore ocean waters. The City of Malibu is in the midst of a long-term project to characterize the potential impact of existing onsite wastewater treatment and dispersal systems on water quality in the Civic Center area; however, only limited information is available from this study at the present time.

Independent of the City's efforts, many of the existing commercial and multi-residential properties in Malibu are in the process of planning upgrades to their existing onsite wastewater treatment systems needed to meet newly imposed requirements of the Los Angeles RWQCB. Some of these existing facilities, as well as future commercial development projects in the Civic Center area, are necessarily having to consider the construction of tertiary treatment systems and, in some cases, wastewater reuse. Wastewater reclamation and reuse is possible for some individual development projects; however, it is generally found to be more effective when it is implemented at a community system level.

A preliminary analysis of wastewater collection, reclamation and reuse alternatives for the Malibu Civic Center area was previously performed by Fuog Water Resources, Inc. (1996 & Crawford, Multari and Starr, *et al* (CMS), 1996). This prior work determined that a community wastewater reclamation system for the Civic Center area was feasible and could provide significant environmental benefits. The Chili Cook-off site was considered as a possible reclamation plant location; however, no study was made of the Chili Cook-off site in terms of its possible use for dispersal and reuse of the treated water.

## 3.0 Purpose and Scope of Study

Questa Engineering Corporation was asked to provide a preliminary assessment of the feasibility of utilizing the Chili Cook-off property for a community wastewater reclamation facility that would serve the existing commercial properties located in the lower elevation areas, and the currently proposed new commercial developments in the Civic Center area. The purpose of the assessment is to provide planning-level information on the basic question of whether or not the Chili Cook-off property is a suitable site with sufficient capacity to be considered as a community wastewater facility site, and to present a preliminary conceptual plan and associated cost estimates for such a system.

## 3.1 Objectives and Approach

The objectives of this analysis focus specifically on the feasibility, costs and potential benefits of developing a community wastewater reclamation facility for the Civic Center Area centered at the Chili Cook-off property. It is not the intent of this study to pre-judge the outcome of the ongoing Risk Assessment Study for the Civic Center Area which is expected to provide further information regarding the relationship between onsite wastewater treatment systems and water quality, as well as define specific areas of high risk in the Civic Center Area. This could form the basis of establishing specific needs areas for the Civic Center wastewater reclamation project. Following is a list of study objectives and approach:

a) Compile and review relevant background information concerning environmental conditions in the Malibu Civic Center area and Chili Cook-off site;
b) Estimate the existing and potential wastewater flows for the core commercial service area;
c) Evaluate the wastewater reuse and groundwater recharge capacity of the Chili Cook-off site;
d) Develop a conceptual plan and description of a community wastewater reclamation facility, including collection, treatment and dispersal/reuse elements with the flexibility for possible limited expansion to serve adjacent areas as needed;
e) Develop preliminary (planning-level) estimates of the capital costs and ongoing operation and maintenance costs for the reclamation system;
f) Review potential environmental benefits of such a system, in terms of groundwater recharge effects, water quality and water conservation for comparison with existing conditions or other wastewater management approaches;
g) Identify key environmental impact considerations to be evaluated and addressed in planning and design studies;
h) Outline future work required to develop and implement a community wastewater reclamation facility for the Civic Center area.

## 3.2 Assumptions

The following are some of the key assumptions that were made to facilitate the assessment process:

a) Existing and readily available information would be used for this evaluation.
b) There are currently three major existing commercial developments in the Civic Center area: Cross Creek Plaza; Malibu Country Mart and Malibu Colony Plaza. Owners of three sets of undeveloped parcels in the Civic Center area are either preparing or negotiating details of development agreements for commercial development. These developed and undeveloped parcels comprise the core area that is being considered for a community (shared) wastewater collection, reclamation and dispersal system. In addition to these areas, the existing commercial and government buildings on the east end of Malibu Road, Pacific Coast Highway and Civic Center Way and Cross Creek Road between Webb Way and Malibu Lagoon are also in the core area.

c) The reclamation system will produce tertiary-treated water meeting Title 22 standards for unrestricted water recycling uses and will include nitrogen removal (denitrification) to a concentration of 10 milligrams per liter (mg-N/L).
d) The southeast corner of the Chili Cook-off site would be the probable location of the reclamation/treatment facility.
e) Up to approximately 17 acres of the of the Chili Cook-off site are potentially available for wastewater irrigation reuse and subsurface percolation/recharge.
f) This conceptual plan does not include the following:
   i) Evaluation of impact on nearby environmentally sensitive areas
   ii) Specific characterization of landscaping and water feature elements on the Chili Cook-Off property
   iii) Integration with stormwater treatment program for the Civic Center Area

## 4.0 Environmental Setting

The environmental setting of the Civic Center area is described in detail in the *Malibu Specific Plan – Background Conditions – Existing Information* (Crawford, Multari and Starr, *et al* (CMS), 1996). Specific information regarding the Chili Cook-off site was also obtained from the *Malibu Bay Company Development Agreement Draft Project Environmental Impact Report* (2002). The project site location is shown on **Figure 1**.

## 4.1 Civic Center Area

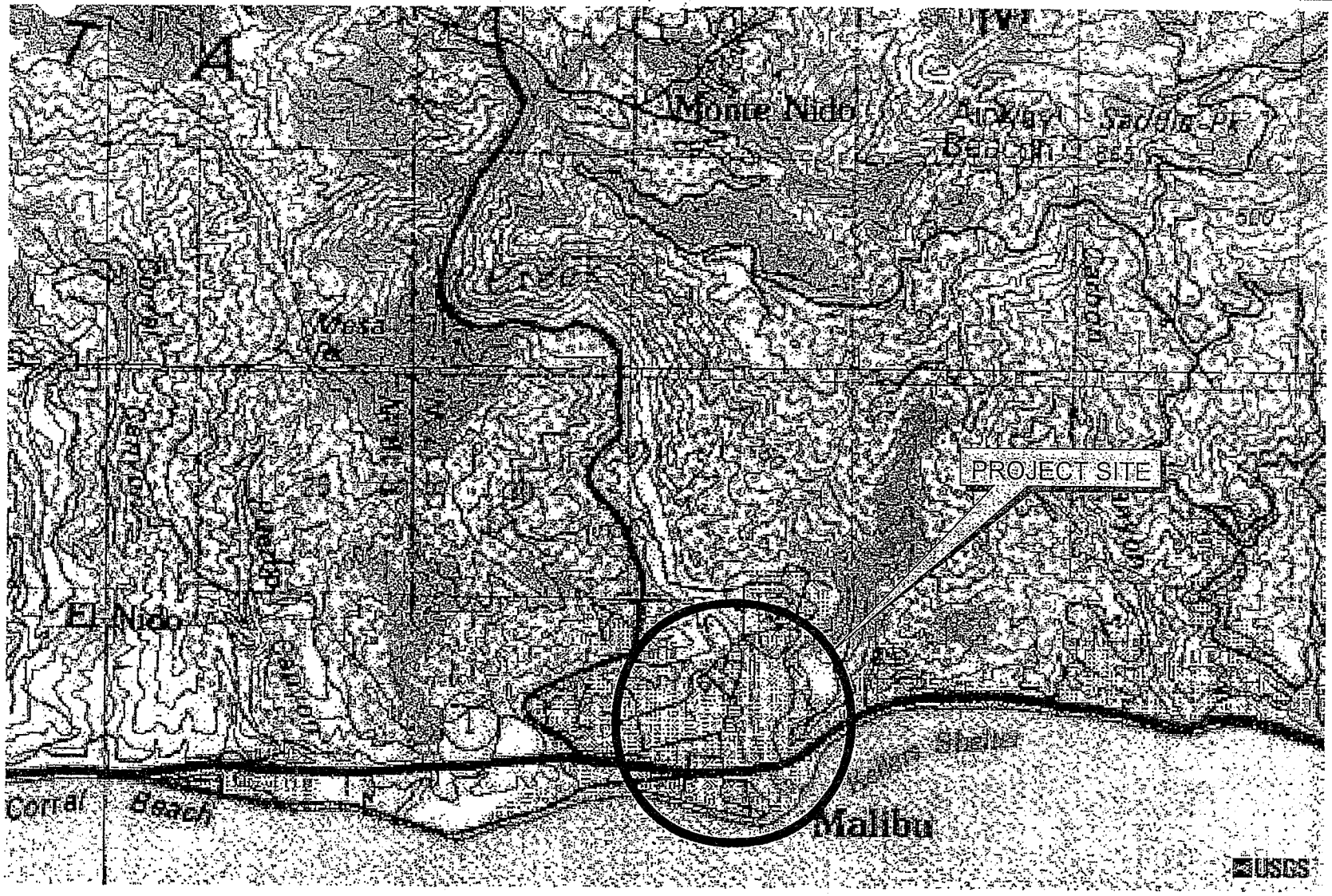
The Civic Center area is an approximately 150-acre area located in a coastal area, on an alluvial plain north of the Pacific Coast Highway on the west side of Lower Malibu Creek and Malibu Lagoon (Ambrose and Orme, 2000). Its north and western boundaries are steep bedrock slopes. This conceptual plan focuses on the commercial area. Adjacent to this commercial area, there are single family residences in Malibu Colony and along Malibu Road to the south; and in Serra Retreat to the east along Cross Creek Road; and on the highlands above the plain to the north. Multifamily condominiums, as well as commercial and institutional occupancies are located to the west and in the Winter Canyon area.

### 4.1.1 Topography

The elevation of the alluvial plain in the Civic Center area generally ranges from 6 to 35 feet above mean sea level (AMSL). The ground surface gently slopes southeastward toward Malibu Creek, Malibu Lagoon and the ocean. The natural topography has been significantly altered by fill associated with development and roads in the area (Ambrose and Orme, 2000).

### 4.1.2 Hydrology

Malibu has a Mediterranean climate with dry summers and intermittent winter rains. The average annual precipitation is 14 inches per year. The hydrology has been altered by grading and development activities, irrigation of the landscape, and the recharge of groundwater by existing septic systems. The water balance for this area is being investigated as part of the Risk Assessment Study and is preliminarily described in the Draft Conceptual Model (Stone Environmental, 2002).

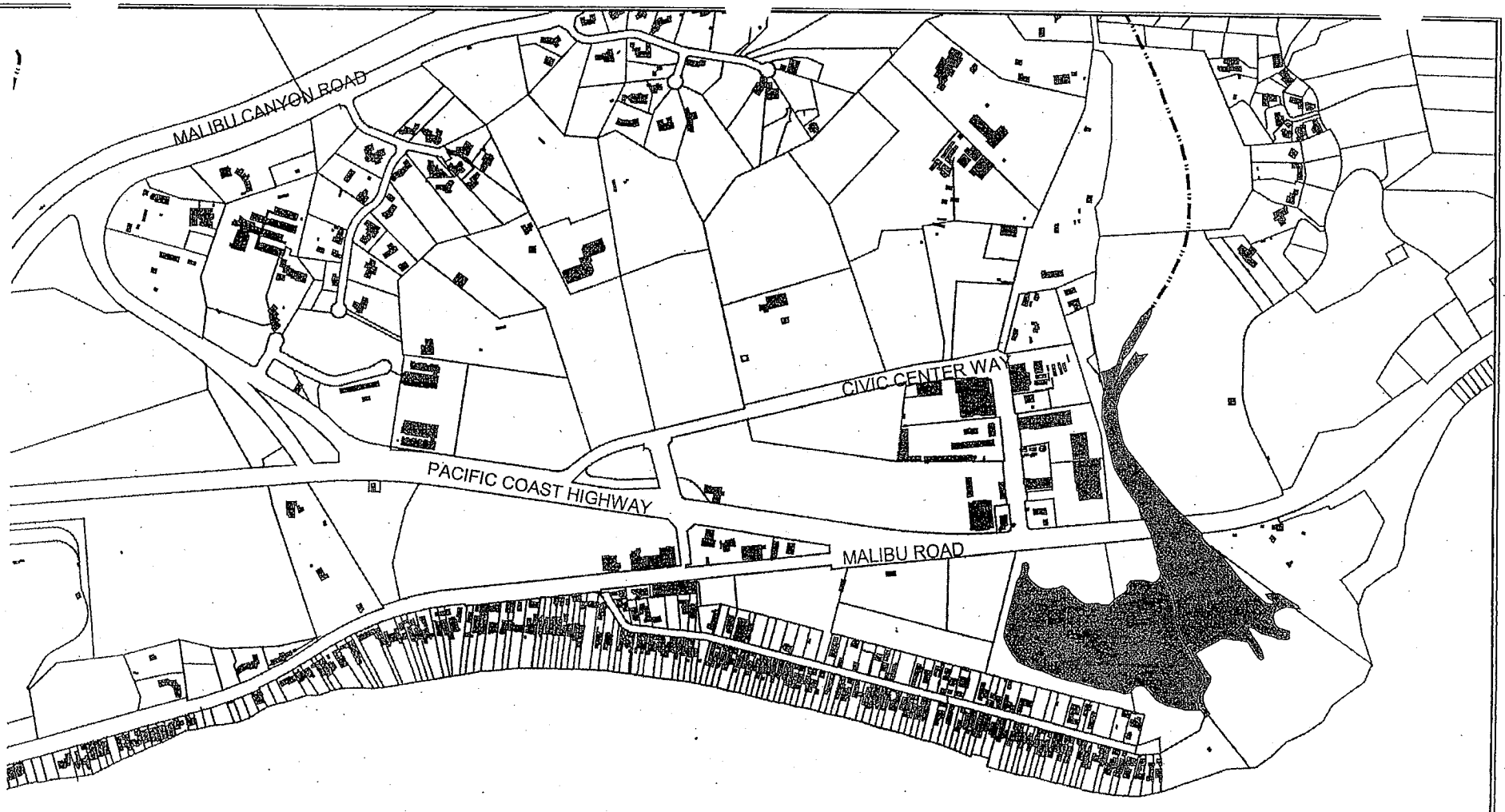



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PROJECT SITE LOCATION
MALIBU, CALIFORNIA

FIGURE
1

252-21




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CIVIC CENTER AREA
PARCEL MAP
MALIBU, CALIFORNIA

FIGURE
2

SS2-S1

## 4.2 Chili Cook-Off Site

The Chili Cook-off area is an approximately 19.61-acre site, with approximately 17.3 acres of vacant land. There are existing commercial enterprises that make up the difference between the vacant land area and the total land area. The site has two, relatively level open areas separated by a drainage swale that runs generally west to east across the site, and encompassing approximately 1 ½ acres. North of the drainage swale is an approximately 4-acre triangular open field along Civic Center Way that comprises about little less than one quarter of the undeveloped land. South of the drainage swale is an approximately 12-acre rectangular open area extending along Pacific Coast Highway from Malibu Lumber in the east to Webb Way on the west end of the property (**Figure 3**).

### 4.2.1 Topography and Hydrology

The site is nearly level with surface elevations generally between 14 and 20 feet AMSL (Leighton and Associates, 1994). The drainage swale mentioned above flows from west to east. The highest elevation on this site is in the eastern most undeveloped area immediately behind Malibu Lumber. The elevation of the bottom of the drainage swale is approximately 10 to 11 feet AMSL. The Federal Emergency Management Agency's (FEMA) Flood Insurance Maps (FEMA, 1985) indicate that the 100-year flood plain extends across all but the western edge of this site with an average flooding depth of 2 feet. However, it is likely that more detailed floodplain analysis and/or mapping, may reveal parts of this site to be above the 100 year flood plain.

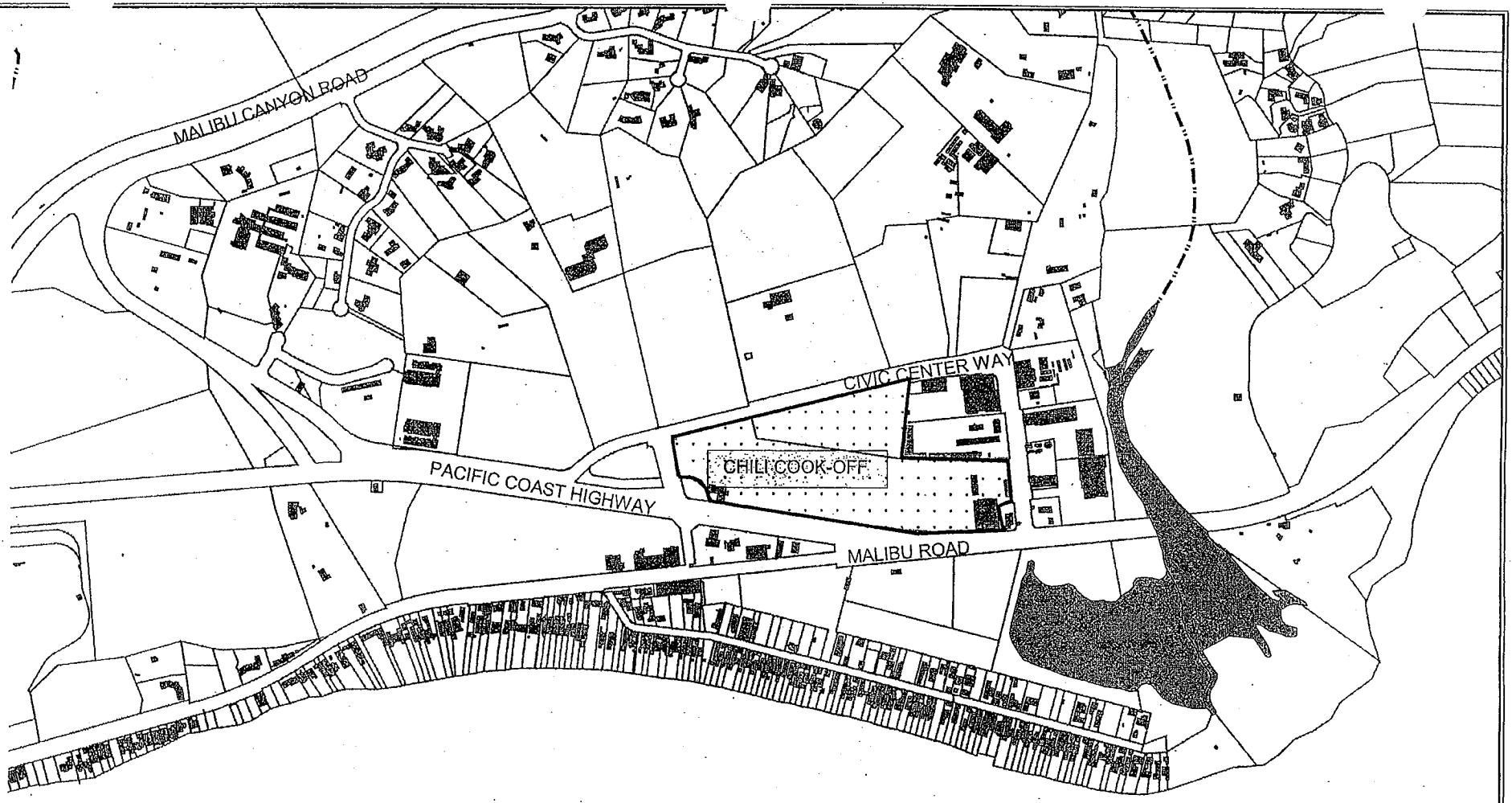
### 4.2.2 Hydrogeology

Subsurface conditions in the vicinity of the Chili Cook-off area have been characterized by others (Leighton and Associates, 1994; Earth Consultants International Inc., 2000; and Bing Yen and Associates, 2001). This information has been enhanced by the *Malibu Preliminary Conceptual Model* , prepared by Stone Environmental, Inc., *et al* (2002) for the ongoing project, titled: "Risk Assessment of Decentralized Wastewater Treatment Systems in High Priority Areas in the City of Malibu, California"; this is referred to as the "Risk Assessment Project".

Previous investigations have revealed approximately 0 to 6 feet of fill in different parts of the site. Published soil survey data describes the native surface layers as a loam soil texture. Beneath the fill are layers and discontinuous lenses of alluvial, floodplain and estuarine materials. This evident in the cone penetrometer profile that shows stratified layers of silty and sandy material in the upper 50 feet below ground surface. At approximately 48-50 feet below ground surface is a gravelly layer that is commonly known as the Civic Center Gravels (Leighton Associates, 1994).

Two sources of data were reviewed to characterize the depth to groundwater beneath the Chili Cook-off site. The April, 2000 water table contour map by ECI; the October, 2000 water table map by Bing Yen & Associates (2001). Generally, the water table ranges from 7 feet to 12 feet below ground surface beneath the site and flows in a south-southeasterly direction across the site, with a gradient of 0.005 feet/feet.

Pairs of groundwater observation wells were installed in each of two borings on the northern 1/3 of the site and groundwater elevations were measured in each pair during April of 2000 (ECI, 2000). The water level elevations in the deeper wells were consistently higher than the shallower wells of each pair, indicating an upward gradient. Flow between the two layers would be very low due to documented low permeability clay in each boring. Therefore, most groundwater recharge from the site appears to move laterally off the site.




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CHILI COOK-OFF SITE LOCATION
MALIBU, CALIFORNIA

FIGURE
3

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Field measurements of hydraulic conductivity are not available from this site. However, based on a preliminary review of information for other locations in the immediate vicinity, a hydraulic conductivity of 1.0 foot per day is a reasonable estimate for initial planning-feasibility analysis.

## 5.0 Service Area

The Malibu Civic Center area includes commercial, residential and public agency/institutional occupancies. These all are being evaluate under the risk assessment study to determine levels of risk and wastewater needs. For initial conceptual planning purposes, the service area for the project has been defined as the existing and currently proposed commercial properties in lower elevations of the Civic Center Area. Within this area the core of the service area; however, the boundaries are not fixed. It is anticipated that subsequent facilities planning studies and/or results of the Risk Assessment Study will be used to determine the most appropriate service area boundaries, including identification of other properties in the immediate area that could benefit from inclusion in a community wastewater reclamation system.

## 5.1 Core Commercial Area

For the purpose of this feasibility analysis, the core service area is diagrammed in **Figure 4** and includes the following:

**Existing Commercial Properties:**

a. Malibu Colony Plaza and the parcels that currently share wastewater system with that Plaza;
b. Malibu Creek Plaza
c. Malibu Country Mart (I, II and III)
d. The Los Angeles County Administration Center on Civic Center Way
e. Other Commercial Properties on Cross Creek Road
f. Commercial and Government Properties on Malibu Road South of Malibu Colony Plaza

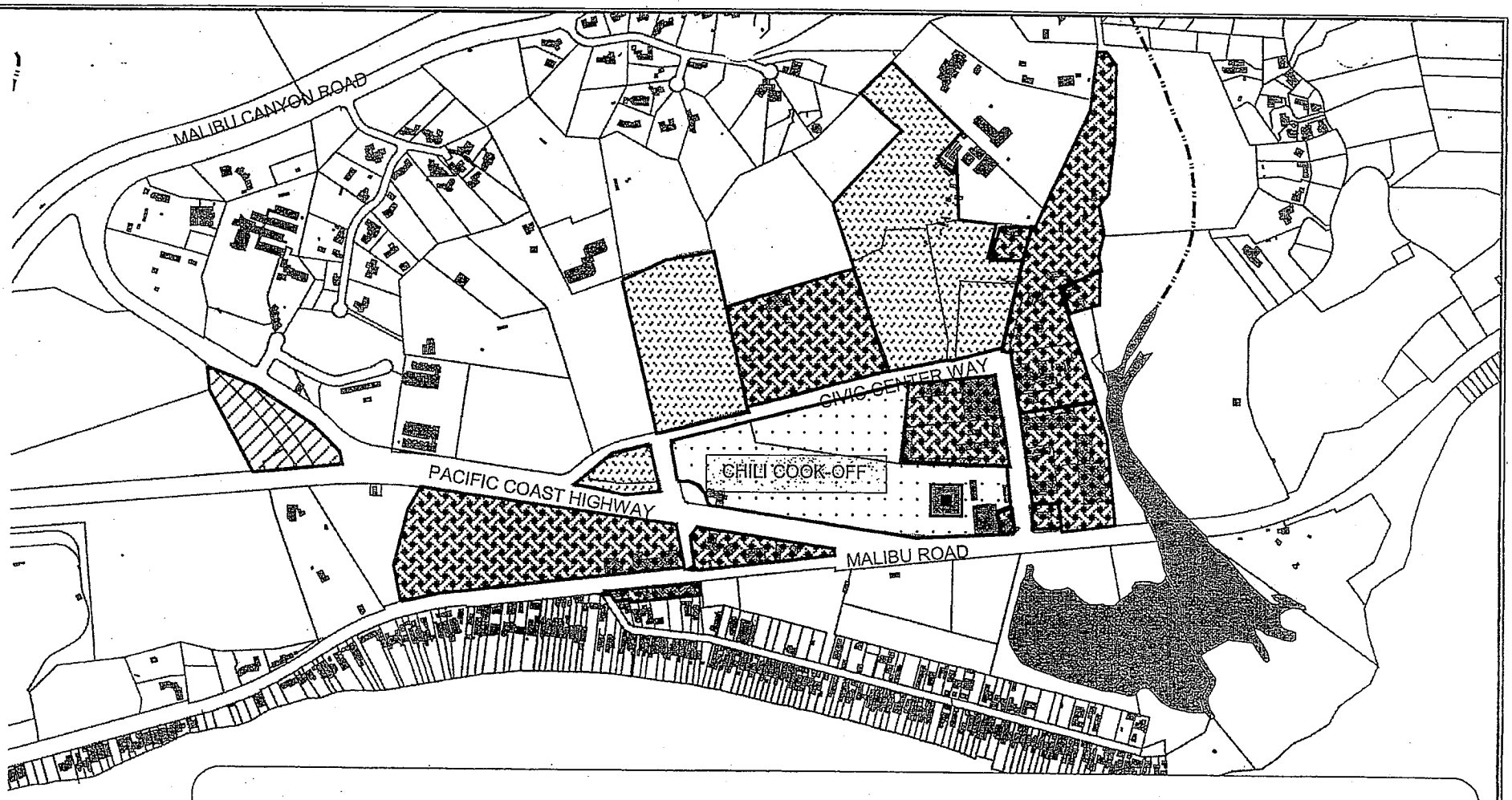
**Proposed Commercial Properties**

a. Malibu Bay Company proposed use of Ioki, Small Island and St. John's site.
b. La Paz Project on Civic Center Way
c. Schultz Projects on Civic Center Way and Cross Creek Road

## 5.2 Wastewater Flow Estimates

Wastewater flow estimates for existing and proposed commercial development in the Civic Center Area are displayed in **Table 1**, based upon information from various sources. A key source of information for these estimates was data obtained from City files (personal communication, Larry Young, Environmental Health Specialist) Additionally, current design flow requirements from existing commercial projects, per Los Angeles RWQCB Waste Discharge Requirements, were reviewed. This information was compared to the Civic Center Specific Plan and the recent data collected for the Risk Assessment project. Where there were differences, we used available design flow estimates to provide a conservative (safe) basis for this preliminary study. The estimates in **Table 1** are considered to be estimates of peak daily flow. The

average water use and wastewater flow can be expected to be approximately two-thirds to three-quarters of the design flow.




## LEGEND

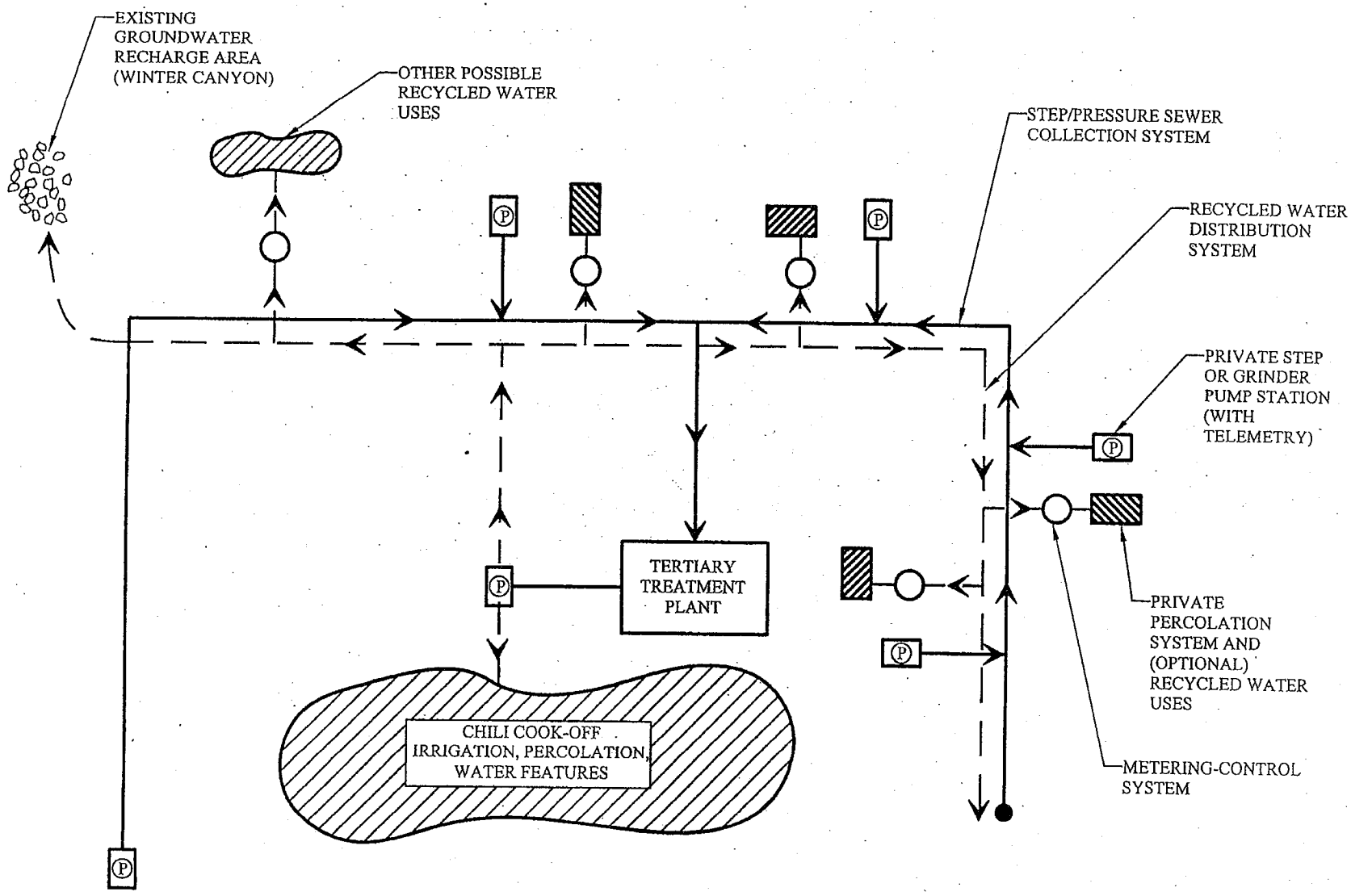
- CHILI COOK-OFF SITE (ALSO IN CORE SERVICE AREA)
- CORE SERVICE AREA PROPOSED COMMERCIAL DEVELOPMENTS
- CORE SERVICE AREA EXISTING COMMERCIAL DEVELOPMENT
- EXISTING MBC RECHARGE AREA
- PROPOSED RECLAMATION FACILITY LOCATION

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PRELIMINARY CORE SERVICE AREA
MALIBU, CALIFORNIA

FIGURE
4

357-51




| | |
|---|---|
| Date: | 6/2/03 |
| Drawn: | J.H. |
| Appr'd: | N.H. |
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# COMMUNITY WASTEWATER RECLAMATION SYSTEM CONCEPTUAL SCHEMATIC

MALIBU, CALIFORNIA

FIGURE 5

**Table 1. Core Commercial Service Area –**
**Preliminary Estimates of Existing and Proposed Wastewater Flow**

| Land use | Name of Commercial Property | Current Design Flows[1] (gpd) | Preliminary Estimates of Proposed Wastewater Flow (gpd) | Total Estimated Wastewater Flows (gpd) |
|---|---|---|---|---|
| Existing Commercial Properties | Malibu Colony Plaza | 45,000 | | |
| | Malibu Creek Plaza (Soboroff) | 42,000 | | |
| | Malibu Country Mart (I, II, III) | 37,000 | | |
| | Other Commercial Occupancies | 10,000 | | |
| Proposed Commercial Developments[2] | Malibu Bay Company (Ioki, Small Island and St. John's Sites) | | 22,000 | |
| | La Paz Properties | | 31,000 | |
| | Schultz Properties | | 8,000 | |
| | SUBTOTALS | 124,000 | 61,000 | |
| | | | | 195,000 |

[1] Design flows based on Regional Board Waste Discharge Requirements.
[2] Proposed commercial flows based on square feet of proposed development and Uniform Plumbing Code estimates (Verbal Communication, Larry Young, May 30, 2003). In some cases these flows exceed the flows proposed by the owners.

# 6.0 Wastewater Reuse and Dispersion

## 6.1 Chili Cook-Off Site - Estimated Capacity

The capacity of the Chili Cook-Off site was evaluated for assimilation of reclaimed wastewater via landscape irrigation and groundwater percolation. These estimates are preliminary due to reliance on limited existing information and will need to be refined once site specific data is available.

### 6.1.1 Landscape Irrigation Reuse

An irrigation soil moisture balance analysis, or "water balance," was completed to estimate the irrigation water use capacity of the Chili Cook-off site and the Malibu Civic Center area in general. This gives an approximation of the amount of water lost to evapotranspiration as well as the net amount of water lost to

percolation past the root zone. We conducted the analysis for pre- and post-development conditions; i.e., existing unimproved or natural open space and irrigated landscape conditions.

The analysis involves the construction of a water balance accounting model that centers on the effective soil moisture reservoir – "water holding capacity" or Available Water Capacity, AWC – of the project area, which is estimated from soil properties. The soil moisture reservoir provides a moisture bank for the vegetation, which minimizes infiltration past the root zone. The model equates the outflows to the inflows plus the change in storage over a period of time. Inflow includes precipitation and applied irrigation water. Outflow includes evapotranspiration, deep percolation (i.e. recharge) to the underlying soil strata when the water holding capacity is reached, and surface runoff. In the analysis, it is assumed that water is stored in the soil column within the limits of the AWC, and is assumed to be available for vegetative uptake. When the AWC is reached, excess water is considered lost to deep percolation. Generally, the available water holding capacity is exceeded in the height of the rainy season and decreases to zero during the summer months.

The analysis utilizes an established methodology that dates back to the 1950s ("The Water Balance", Thornthwaite and Mather, Drexel Institute of Technology, 1955), and is widely accepted and relied upon extensively for irrigation planning, design, and operations throughout California. The analysis relies on reference evapotranspiration data that have been developed and are periodically updated from time-to-time by the U.C. Cooperative Extension from special studies, improved climatic information, and other advances in irrigation science.

The analysis was completed using the monthly precipitation data for the heavy rainfall amounts during the 1997-98 (El Niño) year and the average monthly precipitation data for the years 1995-2001. During the El Niño wet season, rainfall occurred on nearly twice as many days as the average wet seasons from 1995 to 2002, and had 40% more daily rainfall during the storm events as the average wet season storm events. It is assumed that post-development conditions would include the use of a drip irrigation system that delivers water directly to the plant's rootball. The irrigation efficiency is essentially 100%.

**Irrigation Capacity**. The annual irrigation capacity of the Chili Cook-off site was calculated to range from approximately 700,000 gallons per acre during an average rainfall year to 650,000 gallons per acre during a heavy rainfall season. This equates to an average daily irrigation-evaportranspiration capacity of approximately 1,900 to 1,800 gallons per day per acre. These values are appropriate planning-level estimates for the Chili Cook-off site as well as other areas in the immediate Civic Center area of Malibu.

**Change in Groundwater Recharge.** The annual pre-development deep percolation volume at the Chili Cook-off site was estimated to range from approximately 200,000 gallons per acre during an average rainfall year, to 500,000 gallons per acre during a heavy rainfall year.

For post-development conditions, it is assumed that the area will be heavily landscaped with a combination of mixed species of trees, shrubs and groundcover areas and will be irrigated with treated wastewater. Infiltration past the root zone occurs during the wet season in January and February and will range from approximately 80,000 gallons (per acre) per year to 300,000 gallons (per acre) per year during a heavy rainfall year. No infiltration would occur during the dry season.

Based on this analysis, the conversion of the site to extensive irrigated area would result in an approximate reduction in groundwater recharge of 100,000 gallons per year per acre, or approximately 300 gallons per day per acre. There would be increased recharge during wet rainfall years, but the reduction from existing conditions would also be greater. This reduction in groundwater recharge would allow subsurface percolation of an equivalent amount (i.e.,300gpd/acre) to occur on the site to achieve a no net effect on local groundwater recharge.

### 6.1.2 Groundwater Percolation

The hydrogeologic site conditions described previously in section 4.2.2 were used to predict the potential rise in the water table from onsite groundwater recharge, commonly referred to as "groundwater mounding". This prediction was made by using an analytical method developed at Colorado State University (Molden and Sunada, 1988). Using best available information from surrounding areas, the groundwater mounding analysis revealed that the site has an estimated capacity for approximately 10,000 gallons per day (gpd) of groundwater recharge on a year-round basis, or approximately 700 gpd per acre. Combined with the estimated net reduction of 300 gpd/acre in rainfall-recharge (from the soil-water balance analysis) gives an approximate percolation capacity estimate of 1,000 gpd/acre for this site. Additional site specific testing may reveal a higher or lower capacity. A more detailed analysis and refined estimate of the recharge/percolation capacity of the site would require the following types of site specific information: (a) thickness and the hydraulic properties of the fill material; (b) additional borings, observation wells and hydraulic conductivity testing in the southern 2/3 of the site; and (c) additional data and analyses from the risk assessment study.

### 6.1.3 Total Assimilative Capacity of Chili Cook-Off Site

The Chili Cook-off site was evaluated for recycling treated wastewater by two means: (a) irrigation of landscape/open space areas to maximize evapotranspiration; and (b) groundwater recharge/percolation systems. The outcome of this preliminary evaluation is that the Chili Cook-off site has an estimated irrigation-evapotranspiration capacity for 1,900 gpd per acre, plus an additional recharge/percolation capacity of approximately 1,000 gallons per day per acre. With approximately 15 acres of the site assumed to be available for irrigation-disposal uses, this would translate into a total dispersal capacity of approximately 44,000 gallons per day. Since, the site has limited potential as a standalone location for treatment and dispersal of wastewater for the commercial service area, our study considered how the site could be developed in conjunction with other potential wastewater dispersal sites elsewhere in the Civic Center area.

## 6.2 Distributed Wastewater Reuse & Dispersal Capacities

Following is a preliminary review and evaluation of various options and capacities for wastewater reuse and dispersal within the Malibu Civic Center area.

### 6.2.1 Distributed Reuse

Since there is insufficient capacity on the Chili Cook-off site to meet the disposal needs of the existing major commercial properties, other existing and future dispersal and reuse capacity in the service area needs to be considered and maximized. Under this approach, the wastewater can be collected from the various commercial properties, and conveyed to a wastewater reclamation facility on Chili Cook-off property. Once treated to Title 22 reclaimed water standards with denitrification, the recycled water would be distributed in a separate piping network back to the commercial complex for dispersal in leachfields, or reuse via irrigation or toilet flushing, as applicable. This is similar to an approach considered in the 1997 Draft Specific Plan for the Civic Center area. The assumptions under this scenario include the following:

a) Existing development would provide onsite or existing dispersal capacity for existing and future flows.
b) Chili Cook-off site potential for reuse of wastewater via irrigation will be maximized.
c) Winter Canyon wastewater discharge site owned and operated by the Malibu Bay Company (MBC) has apparent existing capacity to handle current design flows. However, based on a policy

decision, the flow/dispersal capacity of this site will be limited to the current design flow of 45,000 gpd.

d) All new development would also be required to provide onsite reuse/dispersal capacity via irrigation, indoor reuse, or groundwater recharge/percolation for individual project design flows.
e) Existing sites without capacity to reuse their currently permitted onsite wastewater generation capacity could potentially utilize excess capacity on Chili Cook-off or other commercial properties.
f) Water features can be incorporated into the Chili Cook-Off property for storage and evaporation of reclaimed water.
g) Further analysis may identify expanded opportunities for reuse.

Wastewater dispersal capacity (via percolation systems and potential recycling activities) on individual commercial properties would generally be assumed to at least equal to the wastewater flows generated by the development. However, it is recognized that some commercial properties may be found (e.g., through the Risk Assessment Study) to be better served by offsite disposal facilities. Alternatively, some existing and future development projects may be able to supply surplus dispersal capacity either through percolation systems or reuse activities, including irrigation and/or toilet flushing. Some existing commercial properties are known to have very little, if any, potential for water recycling. No reasonable estimate of the surplus dispersal capacity available within the service area was possible within the limits of this study. However, it is safe to assume that the potential capacity will be significant. A preliminary review of the open space areas for several of the larger future commercial development projects indicates potential irrigation areas approximately equivalent to that at the Chili Cook-off site, i.e., 15+ acres (Table 2). Taking into account the potential integrated uses of these future open space areas for storm water management, there appears to be substantial capacity for wastewater reuse and dispersal in the undeveloped commercial properties.

**Table 2**
**Preliminary Estimates for Civic Center**
**Open Space and Landscape Areas**
**in Core Service Area of Wastewater Feasibility Analysis**

| OWNER | LOCATION | PROPOSED ALLOCATION OF OPEN SPACE LAND AREA (acres) | | |
|---|---|---|---|---|
| | | Open Space | Developed | Total |
| *Malibu Bay Company* | *Chili Cook-off* | 15.0 | 4.6 | 19.6 |
| *Malibu Bay Company* | *Ioki* | 3.9 | 5.4 | 9.3 |
| | *Small Island* | 0.6 | 0.5 | 1.1 |
| *Schultz* | *3705 Cross Creek Road* | 1.4 | 2.1 | 3.6 |
| | *Civic Center Way Retail Park* | 1.3 | 1.1 | 2.3 |
| *La Paz* | *3700 Civic Center Way* | 7.6 | 7.6 | 15.3 |
| SUB-TOTAL | | 30 | 21 | 51 |



16-214

### 6.2.2 Distributed Groundwater Percolation

Groundwater percolation is a method to return reclaimed wastewater to the hydrologic cycle using leachfields and dry wells. Existing onsite wastewater treatment systems are currently discharging of untreated effluent from the existing commercial and institutional buildings in the study area. The Malibu Bay Company's Malibu Colony Plaza is an exception as it discharges its septic tank effluent in to an existing leachfield in Winter Canyon. It is likely that this existing capacity would continue to be available for dispersal of reclaimed wastewater. The actual capacity of each of these systems will have to be evaluated and confirmed. If necessary, the onsite capacity of these systems could be enhanced by additional distribution systems or replaced by new leach fields. Distributed groundwater percolation needs to be available to handle existing wastewater flows beyond the evapotranspiration and groundwater percolation capacity of the Chili Cookoff property. This would include existing percolation capacity and all new projects could be required to develop groundwater percolation capacity equal to the respective project's design flows.

## 7.0 Preliminary Conceptual Project Description

Based on the preceding assessment of disposal system capacity at Chili Cook-off site compared with commercial service area conditions and needs, the apparent best conceptual plan for a wastewater reclamation facility for the Civic Center area would involve: (a) a community wastewater treatment/reclamation plant (Title 22 - Tertiary 2.2, plus denitrification) to be located on the Chili Cook-off site; (b) wastewater collection system extending to all of the existing and future commercial development parcels in the Civic Center area; (c) maximum reuse of the land area on the Chili Cook-off site for wastewater irrigation-reuse and subsurface percolation/disposal; and (d) a recycled water distribution system to convey treated water back to all commercial properties, and potentially to other sites where recycled water can be used. A schematic diagram of this conceptual plan is provided in **Figure 3**. Key elements and assumptions are discussed below.

## 7.1 Collection System

The collection system for the core service area would have both public main lines and private connections. The following are assumptions for each of these two components and responsibilities for the users of the system.

### 7.1.1 Public Facilities

- A Septic Tank Effluent Pump (STEP)/Pressure Sewer will be utilized for the collection system;
- Pipeline to be installed in public rights of way: Cross Creek Road, Civic Center Drive, Pacific Coast Highway and Webb Way;
- Total pipeline length of approximately 7,000 lineal feet;
- Pipeline to consist of pressure main network, ranging in size from 2" to 6" diameter, high density polyethylene pipe or equal;
- Typical pipeline excavation depth of 3 to 4 feet.
- Pipeline appurtenances include isolation valves, air release valves and pressure sensors.
- No gravity sewers, manholes, or community lift stations; virtually no infiltration/inflow.

### 7.1.2 Private Property Owner Facilities and Responsibilities

- Internal sewage collection from all buildings;
- STEP (Septic tank effluent pump) or grinder pump lift station w/telemetry to reclamation plant;
- Lateral connection to public sewer main;
- Approved onsite wastewater disposal capacity for 100% of property needs, plus designated reserve area; capacity based on enhanced acceptance rate for tertiary treated water;
- Approved piping system to meter and distribute treated water to dispersal system;
- Responsibility for costs of operation and maintenance of onsite facilities.

## 7.2 Reclamation Facility

The wastewater reclamation system will consist of a state-of-the-art tertiary treatment system installed within a building enclosure and below ground treatment tanks. For planning purposes, we estimate that the treatment system will consist either of a sequencing batch reactor (SBR) or a membrane biofilter (MBF) design. These systems are desirable because of the small area required and the ability to achieve high levels of nitrogen removal. The overall area required for the treatment plant and associated parking and equipment areas will be roughly one acre. The treatment plant will be designed and operated to meet California Code of Regulations, Title 22 for unrestricted water recycling (tertiary treatment). Additionally, we have assumed that the treatment system design will incorporate denitrification to meet a final effluent nitrogen concentration of 10 mg-N/L. The building enclosure will be architecturally designed, and screened; odors from the building will be collected and scrubbed with the use of a soil-biofilter or equivalent system.

## 7.3 Chili Cook-off Irrigation Reuse and Dispersal Facilities

The Chili Cook-off site will be developed for wastewater irrigation-reuse, onsite water features, recharge/percolation to the maximum feasible extent, within the hydrogeologic and soil capacities of the site. For this preliminary analysis we have assumed that the onsite irrigation will be achieved primarily by subsurface drip irrigation methods; however, surface irrigation will also be possible with Title 22 tertiary treated water from the reclamation plant. The subsurface percolation/recharge system will consist of a pressure-dosed leachfield system, the location and design of which would be determined based on site specific subsurface investigations. Both the irrigation system and percolation/recharge system would be dosed from a common pumping system located in below ground storage tanks. We have assumed that the tanks would have capacity equal to approximately 50,000 gallons. It is assumed that the approximately 17 acres of available open space would be landscaped similar to a park, which may contain various water features that also utilize recycled water.

## 7.4 Distributed Water Recycling/Reuse and Dispersal

Similar to the wastewater collection system, the recycled water system would include a combination of public facilities and private onsite facilities. The key elements and respective responsibilities for these shared facilities are itemized below.

### 7.4.1 Public Facilities

- Treated water distribution system will be installed to supply all irrigation/water feature needs on Chili Cook-Off Site, as well as subsurface dispersal to the maximum rated hydraulic capacity of the site;

- Pumping facilities and buried storage tanks will be provided at reclamation plant to distribute tertiary treated water for subsurface disposal and/or unrestricted recycled uses throughout commercial Service Area;
- Recycled water distribution system will extend to all commercial properties in Service Area, and may be expanded to include branches to other potential water reuse locations;
- Pipeline to be installed in public rights of way: Cross Creek Road, Civic Center Way, Pacific Coast Highway and Webb Way;
- Total pipeline length of approximately 7000 lineal feet;
- Pipeline to consist of pressure main network, ranging in size from 2" to 6" diameter, high density polyethylene pipe or equal (w/recycled water markings);
- Pipeline appurtenances include isolation valves, air release valves and pressure sensors, and telemetry control system.

### 7.4.2 Private Property Owner Facilities and Responsibilities

- Lateral connection to public recycled water main;
- Approved piping system to meter and distribute treated water to subsurface percolation system and optional recycled water system, if applicable;
- As applicable, approved dual recycled water irrigation system and/or dual plumbing system, per Title 22 Water Recycling Criteria, California Plumbing Code and any additional local requirements;
- Responsibility for costs of operation and maintenance of onsite water recycling facilities, as applicable.

## 8.0 Estimated Costs

There are initial capital costs associated with construction of the wastewater reclamation facilities and appurtenances. There are also long term annual costs to operate and maintain the system. Due to the preliminary nature of this conceptual model, user costs were not developed. The following costs are preliminary estimates for planning purposes only.

## 8.1 Capital Costs

The costs of developing a wastewater reclamation and reuse system, as described above, were developed for a range of wastewater flows (Table 4). These flows were evaluated to bracket the core service area design flows. This will enable one to understand the ramifications of increasing or decreasing the size of the service area.

The City of Malibu is in the process of seeking grants and loans to cover the capital costs of public facilities. Individual property owners will be responsible for repayment of any loans for land acquisition, construction of infrastructure, operation and maintenance through a locally established process, such as assessment district, fees or other financial tool.

**Preliminary Cost Estimates for Civic Center**
**Wastewater Reclamation Facilities**

| ITEM | TREATMENT CAPACITY (GPD) | | | |
|---|---|---|---|---|
| | 100,000 | 200,000 | 300,000 | 400,000 |
| *Collection System* | 450,000 | 800,000 | 1,200,000 | 1,600,000 |
| *Treatment Plant* | 1,500,000 | 2,400,000 | 2,900,000 | 3,700,000 |
| *Building Enclosure, Site Work and Landscaping* | 1,700,000 | 2,000,000 | 2,200,000 | 2,300,000 |
| *Wastewater Irrigation and Dispersal at Chili Cook-Off* | 1,500,000 | 1,500,000 | 1,500,000 | 1,500,000 |
| *Recycled Water Distribution System* | 800,000 | 1,100,000 | 1,400,000 | 1,700,000 |
| **SUBTOTAL** | 5,950,000 | 7,800,000 | 9,200,000 | 10,800,000 |
| *Planning, Permitting, Engineering and Administration @ 30%* | 1,785,000 | 2,340,000 | 2,760,000 | 3,240,000 |
| *Contingencies @ 20%* | 1,190,000 | 1,560,000 | 1,840,000 | 2,160,000 |
| **TOTAL** | **8,925,000** | **11,700,000** | **13,800,000** | **16,200,000** |

## 8.2 Operation and Maintenance and Monitoring Costs

The wastewater treatment and disposal facilities would be operated, maintained and managed by a qualified private wastewater operations contractor, under a services agreement with the City of Malibu. The treatment plant would be operated by a Certified Wastewater Treatment Plant Operator, Grade III (minimum).

The wastewater system will be monitored to verify compliance with performance objectives and to assure safe and proper operation of the collection, treatment, recycling and disposal facilities. Monitoring will include, but not be limited to: wastewater flow quantity from individual users, wastewater influent and effluent quality, reuse and groundwater percolation quantities, and selected groundwater quality. Routine (monthly) reporting of monitoring results will be required.

Following is a preliminary estimate of the approximate annual costs for operation and maintenance of the wastewater reclamation facilities:

| | |
|---|---|
| Labor (Operators & Administrative) | $300,000 |
| Electricity/Utilities and Sludge Disposal | 100,000 |
| Materials, Equipment & Supplies | 100,000 |
| Monitoring | 75,000 |
| Permits, Insurance, & Professional Services | 50,000 |
| Contingency | 75,000 |
| **Total** | **$700,000** |

This estimate is based on a 300,000 gpd reclamation system and will decrease for lower flows and increased for higher flows. This estimate does not include the electrical costs, equipment maintenance, and other operational needs associated with the onsite STEP systems and reuse/dispersal facilities at individual properties in the service area. These costs will vary from site to site and will be borne individually by each property owner.

# 9.0 Environmental Benefits, Impacts and Design Issues

This section provides a brief overview of some of the environmental benefits and key environmental impacts and design issues that will need to be addressed by the project through the facilities planning and appropriate environmental review.. The information presented here is very general and preliminary in nature; it is not intended to be a substitute for the thorough environmental analysis that will be required for the project.

## 9.1 Environmental Benefits

As envisioned, the project will provide a growth-neutral approach to wastewater management. It will neither encourage nor discourage growth in the Civic Center area.

Aesthetic considerations such as visual appearance and odor control can be incorporated into the reclamation facility and reuse program to be compatible with an urban open space and commercial setting.

The benefit of maximizing water conservation and reuse will minimize and potentially reduce the groundwater recharge and potential cumulative impacts of new development on groundwater levels in the Civic Center area.

Title 22 "Tertiary 2.2" standards are higher than the City of Malibu's current "tertiary" wastewater treatment standards. The result of this higher level of treatment and emphasis on reuse will be a decrease in the potential adverse impact on groundwater and surface water quality.

## 9.2 Environmental Impacts and Design Issues

*Sewage Collection System*

Sewage collection will be provided by STEP systems with a common pressure sewer network. Each property will have one or more interceptor tanks and pumps. Multiple, commercial-grade pumps will be incorporated into each system and will pump the clarified sewage effluent to the reclamation facility A grease interceptor will also be installed prior to the interceptor tank for all restaurants. The potential environmental concerns with the collection system include odors, pump system outage/overflow, and force main rupture or leakage.

**Odors.** Sewage odors will be generated at each property in the area of grease interceptors, septic tanks and pump stations. Offensive odors are contained in the tank and vented through pipes to the roof of the building. The only exception to this is at the time of servicing, when the tank lids need to be opened to allow pumping of the contents. This would not represent a significant change from existing conditions, where individual properties are served by onsite septic systems that typically involve septic tanks, grease interceptors and pump systems. The conceptual plan does not include any common sewer lift stations in public rights of way.

**Pump Outages.** A failure of an individual STEP unit (pump station) could result in back-up of sewage and, potentially, surfacing of sewage in the immediate area of the pump station. The chances for this to occur is normally minimized through the use of multiple (redundant) effluent pumps, surplus emergency storage capacity in the pump chamber, telemetry alarm systems, and by the provision of a mobile emergency generator that can be used to supply back-up power to the effluent pumps in the event of a power outage.

**Force Main Rupture/Leakage.** The pumping of sewage from the STEP tanks to the treatment plant will require a 2 to 6-inch diameter force main (i.e., pressure line). Damage to the force main could result in the release of septic tank effluent to the surrounding soil and possibly to the ground surface. The likelihood of a rupture or leak in the force main is relatively small in this case because of the short distance between the interceptor tanks and the reclamation facility (a few thousand feet) and the small elevation difference to overcome. There are no creek crossings, slide-prone areas, or other factors that would pose special risks of pipeline damage. Moreover, the pipeline route will follow public rights of way where ever possible, such that any problems will be readily evident to maintenance staff, and easily accessible for correction. However, the Malibu Civic Center area is subject to seismic activity and liquefaction hazards, which must be taken into consideration in the pipeline design. Typical measures commonly employed to address liquefaction hazards include: (a) use of flexible piping materials; (b) extensive use of isolation valves and temporary bypass piping systems; (c) pressure sensors or other monitoring devices to detect movement or damage to pipelines.

*Reclamation Facility*

The reclamation facility will be a customized facility that will be located on the eastern side of the project site and will provide tertiary treatment including denitrification. The key elements of the treatment process are the influent equalization tank, aeration tanks, tertiary filters, disinfection, sludge storage, treated water storage and disposal and water recycling pumping systems.

**Visual.** The reclamation facility will consist of a series of buried treatment tanks and various above-ground equipment, tanks, controls, office, laboratory and ancillary areas that are planned to be housed in an architecturally-designed building. The building, parking areas, fencing and any exterior equipment will be partially visible from the Pacific Coast Highway and Webb Way, from certain parts of the Chili Cook-Off site. The building, landscaping and site design would be expected to undergo design review to identify and properly address potential visual impacts.

**Odors**. Odors from the proposed wastewater facilities would be confined to the immediate treatment plant area. The plant itself would be designed to capture and contain methane and hydrogen sulfide odors within the buried treatment tanks and the building enclosure, and to eliminate the odors through a forced-air subsurface soil filtration-dispersion venting system or equivalent system.

**Flooding.** The published FEMA map indicated that most of the site is in the 100 year flood elevation based on 1985 conditions and approximate methods. More detailed topographic information indicates that it is possible that portions of the Chili Cook-Off site may be above the flood plain. This can be addressed by more detailed characterization of the floodplain in the vicinity of this site and, if necessary, the use of additional fill to address potential impacts from flooding.

**Safety Hazards.** Normal safety precautions will need to be observed by the treatment plant operators. The treatment plant will be enclosed and fenced and, as such, should not pose a safety risk to Malibu visitors or to nearby businesses or residents. Chlorine gas is not proposed to be used in the treatment plant, so the associated potential for chemical releases and hazards would be absent.

**Power Outage.** The treatment plant requires a continuous power supply for operation of the pumps, blowers and other equipment. A dedicated emergency generator will be installed and maintained at the treatment plant to assure a suitable back-up power supply in the event of an extended power outage.

**Noise.** The treatment system will require pumps, and emergency generator, and air blowers, which are the main potential sources of mechanical noise at the plant. The various pumps will generally be small (e.g., one to two horsepower) submersible units installed within buried pump vaults and will operate intermittently; consequently, pump operating noise will be barely perceptible immediately alongside the pump vaults. The emergency generator will require periodic operation for routine maintenance and testing. The air blowers will be the main source of noise at the treatment plant and, depending upon the selected design, may operate continuously or intermittently. People in adjacent parking lots and in nearby portions of the Chili Cook-Off site may be able to hear the emergency generator operation and blower noise. Appropriate sound proofing will need to be incorporated in the design to reduce noise to unobjectionable levels.

**Wastewater Overflow/By-pass**. The likelihood of an overflow or by-pass of untreated or partially-treated wastewater at the treatment plant is very remote. The treatment tanks would be located below ground and designed with excess storage capacity to meet minimum influent storage capacity requirements per Title 22 for wastewater reclamation facilities. Sewer system infiltration-inflow (I/I) can sometimes create overflow situations at treatment plants; however in this case there will be relatively little chance for I/I, because of the use of a STEP/pressure sewer system that includes to manholes or deep

gravity sewers. Additionally, the plan envisions that sewage flows will be monitored at each individual STEP tank to identify and respond to excessive flow conditions at individual properties in the service area. Pipe rupture or leakage is always a possibility for any wastewater facility; however, this risk can be minimized and reduced to acceptable levels through proper design and construction practices and through normal daily operator surveillance of the facilities. The treatment plant site can also be graded and drained in a manner to minimize the chances for accidental spillage to enter the storm drain system for the project site.

*Recycled Water Distribution System*

The distribution system for recycled water will consist of a network of buried pipes, 2 to 6-inches diameter, similar to the STEP-pressure sewer collection system. It will be subject to the same design and operational issues as the collection system piping. The main environmental impact and design issue will be provisions and contingencies for possible rupture or leakage due to seismic (liquefaction) or other damage. The design considerations and mitigations are likely to be the same as those cited earlier for the sewage collection system.. The impacts associated with leakage from the recycled water distribution system will be of lower environmental risk due to the fact that the water in the distribution system will be tertiary-treated, disinfected water suitable for irrigation and other uses.

*Irrigation-Dispersal Operations*

**Human Contact With Treated Wastewater.** The reclaimed wastewater will generally be disposed below ground in areas that will not be restricted as to public access, but will generally have limited access and activities, and minor opportunity for human contact with the reclaimed wastewater. However, surface irrigation and creation of open water landscaping features may also be incorporated in the project. Accordingly, the wastewater will be treated to a tertiary level (Title 22 – Tertiary 2.2 standards) which is deemed suitable for non-restricted recreational contact. Conformance with all applicable standards and operational requirements should reduce the risk to humans to acceptable levels.

**Wastewater Runoff to Malibu Lagoon.** Wastewater reclamation-irrigation operations are required to operate without creation of puddling or runoff of treated water. However, there will always be a potential risk of runoff of treated effluent from any of the irrigation-disposal areas, as a result of malfunctions or operator error, for example. If the runoff collects in a storm drain system, it may enter Malibu Lagoon. In general, the relatively level terrain and well drained soils in the Malibu Civic Center area minimize the potential for wastewater runoff conditions to occur. However, system design and operational measures should include careful review and attention to avoid or minimize the potential for runoff. Use of subsurface drip irrigation measures should generally be promoted and possibly required in any critical areas.

**Groundwater Mounding.** Groundwater mounding can occur under any large or concentrated wastewater dispersal field. When this occurs to a significant extent, the winter water table may rise high enough to interfere with the soil treatment functions or the ability of subsurface dispersal fields to drain properly. This will need to be considered in the selection and approval of the proposed dispersal areas for the project (at Chili Cook-off site and elsewhere in the service area) and in the development of recommended loading rates for each area. The irrigation systems would typically be operated at loading rates intended to match the plant evapotranspiration requirements, such that seepage losses and associated groundwater mounding effects would be negligible.

**Nitrate Loading Impacts.** Sewage wastes contain high amounts of nitrogen which, when discharged to land, can result in localized or area-wide increases in nitrate concentrations in the underlying ground water. The proposed wastewater treatment and disposal system for the proposed project is intended to

incorporate a high degree of nitrogen removal through several mechanisms to provide significant reduction of nitrate loading in the Civic Center-Malibu Lagoon area as compared with existing conditions. Nitrate loading reduction will be achieved through: (a) denitrification processes in the treatment system; (b) enhanced uptake of nutrients by plants via irrigation reuse systems; and (c) overall reduction (as a result of recycling uses) in the amount of water reaching the groundwater-lagoon system via percolation. A Total Maximum Daily Load (TMDL) for Nutrients, including nitrogen in the Malibu Creek Watershed had been published by the USEPA (2003b). An implementation plan for this TMDL is being developed by the LARWQCB.

**Bacterial Contamination of Groundwater or Malibu Lagoon.** The potential for bacterial contamination of groundwater or Malibu Lagoon from wastewater recycling or subsurface percolation will be negligible and substantially improved over existing conditions by virtue of the fact that: (1) the water will be treated to a tertiary level, including disinfection, which is considerably higher than normally required for subsurface wastewater disposal or landscape irrigation; (2) any new areas proposed for subsurface wastewater disposal will be expected to meet standard soil and groundwater requirements for subsurface disposal of primary treated (i.e., septic tank) effluent; and (3) irrigation of landscaped areas (using recycled water) will be matched to the water needs (evapotranspiration) of the plants to reduce the amount of water reaching the groundwater system. A Total Maximum Daily Load (TMDL) for Bacteria in the Malibu Creek Watershed had been published by the USEPA (2003a). An implementation plan for this TMDL is being developed by the LARWQCB.

***Recycled Water for Toilet Flushing***

The use of recycled water for toilet flushing will expose humans to possible physical contact with treated wastewater. California Title 22 Water Recycling Criteria recognize toilet flushing as a suitable use for treated wastewater, and contain standards to protect against unacceptable risks to public health. For the proposed project, the treatment of wastewater will be to a tertiary 2.2 level, which meets minimum recycled water standards for toilet flushing. The treatment system will be designed, operated and monitored to comply with the same standards followed elsewhere in California for the proposed recycling uses; therefore, the risks to public health would be small.

## 10.0 Limitations of Assessment

a) There will need to be a geotechnical assessment of the proposed reclamation project. However the issue of liquefaction has been raised. Based on Questa Engineering Corporation's experience in this area, liquefaction is a risk. The best way to address this risk to collection systems is to design and install the system to the highest standard of practice; and use flexible piping such as high density polyethylene (HDPE) minimize the risk of a rupture.
b) Expansion for commercial or residential wastewater reclamation need depending on Risk Assessment, TMDL or AB-885 option.
c) Extent of off-site wastewater disposal risk from all existing parcels will be determined by the risk assessment study.
d) The adequacy of existing onsite wastewater leachfields for groundwater recharge of reclaimed water will have to be confirmed on an individual parcel basis.
e) Need to provide incentive for landowners to develop additional onsite capacity to benefit of expanded areas. One option is to develop a dispersal credit system based on net metering of wastewater generated and reclaimed water recycling.
f) Specific conditions of the acquisition of the Chili Cook-off property will need to be taken into account.

g) Stormwater management was not assessed, but the use of Chili Cook-off for water reuse, does not preclude its use for stormwater treatment.
h) This report is based on the information cited herein. Changes to the assumptions, additional information and analyses may change the conclusions.

## 11.0 Next Steps and Timeline

The steps and schedule to bring this project to completion are shown in Table 4.

**Table 4.Preliminary Schedule for Civic Center Water Reclamation Project**

| Phase | Year 1 | | Year 2 | | Year 3 | | Year 4 | | Year 5 | | Year 6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Funding Acquisition** | | | | | | | | | | | | |
| **Feasibility Study** | | | | | | | | | | | | |
| Needs Assessment | | | | | | | | | | | | |
| Preliminary Market Assessment | | | | | | | | | | | | |
| Alternatives Screening | | | | | | | | | | | | |
| **Facilities Plan** | | | | | | | | | | | | |
| Detailed Characterization: | | | | | | | | | | | | |
| Study Area | | | | | | | | | | | | |
| Water Supply | | | | | | | | | | | | |
| Wastewater Flows and Facilities | | | | | | | | | | | | |
| Treatment Requirements | | | | | | | | | | | | |
| Recycled Water Market Analysis | | | | | | | | | | | | |
| Alternative Analysis | | | | | | | | | | | | |
| Recommended Plan | | | | | | | | | | | | |
| Construction Financing Plan and Revenue Plan | | | | | | | | | | | | |
| Other information as required | | | | | | | | | | | | |
| **California Environmental Quality Act (CEQA) Compliance** | | | | | | | | | | | | |
| **Permitting** | | | | | | | | | | | | |
| **Design** | | | | | | | | | | | | |
| **Construction** | | | | | | | | | | | | |

## 12.0 Summary and Conclusion

Malibu imports all of its water for indoor use. There is a finite environmental capacity to assimilate water using landscape irrigation and groundwater recharge in the Malibu Civic Center Area. This environmental capacity is based on local climate, vegetation, soils, geology and water resources. Water conservation, reclamation and reuse are necessary to maximize the utilization of imported water and safely return the water to the hydrologic cycle.

**Conceptual Plan**

We have made a preliminary assessment of the feasibility of a community wastewater wastewater reclamation system for the Malibu Civic Center area, centered around the Chili Cook-Off property. We have concluded that the standard sewer, treat and dispose approach does not appear to be feasible here. However, an environmentally sound approach of utilizing one site for a water reclamation facility with redistribution of the reclaimed water back to the commercial properties where it was generated appears to be feasible for flows on the order of 200,000 to 300,000 gallons per day. The ultimate flow/capacity will depend on the details of the program and the water quality limits that will be set by the Regional Board on the Malibu Lagoon watershed. The environmental outcome would be a cumulative decrease in the nitrogen and bacteria that may be contributing to water quality impairment of the Creek, Lagoon and Surfzone.

**Preliminary Feasibility**

Under this water reclamation approach, the existing and proposed commercial areas in the Civic Center area will have two sets of wastewater pipes connected to the reclamation facility. One pipe collecting the septic tank effluent and one pipe returning highly treated wastewater for onsite reuse, via irrigation, toilet flushing and groundwater recharge. This approach will have to maximize water conservation, landscape irrigation, and indoor water reuse.

Wastewater will be treated to Title 22 – tertiary 2.2, California's highest standard for wastewater reclamation. The discharge of Title 22 water is not subject to the same vertical separations to groundwater standard as required for secondary treated wastewater by the Regional Board. The reclamation facility would include disinfection and nitrogen removal to a level of 10 milligrams per liter, and can be located in the southeaster corner of the Chili Cook-off site. Two technical treatment options were evaluated for feasibility and cost: sequencing batch reactor and a membrane biofilter. Both are feasible and have different advantages and disadvantages that can be explored if this project moves forward.

**Chili Cook-off Capacity**

The Chili Cook-off site has an apparent capacity to assimilate an average of up to 44,000 gallons per day of reclaimed water through drip irrigation and groundwater recharge.

The reclaimed water that cannot be utilized at the Chili Cook-Off site would be redistributed to properties in the service area for reuse through irrigation or toilet flushing, and percolation systems as necessary. Reuse capacities for irrigation will vary throughout the year. When the maximum amount for irrigation on the property is exceeded, the reclaimed water can be dispersed via onsite groundwater recharge/percolation systems. The program should include incentives to maximize water conservation and reuse to the maximum extent possible.

The concept is expandable within in the confines of the overall water balance of the Civic Center area and the nitrogen loading limitations of the Malibu Creek and Lagoon watershed that are currently being developed by the Regional Water Quality Control Board.

**Cost**

The cost of the collection, treatment, and redistribution for the core service area with a design flow of approximately 200,000 gallons per day is approximately 12 million dollars. The estimated annual operation, maintenance and monitoring cost for the system would be approximately $700,000. The costs of private onsite wastewater reuse and dispersal systems have not been estimated. These costs will vary from site to site and will be born by the respective property user.

## Appendix A References


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## Appendix B Questa Engineering Corporation Qualifications

Questa Engineering Corporation is a civil, environmental, and water resources engineering and geological consulting firm. From its main office in the San Francisco Bay Area and an office in Santa Barbara, Questa offers services to clients throughout California on public works, industrial and agricultural development water and wastewater treatment, waste management, and resource conservation projects.

Questa is staffed by a group of highly qualified engineers, geologists, planners, environmental scientists, and technical specialists with diverse project experience throughout California and the western United States. In addition to strong academic credentials, the staff has many years of engineering, geologic and applied environmental planning experience with both the government and private sector. This experience and personal commitment allows us to respond effectively and rapidly to the increasingly complex technical and regulatory issues faced by our clients. The firm strongly subscribes to an interdisciplinary approach in planning solutions to complex environmental and engineering problems. As a small company, our senior staff necessarily maintains a high degree of involvement and management control over individual projects, and a close client-consultant relationship.

The staff at Questa has established close working associations with other technical firms throughout California. These include analytical laboratories and geological, chemical, structural, electrical and mechanical engineering consultants, as well as planning, construction, and architectural companies. Our locations in the San Francisco Bay Area and Santa Barbara afford us convenient access to a vast array of technical resources, including the extensive library resources of the University of California and Stanford University and their associated computer facilities. We utilize these resources to augment our in-house library according to the needs of specific projects.

Questa Engineering Corporation provides government and private industry with consulting services in all phases of geology and engineering geology, hydrology, water resources, wastewater engineering, groundwater studies, and toxic/hazardous materials investigation and remediation. The firm has recently expanded its capabilities in the fields of environmental planning, resource inventory, and natural resource enhancement and management. Questa provides a broad range of professional services from initial project planning and feasibility studies through final construction and operational guidance. These encompass, for example:

- Engineering Design
- Site Investigations and Monitoring
- Feasibility Studies
- Geological Investigations
- Environmental Impact Assessment
- Natural Resource Management
- Resource Inventory and Analysis
- Environmental Planning
- Expert Testimony
- Regulatory Compliance
- Operation and Maintenance
- Field Density and Laboratory Soils Testing
- Construction Management

Since 1983, Questa has successfully completed a broad range of projects large and small, specialized and wide in scope. Our staff possesses extensive technical, managerial and business skills, to provide a balanced approach to any project.

Since 1983, Questa has been providing engineering services to individual homeowners, developers, and other clients throughout California for site-suitability evaluations, environmental analysis, permitting assistance, design and construction management and inspection/monitoring of small-scale and on-site wastewater treatment and disposal systems. This work includes:

- Inspection and performance evaluation of existing septic systems for house remodels and property transfers;
- Designing conventional, single family residential septic systems, as well as various alternative system designs for residences, commercial and community-type systems, including mounds, fill systems, intermittent and recirculating sand filters, aerobic treatment units, pressure-dosed systems using pumps and automatic dosing siphons, and subsurface drip irrigation;
- Feasibility and planning analysis of on-site wastewater treatment and disposal options for unsewered communities and new developments;
- Evaluation and design of small-scale wastewater recycling and reuse alternatives, gray-water systems and other sustainable design and conservation measures;
- Construction management and follow-up inspection and performance monitoring of systems;
- Cumulative impact studies for contamination hazards and groundwater mounding; and
- Training seminars on soils, site evaluation, and specialized aspects of on-site sewage disposal practices.

**Commercial and Community Systems.** Questa has conducted numerous community-wide feasibility studies for on-site sewage disposal and developed facilities plans and designs for new and upgraded wastewater treatment and reclamation systems for various commercial, institutional, and other community-type facilities. These have included, for example, small residential subdivisions, restaurants, golf clubs, campgrounds, resorts/lodges, schools, retreat centers, wineries, and other commercial/ industrial facilities not served by municipal sewers. Additional narrative descriptions of many of these projects are provided further in this Section.

## Representative Clients

| | |
|---|---|
| Lake Canyon Community Services District | Lompico County Water District |
| Contra Costa Water District | San Lorenzo Valley Water District |
| East Bay Municipal Utility District | Stinson Beach County Water District |
| Eel River Resource Conservation District | West Valley Sanitation District #4 |
| Humboldt Improvement District #1 | Sonoma County Permit and Resource Management Department |
| The Sea Ranch Association | Marin Municipal Water District |

The following are descriptions of relevant project experience for Questa Engineering Corporation specific to the provision of wastewater management services for this project.

*Monte Rio Community Wastewater Facilities Plan*

*Client:* Sonoma County

Funded under the State Small Community Grant Program, the project initially included a complete investigation and planning study to develop a Wastewater Facilities Plan for Monte Rio, a community of approximately 2,000 people that lies along the Lower Russian River in western Sonoma County. The community of Monte Rio has historically relied on individual septic systems, many of which are substandard and failing because of their age, river flooding, steep terrain, poor soils, and high groundwater. Questa and Leonard Charles Associates (EIR) consultant completed the study and investigation in June 2000, and Questa subsequently was hired to design the facilities. The selected project includes community facilities to serve a core area of the town encompassing approximately 600 river terrace and hillside properties and the downtown commercial area. Alternatives investigated in this study included upgrading and replacing individual on-site systems and implementing an on-site wastewater management district, constructing a sewer collection system and conveyance to one of several locations suitable for community leachfields and/or irrigation, a d collecting and conveying to the nearby Guerneville Treatment Plant. The selected plan includes a pressure sewer system; an SBR treatment plant (inside a barn-type enclosure) providing enhanced nitrogen removal; tertiary filtration and UV disinfection; and final effluent disposal through a combination of pressure-dosed leachfield and subsurface drip irrigation of pasture, woodland, and riparian enhancement areas. The design plans and specifications are complete. The Proposition 218 assessment vote was recently approved by the community and the system is due to go to bid in the fall of 2003.

*Lake Canyon Wastewater Facilities Plan and Design*

*Client*: Lake Canyon Community Services District and Santa Clara County Health Department

Funded under the State Small Community Grant Program, the project includes the design and construction of a small diameter effluent sewer system and a community leachfield to serve the 60-home community of Lake Canyon located in the Santa Cruz Mountains in Santa Clara County. Questa completed the Wastewater Facilities Plan for the project in 1992 and successfully aided the community in receiving SWRCB grant approval for design and construction. Questa was subsequently retained for design of the project (completed in October 1994), and construction management services. The system was completed and went on-line in 1997. Questa continues to assist the CSD in on-going monitoring and maintenance of the system.

The community is situated in a steep wooded canyon and has historically relied on individual septic systems, many of which encroach closely on the local stream or have failed. Because of the steep terrain, the proposed project design included installation of new on-lot septic tanks with installation of a small-diameter gravity effluent sewer system. The leachfield, a dual pressure-dosed system designed for 17,000 gpd, is situated in an easement obtained on neighboring property owned by the Santa Clara County Department of Parks and Recreation. A central (triplex) lift station and 2,600-foot long force main conveys effluent to the disposal site.

*Cañada Woods Development*

*Client*: Carmel Development Company

This project is a mixed residential-commercial development located in the Carmel Valley which is to be served by a STEP collection system and tertiary-level wastewater reclamation plant (100,000 gpd capacity); final effluent will be disposed through a leachfield-created wetlands and irrigation of a new golf course. Questa was retained initially in 1987 to prepare a wastewater feasibility study for the project; this involved a comparative review of several wastewater storage and disposal alternatives, and evaluation of project compliance with strict nitrate loading criteria that have been adopted to protect the Carmel Valley Aquifer. A STEP collection system was recommended for the project due to the low residential development density (10-acre lots) and steep rocky terrain which characterizes the majority of the site. Following project approvals, Questa was subsequently retained in 1995 to update the plans for additional connections, complete the STEP system design, and coordinate other aspects of the wastewater system design and construction. Construction of Phase I was completed and went on-line in Fall 1997.

*September Ranch Development*

*Client*: September Ranch Partners

Questa was retained in 1995 to prepare a wastewater feasibility study for the September Ranch Project, a 100-unit residential development located in the Carmel Valley. The proposed wastewater facilities are to consist of a STEP collection system, an on-site tertiary "package" treatment plant, a winter storage reservoir, and final disposal by means of pasture and landscape irrigation with reclaimed wastewater. Questa's work to date has included preliminary layout of the STEP collection system, water balance analysis for preliminary sizing of treatment storage and disposal facilities, and analysis of nitrate loading effects to verify compliance with Monterey County and Carmel Valley requirements. The project is presently undergoing environmental review.

*Wastewater Feasibility Study for Lion's Gate Reserve*

*Client*: Hayes Valley Development Partners

Questa Engineering served as consultant for the evaluation of on-site wastewater treatment and disposal options for the proposed Lion's Gate Reserve in Santa Clara County. Located immediately southwest of Morgan Hill, the project consists of an 18-hole golf course, clubhouse facilities and overnight lodging facilities, as well as 41 individual residential lots with associated swimming, tennis and equestrian facilities. Following an evaluation of soil and geologic constraints, Questa developed a plan for an on-site treatment and reclamation system for the project. Questa recommended a STEP collection system consisting of septic tanks at individual buildings and small-diameter (4-inch) pipelines for effluent collection. A central enclosed treatment plant, located adjacent to the north side of the golf practice range, will provide secondary level reclaimed effluent quality for a design flow of 23,000 gpd. Following storage in an on-site holding pond, the final effluent will be disposed of by means of spray irrigation at the practice range and other nearby turf grass and open space areas. At the request of the client, Questa completed the study, analysis and final project report within an accelerated time schedule (30 days).

*Lawson's Landing Master Plan*

*Client*: Lawson's Landing

Lawson's Landing development at Dillon Beach, a mixture of residential, recreational, agricultural and sand mining activities, has been operating without proper land use approvals and permits for several years. In an effort to bring the existing facilities and operations into compliance with Marin County and Water Quality Control Board standards, Questa was retained to develop a Wastewater Facilities Master Plan. A Draft Plan has been completed and has focused on developing a system that takes into account the water quality effects from disposal into the rapidly permeable dune sands balanced against costs and the potential for beneficial use of the wastewater. Preliminary screening reduced the options to a STEP collection system and recirculating sand filter followed by drip irrigation or leachfield-absorption beds for either: (a) wetlands enhancement; (b) dune stabilization; or (c) managed pasture. The preferred plan calls for a series of absorption beds using chamber technology and dune stabilization.

Questa prepared a dune stabilization plan for the physical protection of the wastewater facilities. The stabilization plan focused on the use of biotechnical stabilization techniques, which combine structural supports with vegetative stabilization methods. Project is presently undergoing environmental review.

*French Ranch and Lagunitas School Wastewater Facilities Project*

*Client*: French Ranch, LLC, and Lagunitas School District

In 1997-1999, Questa completed feasibility studies, permitting, design construction oversight for two, side-by-side, 10,000 gpd on-site wastewater systems that included recirculating sand filters, transmission lines, and pressure-dosed leachfield systems to serve a school and adjoining subdivision. Questa also developed complete operation, maintenance, and contingency documents for both facilities. Unique features of the project include a STEP collection system for some facilities, 2.5 miles of force main; four lift stations, gravelless drainfield trenches, and remote monitoring and control systems. Both systems are in operation and Questa provides on-going maintenance and monitoring services for both systems, including remote monitoring/control and monthly reporting to the County and Regional Water Board.

*San Lorenzo Valley Wastewater Management Feasibility Studies*

*Client:* Santa Cruz County, Department of Environmental Health

In 1994, Questa completed a wastewater feasibility study for several small communities in the San Lorenzo Valley area of Santa Cruz County. Included were portions of the towns of Boulder Creek, Felton, Ben Lomond, Brook Lomond, El Solyo Heights and Glen Arbor. All of these areas, including commercial and residential properties, are currently served by on-site septic systems; but they have a high failure rate due to winter groundwater conditions. For each community, Questa defined primary and secondary service areas according to the identified septic system constraints and needs for wastewater improvements. Questa also conducted reconnaissance soil investigations to determine potential sites for community wastewater disposal in each area. Alternative solutions for each area were formulated and evaluated on the basis of engineering feasibility, environmental effects, costs, and implementation issues. The principal options in each area included; (1) on-site upgrade of individual systems, and (2) a STEP collection facilities for community treatment and subsurface disposal. For two of the communities, Questa also investigated the possibility of implementing drainage measures to improve conditions for on-site disposal. The findings and recommendations from this study are being incorporated in Santa Cruz County's overall wastewater management plan for the San Lorenzo Valley watershed.

***Bodega Marine Laboratory Wastewater System***

*Client:* University of California at Davis

This project, for the University of California, involved field investigations, feasibility analysis and design of on-site wastewater facilities for a proposed major expansion of the laboratory and housing complex at the Bodega Marine Laboratory (Sonoma County). Wastewater facilities designed for the Laboratory consisted of a lift station, 3,000-foot main, and standard, dual leachfield system for wastewater flows of 20,000 gpd in an area of deep sands and loamy sand deposits. A series of absorption beds, utilizing pressure effluent distribution were developed in a sand dune area to accommodate the 10,000 gpd wastewater flows from the housing area. Pump tests and related groundwater investigations were conducted in the disposal sites to assess groundwater flow patterns in an area of geological faulting. Special considerations in construction work were required to minimize disturbance and promote rapid restoration and revegetation of sand dune and sensitive coastal bluff plant communities. Questa provided complete feasibility and design services and obtained the necessary approvals from the North Coast Regional Water Quality Control Board for the project. The wastewater facility improvements were completed in 1990 and have been in successful operation since that time.

*Vinters Inn Development*

*Client:* Mr. John Duffy, Santa Rosa

Questa performed the engineering analysis and design of an enlarged "mound" wastewater disposal system for a 45-unit inn, restaurant and winery complex near Santa Rosa (12,500 gpd capacity). The unique design required detailed analysis of groundwater hydraulics and potential nitrate impacts. Questa provided complete plans and specifications and a detailed monitoring plan, maintenance and contingency provisions, as well as construction inspection. The system was completed and went into initial operation in June 1984. Subsequent maintenance/repair work was required on portions of the mound in the early 1990s to improve internal aeration of the gravel-sand bed. Currently, Questa is completing the engineering work for further expansion of the project, including additional lodging, restaurant expansion and conference facilities. The wastewater system will be upgraded to a capacity of 32,000 gpd and will include the use of an aerobic pre-treatment unit (FAST system), followed by re-use of the treated water for subsurface drip irrigation of 65 acres of vineyards.

**From:** Elizabeth Erickson
**To:** jthorsen@ci.malibu.ca.us
**CC:** asheldon@ci.malibu.ca.us; Bacharowski, David; bthornton@tdgcorp.org; ...
**Date:** 8/11/2008 3:42 PM
**Subject:** Malibu Lumber

Hello Mr. Thorsen,

We have reviewed your proposal for Malibu Lumber, which we quote at the end of this email. We do not concur that the City of Malibu can use the MOU to permit the non-restaurant portion of the Malibu Lumber, for the reasons listed below.

**(1) Quantity:** The MOU did not anticipate, and does not contain, provisions that address our concerns about increased flows into the Civic Center area and the rising water table. We note that Civic Center area dischargers frequently have underestimated flow (especially peak flows on weekends and holidays) and the assimilative capacity of the underlying groundwater. For your proposed, restricted discharge, we are concerned about your ability to keep the flow from the non-restaurant portions of the Malibu Lumber development at 1,236 gpd. We're further concerned that your lower 'base flow' assumes recycling, when in fact the discharge will be too small for the original design of the full treatment plant, which at full scale should be capable of meeting Title 22 recycling standards. (In addition, we note that you have not submitted all the materials needed by the State Dept of Public Health to complete its conceptual review of the treatment plant capabilities.) Furthermore, if you are going to rely on a simple, conventional septic system for your limited discharge, you will be unable to recycle, as the flow will not meet Title 22 standards.

(2) Quality: If you are proposing discharge through a simple septic system, it will not remove any significant amount of nitrogen, which is a source of impairment to Malibu Creek and Malibu Lagoon. See also our comments above about meeting recycling standards under Title 22.

Based on staff's review of your proposal, we do not find that the proposed system meets the requirements of the MOU, as the scope of the MOU does not consider arrangements such as the one you proposed on August 8, 2008. Finally, your use of the MOU would mean you are regulating your own discharge.

Pending the submittal of an adequate ROWD, we intend to work with you to enroll your proposed, limited discharge under Order No 01-031 - General Waste Discharge Requirements (WDR). You may view this General WDR on our Web site at http://www.waterboards.ca.gov/losangeles/board_decisions/adopted_orders/general_orders/wdr-order01-031.pdf

If you wish to proceed with a General WDR, you will need to promptly submit a Report of Waste Discharge, characterizing the volume, quality, and water quality impacts from your proposed discharge. In characterizing your proposed, limited discharge, you must, among other items:

(a) Identity users (stores, restaurants, hair salons, spas) hooked up to temporary system, and include estimates of the inputs from each tenant, consistent with your planning code and water usage trends. In addition, the estimate must include anticipated usage by off-site users, who don't have bathroom access at nearby developments (e.g. Malibu Country Mart III).

(b) Include your proposed treatment design for the limited flow;

(c) Include your proposed design for the leachfield for the limited flow, including 100% redundancy (and locations of the leachfield and redundancy area); and

(e) Provide contact information for all property owners within 500 feet of the perimeter of the Malibu Lumber and Legacy Park boundaries, so that they have opportunity to participate in a 30-day public notification period before your enrollment under the General WDR.

Pending your submittal of an adequate RoWD, our Executive Officer or Board is likely to add the following conditions and reporting requirements, among others:

- Term: The General WDR would expire if an individual WDR for larger system at Lumber/Legacy Park is not completed within 6 months.
- Cartage/Hauling/Pumping: The General WDR will not allow this. (This is not an acceptable, standard operating practice.)
- Flow restriction: The population (including off-site users) must be periodically measured, and the discharge must be metered, to demonstrate that the peak discharge does not exceed 2,000 gpd.
- Monitoring: In addition to effluent monitoring, you shall need to install a groundwater monitoring network that (a) demonstrates vertical separation of at least five feet between the bottom of the disposal system and the highest elevation of the water table, and (b) assesses any increase to the regional water table.

We shall expedite our review of your RoWD, and try to initiate a 30-day public notification period within three days of receiving your complete RoWD.

With regard to your RoWD for the larger proposed discharge (up to 17,000 gpd), we remind you that there are still critical materials that have not been submitted. Also, our legal staff needs to complete its review of CEQA issues. (Thank you for forwarding the CEQA documents late Friday.)

Call me (213 620 2264) or Rebecca (213 620 6156) if you have questions.

Best

---

to Tracy Egoscue from Jim Thorsen 8/8/08
As we discussed yesterday, here is what I am proposing and I would like to get your concurrence...

I am requesting when the buildings and tenant improvements are ready for the commercial retail spaces at the lumber yard site, that you concur the City has the ability to issue certificates of occupancy for those retail tenants (no restaurants). This request is made in conformance with our MOU with the RWQB, wherein the City shall have the lead responsibility for onsite wastewater treatment system for discharges of wastes from commercial facilities that generate less than 2,000 gallons per day. The flows for the retail component of the shopping center are estimated at 1236 gallons a day (see above calculations from Ensitu). This flow does not include any restaurant use and as you can see is well below the threshold.

It should be noted that we would like to be on the November agenda for the full WDR from the board or at least no later than December. This would ensure that your staff has ample time to determine the completeness of our application and allows our staff the ability to finalize this new design. We are in the final stages of putting together all of the data regarding the amount of wastewater flow/stormwater flow and description of how the two projects (Legacy Park and Lumber Yard) work together. In addition, in accordance with the staff recommendations, the wastewater treatment facility is being designed and constructed to meet the 3mg/l nitrogen limit and will also be Title 22 "Certified" which will allow us to spray irrigate the park at such time the park is constructed.

**From:** Elizabeth Erickson
**To:** bthornton@tdgcorp.org
**CC:** asheldon@ci.malibu.ca.us; Bacharowski, David; cgeorge@ci.malibu.ca.us;...
**Date:** 8/13/2008 2:58 PM
**Subject:** Next steps Malibu Lumber

Hello Brett,

I didn't have luck reaching you by phone today, so just wanted to make sure we are all on the same page. Jim Thorsen called me earlier to say that the City was moving ahead to provide material in support of a General WDR for a temporary, initial, reduced flow at Malibu Lumber(non restaurant <2000 gpd), while we finish gathering the information required to assess the full 17,000 gpd peak flow.

We would assess if the small project could be enrolled in the General WDR. It can be granted with out full Board review and EO approval, but includes notification of the neighbors within 500 feet and gives them 30 days to comment. We need an RoWD to begin this process.

John informed me that if you sought a GWDR, the existing plant would be installed with baffles to downsize it. This also means that you will want to resolve the remaining technical problems for the 17,000 gpd flow before you build it. The GWDR will require Board approval of the larger WDR within a specific time period.

I spoke with John Y. this morning because I will be on vacation the last week in August and he and I should move ahead on the technical details, if the GWDR is our next step. Although we have plenty of staff to carry you that week, we have all worked together up until now.

Below is a copy of the email that went to you all earlier this week.

Best.

---

Hello Jim!

We have reviewed your proposal for Malibu Lumber, which we quote at the end of this email. We do not concur that the City of Malibu can use the MOU to permit the non-restaurant portion of the Malibu Lumber, for the reasons listed below.

**(1) Quantity:** The MOU did not anticipate, and does not contain, provisions that address our concerns about increased flows into the Civic Center area and the rising water table. We note that Civic Center area dischargers frequently have underestimated flow (especially peak flows on weekends and holidays) and the assimilative capacity of the underlying groundwater. For your proposed, restricted discharge, we are concerned about your ability to keep the flow from the non-restaurant portions of the Malibu Lumber development at 1,236 gpd. We're further concerned that your lower 'base flow' assumes recycling, when in fact the discharge will be too small for the original design of the full treatment plant, which at full scale should be capable of meeting Title 22 recycling standards. (In addition, we note that you have not submitted all the materials needed by the State Dept of Public Health to complete its conceptual review of the treatment plant capabilities.) Furthermore, if you are going to rely on a simple, conventional septic system for your limited discharge, you will be unable to recycle, as the flow will not meet Title 22 standards.

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Based on staff's review of your proposal, we do not find that the proposed system meets the requirements of the MOU, as the scope of the MOU does not consider arrangements such as the one you proposed on August 8, 2008. Finally, your use of the MOU would mean you are regulating your own discharge.

Pending the submittal of an adequate ROWD, we intend to work with you to enroll your proposed, limited discharge under Order No 01-031 - General Waste Discharge Requirements (WDR). You may view this General WDR on our Web site at http://www.waterboards.ca.gov/losangeles/board_decisions/adopted_orders/general_orders/wdr-order01-031.pdf

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**From:** "Jim Thorsen" <jthorsen@ci.malibu.ca.us>
**To:** "Elizabeth Erickson" <eerickson@waterboards.ca.gov>, <bthornton@tdgcorp....
**CC:** "Andrew Sheldon" <asheldon@ci.malibu.ca.us>, "Craig George" <CGEORGE@ci....
**Date:** 8/14/2008 8:56 AM
**Subject:** RE: Next steps Malibu Lumber

Elizabeth,

Neither the City nor the Lumber Yard applicant has agreed with the General WDR permit process for the flow under 2000 gallons/day. At this time we are evaluating our options and are still gathering the data you have requested to fulfill our application requirements for an individual WDR.

At this point in time, in order to keep one main lead on this issue, it is requested that if you or other staff members have any questions or concerns, please email or call me directly as I will coordinate any response that the board staff may need. I believe that this will help speed up this lengthy process.

Jim Thorsen
City Manager
City of Malibu
23815 Stuart Ranch Road
Malibu, CA 90265-4861
Phone: 310-456-2489 x-226
Fax: 310-456-2760
Email: jthorsen@ci.malibu.ca.us

-----Original Message-----
From: Elizabeth Erickson [mailto:eerickson@waterboards.ca.gov]
Sent: Wednesday, August 13, 2008 2:58 PM
To: bthornton@tdgcorp.org
Cc: Andrew Sheldon; Craig George; Jim Thorsen; John Yaroslaski; David Bacharowski; Rebecca Chou; Tracy Egoscue; Wendy Phillips; J.J. O'Brien; Richard Weintraub
Subject: Next steps Malibu Lumber

Hello Brett,

I didn't have luck reaching you by phone today, so just wanted to make sure we are all on the same page. Jim Thorsen called me earlier to say that the City was moving ahead to provide material in support of a General WDR for a temporary, initial, reduced flow at Malibu Lumber(non restaurant <2000 gpd), while we finish gathering the information required to assess the full 17,000 gpd peak flow.

We would assess if the small project could be enrolled in the General WDR. It can be granted with out full Board review and EO approval, but includes notification of the neighbors within 500 feet and gives them 30 days to comment. We need an RoWD to begin this process.

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**From:** Elizabeth Erickson
**To:** Thorsen, Jim
**CC:** Chou, Rebecca; David Bacharowski; Egoscue, Tracy; Wendy Phillips
**Date:** 8/14/2008 10:21 AM
**Subject:** RE: Next steps Malibu Lumber
**Attachments:** Elizabeth Erickson.vcf

Thanks Jim.

Our management team hasn't had a chance to weigh in on your last email. However, I did propose that an increase in the GWDR permit flow to 3460 gpd, the original non-restaurant flow, might make sense because the 2000 gpd was based on the MOU requirements.

John Y. emailed me asking why we couldn't permit the whole 17,000 gpd under the General. As we have discussed, the technical evidence is very clear that 17,000 gpd with Legacy's 33,000 gpd is an increase of about 50% into Malibu Valley. The more extensive requirements of the individual permit have long been considered necessary for these high flows.

The General WDR idea originated from your suggestion to permit a smaller operation with the MOU. Although the MOU doesn't work, the GWDR idea is the option Board staff proposes to consider a smaller flow allowing the earlier start you requested. Otherwise, we have passed the deadlines for an individual WDR for October, and the deadlines are fast disappearing for November as well (my most recent estimate was all technical questions needed to be resolved by August 12 to give us the Board-requested 45 days of public comment before a November hearing.)

The time urgency was behind my call yesterday to John begin collaboration on the GWDR. Thanks for the email: written correspondence is always more clear. I appreciate your offer to act as a point person, and I am sure you can understand my attempts to identify our next steps quickly.

Best.

-

>>> "Jim Thorsen" <jthorsen@ci.malibu.ca.us> 8/14/2008 8:56 AM >>>
Elizabeth,

Neither the City nor the Lumber Yard applicant has agreed with the General WDR permit process for the flow under 2000 gallons/day. At this time we are evaluating our options and are still gathering the data you have requested to fulfill our application requirements for an individual WDR.

At this point in time, in order to keep one main lead on this issue, it is requested that if you or other staff members have any questions or concerns, please email or call me directly as I will coordinate any response that the board staff may need. I believe that this will help speed up this lengthy process.

Jim Thorsen
City Manager
City of Malibu
23815 Stuart Ranch Road
Malibu, CA 90265-4861
Phone: 310-456-2489 x-226
Fax: 310-456-2760
Email: jthorsen@ci.malibu.ca.us

-----Original Message-----
From: Elizabeth Erickson [mailto:eerickson@waterboards.ca.gov]
Sent: Wednesday, August 13, 2008 2:58 PM
To: bthornton@tdgcorp.org
Cc: Andrew Sheldon; Craig George; Jim Thorsen; John Yaroslaski; David Bacharowski; Rebecca Chou; Tracy Egoscue; Wendy Phillips; J.J. O'Brien;

**From:** "Jim Thorsen" <jthorsen@ci.malibu.ca.us>
**To:** "Elizabeth Erickson" <eerickson@waterboards.ca.gov>
**CC:** "David Bacharowski" <Dbacharowski@waterboards.ca.gov>, "Rebecca Chou" <R...
**Date:** 8/14/2008 10:47 AM
**Subject;** RE: Next steps Malibu Lumber

Elizabeth,

Thank you for the update. This is why I now want to be the point person as I want to clarify any questions or misconceptions that are initiated by anyone who may not have the entire picture with them.

For further clarification Legacy Park will never have 33,000 gallons per day of storm water discharge. It is anticipated that we may have up to a maximum of 7000 gallons per day during a few months of the year. This is not due to any regulatory requirement but a grant condition. We are discussing with appropriate agencies on the logic of that grant requirement. I believe what is confusing to some is that originally we anticipated that this corner of the site "could" handle up to 50,000 gal/day and the City "could' discharge up to that amount of stormwater if needed. However, we will never be discharging anywhere near that amount of stormwater.

We fully understand time requirements and plan to have all to you very shortly.

Jim Thorsen

-----Original Message-----
From: Elizabeth Erickson [mailto:eerickson@waterboards.ca.gov]
Sent: Thursday, August 14, 2008 10:22 AM
To: Jim Thorsen
Cc: David Bacharowski; Rebecca Chou; Tracy Egoscue; Wendy Phillips
Subject: RE: Next steps Malibu Lumber

Thanks Jim.

Our management team hasn't had a chance to weigh in on your last email. However, I did propose that an increase in the GWDR permit flow to 3460 gpd, the original non-restaurant flow, might make sense because the 2000 gpd was based on the MOU requirements.

John Y. emailed me asking why we couldn't permit the whole 17,000 gpd under the General. As we have discussed, the technical evidence is very clear that 17,000 gpd with Legacy's 33,000 gpd is an increase of about 50% into Malibu Valley. The more extensive requirements of the individual permit have long been considered necessary for these high flows.

The General WDR idea originated from your suggestion to permit a smaller operation with the MOU. Although the MOU doesn't work, the GWDR idea is the option Board staff proposes to consider a smaller flow allowing the earlier start you requested. Otherwise, we have passed the deadlines for an individual WDR for October, and the deadlines are fast disappearing

**From:** Elizabeth Erickson
**To:** Thorsen, Jim
**CC:** cgeorge@ci.malibu.ca.us; Chou, Rebecca; David Bacharowski; Egoscue, T...
**Date:** 9/3/2008 3:04 PM
**Subject:** GWDR ROWD application for Malibu Lumber
**Attachments:** Elizabeth Erickson.vcf

Mr. Thorsen

I received a technical package from you on August 27, 2008, which I believe constitutes an ROWD for an individual WDR for both non-restaurant and restaurant use at Malibu Lumber and an ROWD for a GWDR for non-restaurant use. I am evaluating these applications with the assumption that we would have completed public comment on the GWDR in late October, making way for non-restaurant permitting at that time. Further, the Board would hear your individual WDR on December 18, 2008. If this is not correct, please let me know as soon as possible.

In my initial evaluation of the completeness of the application for the GWDR, I find that the following items are needed:

(a) a Form 200 for the GWDR usage at 3460 gallons
(b) the annual fee for that application
(c) the addresses of neighbors within 500 feet

In the next few days I expect to provide you with a draft of a letter for you to mail out no later than September 15, 2008, announcing your application for a GWDR to the neighbors and asking for their comment. The timing is important as the close of public comments for the GWDR would be October 15, 2008, which is before we mail out the public drafts of the individual permit on October 17, 2008, to allow for a 45 day comment period before the next Board meeting on December 18, 2008.

Please let me know if you need help, or have any questions about these items, especially given the firm time constraints.

Best.

**From:** Elizabeth Erickson
**To:** Thorsen, Jim
**CC:** Bacharowski, David; bthornton@tdgcorp.org; cgeorge@ci.malibu.ca.us; C...
**Date:** 9/3/2008 4:41 PM
**Subject:** Additional questions: GWDR ROWD application for Malibu Lumber
**Attachments:** Elizabeth Erickson.vcf

Mr. Thorsen

In addition to my previous email, I have the following questions concerning the package submitted:

(1) I am assuming that all 8 AF stored in Legacy Park will now go to treatment, with none to irrigation and all irrigation will be of Lumber flows. Is this correct? I understand you wish to keep flexibility, but if some combination is anticipated, our permitting and DPH approval path would be different.

(2) The Legacy Park May TAC document shows that 33,000 gpd of dry weather flows will be percolated into a leach field and 3 exceedances of WQO are expected each year. I assume that these values must now be revised given (1). Do you have the new numbers?

(3) What ET values are used to estimate irrigation demand in the RMC document?

I look forward to your comments.

**From:** "Jim Thorsen" <jthorsen@ci.malibu.ca.us>
**To:** "Elizabeth Erickson" <eerickson@waterboards.ca.gov>
**CC:** "Craig George" <CGEORGE@ci.malibu.ca.us>, "David Bacharowski" <Dbacharow...
**Date:** 9/4/2008 10:44 AM
**Subject:** RE: GWDR ROWD application for Malibu Lumber

Elizabeth,

Welcome back and thank you for the email acknowledging receipt of the technical package. The technical information I sent is for an individual WDR. If all information has been received and the project is complete we would like to schedule a permit hearing with the Board as soon as feasible. The Dec. 18th date is acceptable with us. If not, please let me know what else you need to deem the application complete.

As I stated in a previous email to Tracy on August 14th, the City is working under the agreed MOU and since the flow from the site will be limited to less than 2000 gallons per day with no restaurant use, the City will be the designated Qualified Local Agency. The City accepts it responsibility with firm commitment and will require this project phase to comply with Board Order No. 01-031 General Waste Discharge Requirements for Small Commercial and Multifamily Residential Subsurface Sewage Disposal Systems in accordance with the MOU. The City acknowledges that Regional Board is the lead for this project when the waste stream includes high strength restaurant waste or at anytime daily flows exceeds 2000 gallons. With these in mind, we are in full compliance with the MOU. We fully concur and recognize that this system will need to come before the Board for an individual WDR prior to the project ever discharging effluent that exceeds 2,000 gallons per day. At such time an individual permit is issued, the City will relinquish our QLA status.

Although I thought this was clear in my previous email, we are not requesting a GWDR and are only seeking approval of an individual WDR.

Sincerely,

Jim Thorsen

City Manager

City of Malibu

23815 Stuart Ranch Road

**From:** "Jim Thorsen" <jthorsen@ci.malibu.ca.us>
**To:** "Elizabeth Erickson" <eerickson@waterboards.ca.gov>
**CC:** "Craig George" <CGEORGE@ci.malibu.ca.us>, "John Yaroslaski" <JYaroslaski...
**Date:** 9/4/2008 10:49 AM
**Subject:** RE: Additional questions: GWDR ROWD application for Malibu Lumber
**Attachments:** WATER USE ESTIMATE V.2 4-30-08.pdf

(1) I am assuming that all 8 AF stored in Legacy Park will now go to treatment, with none to irrigation and all irrigation will be of Lumber flows. Is this correct? I understand you wish to keep flexibility, but if some combination is anticipated, our permitting and DPH approval path would be different. No. The City is looking to maximize the re-use of urban runoff/stormwater for irrigation. The priority will be to utilize effluent first and then use treated runoff/stormwater second. All stormwater that will be used for irrigation will be fully treated through the City's stormwater treatment plant prior to re-use as irrigation. It should be noted that using stormwater runoff for irrigation was very critical to Heal the Bay and to our TAC as it is felt this resource is too valuable to discharge to the Creek.

(2) The Legacy Park May TAC document shows that 33,000 gpd of dry weather flows will be percolated into a leach field and 3 exceedances of WQO are expected each year. I assume that these values must now be revised given (1). Do you have the new numbers? The TAC document showing 33,000 gpd was an early iteration where it was believed that it might be best to infiltrate stormwater rather than to treat and release it to the Creek. This iteration has been superseded and the design now reflects that there will be no (zero) stormwater percolated into a leach field at all. As I mentioned in a previous email, we have adjusted our operation of the pond to eliminate the need for percolation. It is further noted that the 33,000 was believed to be the capacity of the leach field, not the amount of dry weather flow. We have conservatively estimated that the dry weather flow is approx. 7,000 gpd. Our records from the stormwater treatment facility demonstrate that the actual numbers are much less.

As to the number of exceedances, that has not changed. Below is a chart to show the number of detention pond AF vs. the # of discharge events per year that exceed the detention pond capacity based upon a 57 year rainfall history.

* Without a pond for storage, there would be ~15.5 events/year that exceed the Stormwater Treatment Facility (SWTF) capacity.

* With 4 AF of pond storage, there will be an avg. of 5.2 events/year that exceed the SWTF (This size pond allows full compliance with the bacteria TMDL for every year in the last 57 years of data collection).

* We have doubled the size to 8 AF and estimate there would be an avg. of 3 rainfall events/yr that may exceed treatment abilities. The 8 AF insures a large margin of redundancy to ensure we are well

below TMDL regulations).

* Finally, even if you increase the pond size to 24 AF, you only reduce the # of event exceedences by 1. The graph is illustrative of the diminishing returns on having an extremely large pond.

(3) What ET values are used to estimate irrigation demand in the RMC document? See attachment.

Jim Thorsen

City Manager

City of Malibu

23815 Stuart Ranch Road

Malibu, CA 90265-4861

Phone: 310-456-2489 x-226

Fax: 310-456-2760

Email: jthorsen@ci.malibu.ca.us

-----Original Message-----
From: Elizabeth Erickson [mailto:eerickson@waterboards.ca.gov]
Sent: Wednesday, September 03, 2008 4:41 PM
To: Jim Thorsen
Cc: Craig George; John Yaroslaski; bthornton@tdgcorp.org; David Bacharowski; Rebecca Chou; Tracy Egoscue; Wendy Phillips; J.J. O'Brien
Subject: Additional questions: GWDR ROWD application for Malibu Lumber

Mr. Thorsen

In addition to my previous email, I have the following questions concerning the package submitted:

California Regional Water Quality Control Board
Los Angeles Region

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.waterboards.ca.gov/losangeles

Linda S. Adams
*Cal/EPA Secretary*

Arnold Schwarzenegger
*Governor*

September 5, 2008

Mr. Jim Thorsen
Manager, City of Malibu
23815 Stuart Ranch Road
Malibu, CA 90265-4861

Mr. John J. O'Brien
Malibu Lumber LLC
C/o Weintraub Financial Services Inc.
P.O. Box 6528
Malibu, CA 90264

Dear Mr. Thorsen and Mr. O'Brien:

**NOTIFICATION OF INCOMPLETE APPLICATION FOR WASTE DISCHARGE REQUIREMENTS, WEINTRAUB FINANCIAL-MALIBU LUMBER PLAZA, 23641 PACIFIC COAST HIGHWAY, (FILE NO. 08-019), MALIBU, CALIFORNIA**

The Los Angeles Regional Water Quality Control Board (Regional Board) staff received your Report of Waste Discharge (ROWD) on August 27, 2008 for a development at 23419 West Pacific Coast Highway, including documentation describing the operation of this facility at 1,931 gallons per day (gpd). We understand that you intend to construct the treatment plant and begin disposal at reduced volume for non-restaurant flow without receiving Waste Discharge Requirements (WDR), as directed by this Regional Board.

As we have stated previously, we have determined that any discharge from this facility without a WDR or enrollment under a General WDR, and especially based on our Memorandum of Understanding, is not consistent with protection of water quality and beneficial use objectives in the Civic Center area of Malibu. Should the Weintraub Financial-Malibu Lumber Plaza open without a WDR, the Regional Board may, without further notice, take enforcement action for illegal discharge.

## Background

We received your email on September 4, 2008, stating your intention to operate this facility under a Memorandum of Understanding between our agencies:

> "As I stated in a previous email to Tracy on August 14th, the City is working under the agreed MOU and since the flow from the site will be limited to less than 2000 gallons per day with no restaurant use, the City will be the designated Qualified Local Agency. The

> City accepts it responsibility with firm commitment and will require this project phase to comply with Board Order No. 01-031 General Waste Discharge Requirements for Small Commercial and Multifamily Residential Subsurface Sewage Disposal Systems in accordance with the MOU. The City acknowledges that Regional Board is the lead for this project when the waste stream includes high strength restaurant waste or at anytime daily flows exceeds 2000 gallons. With these in mind, we are in full compliance with the MOU. We fully concur and recognize that this system will need to come before the Board for an individual WDR prior to the project ever discharging effluent that exceeds 2,000 gallons per day. At such time an individual permit is issued, the City will relinquish our QLA status. "

Your actions conflict with the comments we provided via email on August 11, 2008, that the project could not be covered under the MOU:

> "We do not concur that the City of Malibu can use the MOU to permit the non-restaurant portion of the Malibu Lumber, for the reasons listed below. (1) Quantity: The MOU did not anticipate, and does not contain, provisions that address our concerns about increased flows into the Civic Center area and the rising water table. We note that Civic Center area dischargers frequently have underestimated flow (especially peak flows on weekends and holidays) and the assimilative capacity of the underlying groundwater. For your proposed, restricted discharge, we are concerned about your ability to keep the flow from the non-restaurant portions of the Malibu Lumber development at 1,236 gpd. We're further concerned that your lower 'base flow' assumes recycling, when in fact the discharge will be too small for the original design of the full treatment plant, which at full scale should be capable of meeting Title 22 recycling standards. (In addition, we note that you have not submitted all the materials needed by the State Dept of Public Health to complete its conceptual review of the treatment plant capabilities.) Furthermore, if you are going to rely on a simple, conventional septic system for your limited discharge, you will be unable to recycle, as the flow will not meet Title 22 standards. (2) Quality: If you are proposing discharge through a simple septic system, it will not remove any significant amount of nitrogen, which is a source of impairment to Malibu Creek and Malibu Lagoon. See also our comments above about meeting recycling standards under Title 22."
>
> "Based on staff's review of your proposal, we do not find that the proposed system meets the requirements of the MOU, as the scope of the MOU does not consider arrangements such as the one you proposed on August 8, 2008. Finally, your use of the MOU would mean you are regulating your own discharge."
>
> "Pending the submittal of an adequate ROWD, we intend to work with you to enroll your proposed, limited discharge under Order No 01-031 – General Waste Discharge Requirements (WDR). You may view this General WDR on our Web site at http://www.waterboards.ca.gov/losangeles/board_decisions/adopted_orders/general_orders/wdr-order01-031.pdf "

## Discussion

The additional material you provided, on August 27, 2008, gives additional technical support to our finding that the discharge does not meet the conditions required in the MOU:

- The calculation of non-restaurant discharge flows less than 1,931 gpd is inadequately supported because it is based on average conservation flows when peak usage will determine maximum flows.

- The engineering documentation of a 17,000 gpd system does not contain any description of how the large system will operate at the proposed low levels.

- The project discharges to and will affect the performance of a leachfield in Malibu's Legacy Park without a public process to ensure that regional flows from many users served by the Park will be adequately managed.

Further, during our assessment of the Weintraub Financial-Malibu Lumber site, Regional Board staff determined that the Civic Center area of the Malibu Valley currently has more subsurface discharge than can be assimilated while maintaining 5-10 feet of separation between groundwater and the bottom of any new leachfield under the most critical wet weather conditions when stormwater will be present. These conditions have been exacerbated by past and/or existing public policies of the City of Malibu, including an emphasis on septic systems for waste disposal, a plumbing code that allows less separation during critical wet weather, and planning policies which do not fully consider cumulative effects. New use and disposal in the Civic Center area, even with high levels of treatment, is predicted to cause the failure of the existing older septic systems and increased bacteria discharge from flooded leachfields. Of further concern, you reported that the City has recently abandoned plans for a wastewater treatment system to replace leachfields in the Civic Center area.

The Regional Board staff concludes that the addition of new or increased discharges, like that proposed for Weintraub Financial-Malibu Lumber Plaza, should be allowed only when coupled with other measures to reduce bacteria and nutrient loading to Malibu Creek and Lagoon, which are impaired for these constituents and subject to Total Maximum Daily Loads. Legacy Park or other stormwater control mechanisms are projected to enhance bacteria and nutrient conditions in the Civic Center and could offset the projects impact. However, Weintraub Financial-Malibu Lumber Plaza discharges may affect the operations of Legacy Park and will not be monitored and protected by the Regional Board if it is permitted by the City, despite the potential for unsuccessful operation to result in impact to public health and safety.

Next Steps

We are unable to proceed with our preparation of a General WDR for non-restaurant use until you submit:

- Form 200 for reduced flow
- GWDR permit fee, and
- A list of neighbors within 500 feet.

Should we receive the documents described above, we may be able to allow non-restaurant use to begin by the end of October, and the individual WDR Malibu Lumber and Legacy Park projects to be heard by the Regional Board on December 18, 2008.

We look forward to your comments and appreciate your assistance in providing the necessary information in a timely fashion. If you have any questions, please call Elizabeth Erickson at (213) 620-2264.

Sincerely,

Tracy J. Egoscue
Executive Officer

cc: Mr. Craig George, Mr. Granville Bowman, Mr. Andrew Sheldon, City of Malibu
Mr. Don Schmitz, Schmitz and Associates, Inc.
Mr. John Yaroslaski, Ensitu Engineering, Inc.
Mr. Pio Lombardo, Lombardo Engineering, Inc.
Chi Diep, CA Dept. of Public Health Drinking Water Program

**From:** Elizabeth Erickson
**To:** Thorsen, Jim
**CC:** asheldon@ci.malibu.ca.us; Bacharowski, David; Bowman, Bow; bthornton@...
**Date:** 9/9/2008 11:43 AM
**Subject:** Upcoming dates: Malibu Lumber
**Attachments:** Elizabeth Erickson.vcf

Hello Jim,

Just turning my attention back to Lumber and Legacy and wanted to give you some upcoming dates.

For a Lumber opening before December, with the GWDR, we should get out a notification letter to the neighbors by this coming Monday. We have a letter being finalized for your distribution and I want to be ready if you decide to proceed. Do you need help assembling neighbor contact information?

Best.

Here's the details.....

Sep 15, 2008: City mail out notification to neighbors for 30 day review
Sep. 28, 2008: City of Malibu certifies EIR revision to satisfy RB legal counsel on CEQA compliance Legacy and Lumber
Sep 30, 2008: Receive conceptual approval of Title 22 Engineering Report for restaurant use and irrigation at Legacy Park.
Oct. 15, 2008: Close of neighbor comments on GWDR
Oct 17, 2008: Mail out Individual WDR and MRP for public comment (45 days)
Oct. 20, 2008: Possible date of signature of GWDR permit for non-restaurant use
Dec 1, 2008: Receive approval of Final Title 22 Engineering report submittal to DPH for Lumber with restaurant use
Dec 1: Close of public comment on Individual WDR
Dec 5: mail out of Agenda package and all Board documents including response to public comments.
Dec 18, 2008: Board meeting with consideration of individual WDR for restaurant use

# City of Malibu

23815 Stuart Ranch Road • Malibu, California • 90265-4861
Phone (310) 456-2489 • Fax (310) 456-7650 • www.ci.malibu.ca.us


September 12, 2008

Tracey Egoscue
Los Angeles Regional Water Quality Control Board
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

RE: 23641 Pacific Coast Highway
Malibu Lumber

Dear Ms. Egoscue:

I am in receipt of your letter dated September 5, 2008. The City of Malibu understands your concern, but disagrees with your assertation that discharges from this facility without a WDR or enrollment under a General WDR, and especially based on our Memorandum of Understanding, is not consistent with protection of water quality and beneficial use objectives in the Civic Center area of Malibu. The City respectfully contends that the Memorandum of Understanding confers a limited authority on the City and believes that it is within that authority for the City to permit an OWTS for non-food related commercial facilities that generate 2000 gallons per day or less. The City intends to confine its actions, reviews, and permitting of the reduced volume non-restaurant flow to that which is consistent and fully compliant with the MOU, RWQB Order No. 01-031, and will protect water quality and beneficial use objectives in the Civic Center area.

Background and Discussion

The City of Malibu and the Los Angeles Regional Water Quality Control Board entered into a Memorandum of Understanding on August 4, 2004. This agreement was created through collaborative negotiations and constructive dialogue between the City and Board staff. Both the Board and the City Council approved the MOU in the good faith belief that the MOU was consistent with the protection of water quality and beneficial use objectives for all areas of Malibu. The MOU is still in effect and the parties continue to abide by its terms.

As stated in Section III. of the MOU: "It is the joint goal of the City of Malibu and the Regional Board to protect the water quality and public health. This MOU is intended to assist in the creation of a partnership between the City of Malibu and the Regional Board to provide protection of water quality and public health in areas where onsite wastewater treatment systems are utilized."

Section IV.1 of the MOU states, "This MOU is applicable for all [emphasis added] onsite wastewater treatment systems within the City of Malibu's jurisdiction." The MOU is effective for every parcel of

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land and every project in the City. It does grant the City or the Board the ability to apply individual exceptions for projects or property within the Civic Center area.

Section IV.2.d states: "The City of Malibu shall have lead responsibility for onsite wastewater treatment systems that.... (d). discharge waste from non-food related commercial facilities that generate 2000 gallons per day or less". The Lumber Yard applicant has submitted sufficient engineering calculations to demonstrate that it will meet this requirement. The City will monitor the flow from the site to ensure compliance with this and all conditions. In accordance with the MOU, if the flows exceed 2000 gpd, the site would be subject to a WDR from the RWQB.

Below are the reasons you have stated that this project does not conform to the MOU and our response to each of the comments:

1. *The calculation of non-restaurant discharge flows less than 1,931 gpd is inadequately supported because it is based on average conservation flows when peak usage will determine maximum flows.*

   **City's Response: The calculation of non-restaurant discharge flows is based upon peak usage flows during summer months. Please refer to section 5.1ee attached clarification letter from the design engineer. In addition, the site will be monitored for compliance.**

2. *The engineering documentation of a 17,000 gpd system does not contain any description of how the large system will operate at the proposed low levels.*

   **City's Response: The City will ensure through the plan check and construction process that the system will operate at the proposed low levels to meet water quality standards. The design engineer has stated that minor design and operational changes can be implemented to ensure system compliance for low flows.. The City will permit the project only if and when it is satisfied that these conditions can and well be met.**

3. *The project discharges to and will affect the performance of the leachfield in Malibu's Legacy Park without a public process to ensure that regional flows from many users served by the Park will be adequately managed.*

   **City's Response: Legacy Park will not have restrooms and will not disperse stormwater into the ground and therefore it will not affect performance of the lumber yard percolation area. The Lumber Yard project has designed restroom facilities in accordance with City codes, applicable health codes, and has been approved through a public process. In addition, a public hearing will be held with the RWQB at such time that the individual WDR is scheduled for review.**

In addition, you provided the following statements: *Further, during our assessment of the Weintraub Financial-Malibu Lumber site, Regional Board staff determined that the Civic Center area of the Malibu Valley currently has more subsurface discharge than can be assimilated while maintaining 5-10 feet of separation between groundwater and the bottom of any new leachfield under the most critical wet weather conditions when stormwater will be present. These conditions have been exacerbated by past and/or existing public policies of the City of Malibu, including an emphasis on septic systems for waste disposal, a plumbing code that allows less separation during critical wet weather, and planning policies which do not fully consider cumulative effects. New use and disposal*

*in the Civic Center area, even with high levels of treatment, is predicted to cause the failure of the existing older septic systems and increased bacteria discharge from flooded leachfields. Of further concern, you reported that the City has recently abandoned plans for a wastewater treatment system to replace leachfields in the Civic Center area.*

City's Response: The City has not been provided with any scientific studies or evidence that the Civic Center area has more subsurface discharge than can be assimilated. Nor has any scientific evidence been brought forward to show groundwater elevations are rising as alleged in a previous email. Further, it is noted at the urging of the RWQB, the City has hired Stone Environmental to conduct a regional groundwater study to evaluate and model these concerns.

The City takes great umbrage to the misrepresentation that the City's policies have lead to the exacerbation of groundwater separation issues during wet weather. I would really like to be clear on this issue, the Lumber Yard project is the first commercial development within the civic center area to be permitted by the City since incorporation in 1991. However, even this project is a remodel and has the same commercial square footage as the previous building. In addition, there have been virtually no residential homes constructed within the region. The City has enacted some of the most stringent wastewater treatment system criteria in the State in addition to our bans on plastic bags, polystyrene, and cigarette smoking on beach. Our Point of Sale ordinance and wastewater permitting regulations further reflect our commitment to clean water.

Finally, the City has never reported that we are abandoning plans for a regional wastewater treatment system to replace leachfields. In fact, nothing could be further from the truth. The City has already spent a great deal of funds doing preliminary investigation and preparing preliminary designs for 3 different alternative types of treatment systems. The next and final phase of Legacy Park will include the final design of the wastewater system, completion of an EIR, acquisition of site, assessment district formation, and State Revolving Fund Loan application/approval.

Conclusion

The Regional Water Quality Board and the City of Malibu entered into an agreement in August of 2004. The lumber yard project has been designed to generate flows under 2000 gpd and therefore in accordance with Section II of the MOU, the City of Malibu is the Qualified Local Agency. Further, in accordance with Section V.6., the City of Malibu will only issue permits for the commercial systems specified in section IV.2.d. if it has been found to be in accordance with Regional Board Order No. 01-031.

It is anticipated that this project will soon have a WDR hearing before the Board in order that the final phase of construction (restaurant use) can be permitted. The City looks forward to working cooperatively with the Regional Board in connection with the WDR for the restaurant portion of the project.

Finally, I will state that, upon your request, the City agreed to perform a regional ground water modeling study for the civic center area, which we undertook at great expense to the City. The City agreed to do the study based on your assurance that the applicant would be able to construct and open for business prior to the study results, which would lag the opening of the site by several months. We both recognized





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that this verbal agreement would be beneficial in order to avoid delay of this project which will generate lease revenue that will be used to help fund our Legacy Park project and provide the water quality benefits the RWQB has been seeking.

Sincerely

Jim Thorsen
City Manager

Attachments: September 5, 2008 letter from RWQB

cc: Honorable Mayor and City Councilmembers
Richard Weintraub, Weintraub Financial Services, Inc.





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# California Regional Water Quality Control Board
## Los Angeles Region

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.waterboards.ca.gov/losangeles

Linda S. Adams
*Cal/EPA Secretary*

Arnold Schwarzenegger
*Governor*


September 17, 2008

Mr. Jim Thorsen
Manager, City of Malibu
23815 Stuart Ranch Road
Malibu, CA 90265-4861

Mr. John J. O'Brien
Malibu Lumber LLC
C/o Weintraub Financial Services Inc.
P.O. Box 6528
Malibu, CA 90264

Dear Mr. Thorsen and Mr. O'Brien:

**NOTIFICATION OF PENDING REPORT OF WASTE DISCHARGE FOR HIGH-FLOW WASTE DISCHARGE REQUIREMENTS, WEINTRAUB FINANCIAL-MALIBU LUMBER PLAZA, 23641 PACIFIC COAST HIGHWAY, (FILE NO. 08-019), MALIBU, CALIFORNIA**

This is to acknowledge your letter to me dated September 12, 2008. My September 5, 2008 letter to you and Mr. O'Brien stated that the application for low-flow waste (1,931 gallon per day [gpd]) discharge requirements (WDRs) for the Weintraub Financial-Malibu Lumber Plaza was incomplete. We are in receipt of the technical material you sent on August 27, 2008, and are reviewing this material to determine if it constitutes a complete Report of Waste Discharge (ROWD) for the high-flow (17,000 gpd) WDR.

As of this date, your application for the high-flow waste discharge requirements for Weintraub Financial-Malibu Lumber Plaza is incomplete.

Sincerely,

Tracy J. Egoscue
Executive Officer

cc: Mr. Craig George, Mr. Granville Bowman, Mr. Andrew Sheldon, City of Malibu
Mr. Don Schmitz, Schmitz and Associates, Inc.
Mr. John Yaroslaski, Ensitu Engineering, Inc.
Mr. Pio Lombardo, Lombardo Engineering, Inc.
Chi Diep, CA Dept. of Public Health Drinking Water Program

# City of Malibu

23815 Stuart Ranch Road • Malibu, California • 90265-4861
Phone (310) 456-2489 • Fax (310) 456-7650 •www.ci.malibu.ca.us

September 27, 2008

Tracey Egoscue
Los Angeles Regional Water Quality Control Board
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

RE: Notice of Intent to Terminate MOU

Dear Ms. Egoscue:

I write in response to your letter to me dated September 19, 2008. The letter purports to be notice of the Board's intent to terminate the Memorandum of Understanding between the LA Region of the RWQCB and the City regarding on-site wastewater treatment systems (MOU); however, as you acknowledge, pursuant to Paragraph IX of the MOU, "[t]he *Regional Board* shall make any determination to terminate the MOU at a publicly noticed hearing." At such public hearing, should the Regional Board determine that it wishes to terminate the MOU, Paragraph IX further provides that the Regional Board shall give 30 days prior written notice to the City before such termination takes effect.

The Regional Board has neither met nor made a determination to terminate. Your purported notice on behalf of the Board is unauthorized, premature and of no legal effect under the terms of the MOU. It is certainly the Regional Board's right to terminate the MOU; but, when this comprehensive agreement was negotiated years ago, the parties foresaw that there were multiple consequences of termination and various stakeholders affected, and therefore they expressly vested in the *Regional Board*, not its staff, the authority to terminate, following a public hearing.

Regrettably, your letter appears to be a reaction to the City's unwillingness to agree to have the Regional Board be the lead agency for the OWTS for the first phase of the Lumber Yard project, consisting of non-food commercial facilities that generate 2000 gallons per day or less. As you know, Paragraph IV of the MOU provides that the City has the lead responsibility for such systems, unless the Regional Board and the City agree otherwise. You have made clear your desire to assume responsibility for that OWTS and the City has elected instead to exercise the authority delegated to it under the MOU.

Termination of the MOU, of course, will transfer back to the Regional Board the responsibility for all OWTS in the City, not just the one in the civic center for which you have expressed such an interest in assuming responsibility. Currently, due to upgrades, remodels, new construction and city performance requirements, the City reviews around 400 such systems per year. Termination of the MOU will also affect the understanding between the City and the Regional Board with respect to numerous measures

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that the City has undertaken as an obligation of the MOU. For these reasons, the City is surprised that you would place such little value on the partnership between the City and the Board as memorialized in our MOU. We will await the determination of the Regional Board in that regard.

Finally, the City is concerned that your previous role as the Executive Director of the Santa Monica Baykeeper and prior advocacy on these matters is evidence of bias (*Nasha L.L.C. v. City of Los Angeles,* (2004) 125 Cal.App.4th 470) and creates a constitutionally impermissible appearance and risk of bias (*Haas v. County of San Bernardino* (2002) 27 Cal.4th 1017). Your participation in these decisions taints the Regional Board's process and denies the City and its residents an unbiased decisionmaker.

Sincerely,

James E. Thorsen
City Manager

cc: Mayor Conley Ulich and Honorable Members of the Malibu City Council
Richard Weintraub, Weintraub Financial Services, Inc.





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**State of California**
**California Regional Water Quality Control Board, Los Angeles Region**

**Resolution No. 98-023: Malibu Creek Watershed**

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) finds:

1. Malibu Creek drains a watershed of 109 square miles which includes the communities of Calabasas, Agoura Hills, portions of Thousand Oaks, Westlake Village, unincorporated portions of Los Angeles County, portions of Malibu, and a small portion of Ventura County.

2. Land use in the Malibu Creek watershed is in transition, with increasing urbanization in headwater areas. In addition, the net importation of water to serve growing urban areas has altered the water balance in the watershed.

3. Water resources in the Malibu Creek watershed are degraded by pollutants from several sources, including but not limited to: runoff from urban areas and rural residential areas zoned for horses; wastewaters discharged from the Las Virgenes Municipal Water District's Tapia Water Reclamation Facility; stormwater runoff; and wastewaters discharged from septic systems.

4. Malibu Lagoon is located at the mouth of the watershed; this lagoon supports sensitive and endangered species. The historic size of the lagoon has been significantly reduced from urban encroachment; as a result, valuable habitat has been lost. The lagoon is in close proximity to septic systems, and is subject to rising water levels following closure of the lagoon with the natural establishment of a barrier sand berm during summer months. During wet periods or due to flows from various sources in the Malibu watershed, formation of the barrier berm may be delayed or, once formed, may exist for a shorter period. The berm may be breached naturally, due to high water levels, or due to unsanctioned artificial methods.

5. In addition to nutrients and other pollutants in discharges from septic systems, Malibu Lagoon receives loadings of nutrients from other sources in the watershed, including but not limited to wastewaters from the Tapia Water Reclamation Facility, runoff from the corrals of numerous domesticated animals living in the watershed, and from wildlife including birds that inhabit the lagoon area.

6. Due to the contribution of various pollutants, Malibu Creek and Lagoon have been formally designated by the Regional Board as "impaired waterbodies," pursuant to section 303(d) of the federal Clean Water Act, such listing also being adopted by

the State Water Resources Control Board and the United States Environmental Protection Agency.

7. The ocean beaches along the City of Malibu also are designated as impaired under section 303(d) of the Clean Water Act, due to the presence of harmful bacteria that pose a health threat to humans engaged in waterborne recreation.

8. The ocean beaches in the City of Malibu are widely considered by recreational enthusiasts to possess qualities that rank some beaches in Malibu, including but not limited to Surfrider Beach, as preeminent surfing beaches in the world.

9. Surfrider Beach is routinely rated a grade of "F" by the environmental advocacy organization Heal the Bay, based on bacterial pollution levels provided by monitoring conducted by several public agencies.

10. Information collected by the City of Malibu on groundwater monitoring wells located adjacent to Malibu Creek and Lagoon, and collected in mid-1997, show high levels of enterococcus, fecal and total coliform in groundwater.

11. Prior to its incorporation in 1991, the City of Malibu was unincorporated land in the County of Los Angeles. Neither the County of Los Angeles nor the City of Malibu have constructed a centralized wastewater collection system. In most cases, residents and businesses continue to rely upon septic systems (also referred to as private sewage disposal systems) for treatment and disposal of wastewaters.

12. In the late 1980s and early 1990s, the County of Los Angeles engaged in studies and efforts and ultimately approved the establishment of a sewage treatment strategy for the Malibu community that would create a sewer line to convey wastewater generated in the community to the Hyperion Treatment Plant. This effort was to have been financed through the creation of County Improvement District No. 2640R and Integrated Financing District No. 1.

13. Subsequent to the formation of these districts, the Malibu Township Council filed suit against the County of Los Angeles seeking to enjoin the County from the construction of a sewer line to serve its residents. This suit was subsequently consolidated with an action by additional petitioners in the community of Malibu and with a separate proceeding filed by the California Coastal Commission.

14. The above referenced litigation was settled by the parties on July 1, 1993, with the stipulation that the County would cease efforts to design and construct wastewater disposal systems to serve the residents of the City of Malibu.

15. The settlement agreement between the City of Malibu and the County of Los Angeles and other parties was expressly premised on the City of Malibu's commitment to adopt, implement. and enforce necessary measures, ordinances, and

regulations, to assure that wastewater disposal and/or management practices are consistent with the public health and safety...as determined in the judgment of the City Council reasonably exercised," and further, that the settlement agreement provides that such ordinances would be implemented and enforced in full compliance with any applicable requirements of the California Regional Water Quality Control Board.

16. In recognition of wastewater management and environmental problems, the City of Malibu contracted a study published in 1992, hereinafter known as the "Warshall Report," which documented many of the concerns and water quality problems associated with the watershed. To date, the City has not fully implemented recommendations in the Warshall Report.

17. On March 2, 1998, the environmental advocacy group Baykeeper petitioned the Regional Board to issue a Cleanup and Abatement Order to the City of Malibu requiring the City of Malibu to: (1) begin an immediate investigation of septic systems in the Malibu Coastal Zone, (2) immediately order the City of Malibu to conduct and submit monitoring and sample effluent reports of storm water drains, and (3) remedy discharges from hazardous and ineffective septic systems.

18. On May 18, 1998 at a regularly scheduled Board meeting, the Regional Board discussed options to regulate discharges from septic systems. Also at this meeting, the Regional Board adopted Resolution No. 98-11, recognizing the lack of adequate funding for the Regional Board to effectively address the problem of contamination from septic systems in this Region, and requested support from the State Water Resources Control Board's Cleanup and Abatement Account. This funding request has not been approved to date, and other subsequent efforts to obtain funding from the State Board for regulatory oversight of septic systems has been unsuccessful.

19. On June 10, 1998, the Regional Board directed the City of Malibu to undertake a technical investigation of water quality impacts from septic systems in densely populated portions of the city of Malibu, pursuant to Section 13267 of the California Water Code. This directive required submittal of a workplan by July 10, 1998.

20. On June 10th, the Malibu City Attorney wrote a letter denying responsibility for any septic system discharges and questioning the Regional Board's authority to direct the City of Malibu to conduct a study pursuant to Section 13267.

21. On July 8, 1998, Counsel for the Regional Board responded to the City of Malibu's letter and reasserted the Regional Board's claim and authority to require a completion of a technical investigation by the City of Malibu.

22. On August 21, 1998, the Regional Board extended the deadline for submittal of a workplan for the technical investigation to September 30, 1998.

23. The City of Malibu failed to submit a workplan to the Regional Board on September 30, 1998.

24. In response to the City's failure to submit a workplan as directed, the Executive Officer of the Regional Board issued a Notice of Violation to the City of Malibu on October 16, 1998.

25. The City of Malibu responded to the Notice of Violation in a letter from the City Mayor on October 29, 1998. In this letter, the City of Malibu raises a number of concerns regarding the technical scope of the study, the Regional Board's authority to require the study to be conducted, and the source of financing the study. The overall sense of the letter is that without a resolution of these issues, the workplan originally required to be submitted by the Regional Board on July 10th and subsequently extended to September 30, 1998, will not be forthcoming.

**Therefore, be it resolved that:**

1. The Regional Board directs the Executive Officer to ensure that existing or additional package treatment plants in the Malibu Creek watershed are constructed and operated to ensure that they meet the highest practical standards to treat wastewater, and that such discharges do not contribute to the creation of conditions that would exacerbate the transmission of pollutants from existing septic systems in such a manner as to result in a violation of water quality objectives.

2. The Regional Board directs the Executive Officer to prepare and issue a complaint for civil liability against the City of Malibu for failure to submit a workplan by the required date.

3. The Regional Board directs the Executive Officer to undertake such to require the submittal of Reports of Waste Discharges for all existing discharges from multi-family and commercial septic systems located in the Malibu Creek Watershed, and to require such applicants for waste discharge requirements to conduct all necessary studies required to evaluate cumulative impacts on receiving waters from these wastes and to require the installation of upgrades to these systems as necessary to ensure achievement of water quality objectives in the *Water Quality Control Plan for the Los Angeles Region.*

4. The Regional Board directs the Executive Officer to prepare for the consideration of this Board, following adequate notice, a proposal for the prohibition of all future discharges from septic systems in the City of Malibu, and the termination of discharges from existing septic systems within the City of Malibu following an adequate period of time to allow for the provision of an alternative wastewater disposal system.

I, Dennis A. Dickerson, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on December 14, 1998.

_____
Dennis A. Dickerson
Executive Officer

Item 16
Consideration of Termination of City of Malibu's MOU
Response to Written Comments

| Commenter | Date of Letter/ Date Received | Comment Summary | Response |
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| Koss Real Estate Investment | October 8, 2008/ October 10, 2008 | 1. This is in response to Malibu Country Mart's NOV. Proposing a centralized treatment system for the Civic Center area.<br>2. Volunteers to help in the technical and financial support of a centralized system. | Thank you for your input on the water quality issues in the Civic Center area and appreciate your efforts to comply with the Regional Board's requirements. We acknowledge your suggestion that a centralized wastewater treatment system would be a favorable solution to improve water quality in the Civic Center area and are grateful for your decision to aid financially in the project. |
| Heal the Bay | October 21, 2008/ October 21, 2008 | 1. Acknowledges the water quality problems in the Civic Center that will become worse with additional discharge from new dischargers, such as Malibu Lumber<br>2. Proposes a moratorium on all new OWTS in the Civic Center area to remain active until a comprehensive wastewater treatment plant is in place.<br>3. Termination of the MOU won't be as effective as a moratorium on the OWTS. | Thank you for your comments on the Tentative Resolution to Consider Termination of the MOU with the City of Malibu. We are well aware that the conditions in the Civic Center area will only worsen with new discharges in this area. A moratorium on the septic systems in the Civic Center area is one of the options for Regional Board consideration. |
| City of Malibu Wastewater Advisory Committee | October 24, 2008 via e-mail October 24, 2008 | 1. City has complied with its obligation with respect to the MOU.<br>2. City requires operating permits and implemented Point of Sale Ordinance.<br>3. Termination of the MOU will delay the processing of approximately 380 applications per year for OWTS.<br>4. City may not be able to keep septic systems in compliance without MOU. | We acknowledge that the City has tried to comply with its obligations regarding the MOU. We realize that service to the public is the paramount goal for both the City and the Regional Board and please be assured that the Regional Board will take into consideration all options so that we can serve the public and maintain our mission of protecting water quality. |

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| Santa Monica Bay keeper | October 24, 2008 Via e-mail October 24, 2008 | 1. Supports the resolution to terminate MOU because Malibu failed to fulfill its obligations as prescribed by the MOU.<br>2. City cannot solve its water quality problems. | We acknowledge your statements as to how the City has failed in its obligations to improve water quality. Although the staff initially recommended termination of the MOU, staff now recommends renegotiation to address Regional Board concerns. |
| Jenkins & Hogin, LLP | October 26, 2008 Via e-mail October 26, 2008 | General comment<br>1. Summarizes how the City has complied with the Interim Measures as provided for in the MOU.<br>2. Points out the challenges offered by terminating the MOU.<br>3. Disputes findings in the resolution | General Response:<br>We acknowledge receipt of additional information pertaining to the City's compliance with the requirements of the MOU. Some of the issues raised pertain to the issuance of WDR for Malibu Lumber which should be deferred to the Regional Board's December meeting.<br>Regional Board staff has changed its recommendation from termination of the MOU to renegotiation. The Regional Board is committed to work with the City to provide quality customer service while maintaining our mission to safeguard water quality. |
| | | Specific Comments noted on attached Letter with Responses<br>(a) MOU termination process violates due process for Malibu Lumber WDR review.<br>Response: The Malibu Lumber WDR will be heard in December. In response to your comments, staff has removed much of the discussion of Malibu Lumber from the "findings" and the text of the tentative resolution. Staff agrees that no discussion of the specific Malibu Lumber WDR should take place at the November meeting except for the factual statements about process. That discussion is only to be used to illustrate the range of actions that led to staff's initial recommendation to terminate the MOU.<br>(b) City is a good steward<br>Response: Comment acknowledged.<br>(c) would be a moratorium on treatment systems<br>Response: This is one of the Board's options.<br>(d) would harm the environment<br>Response: Quantification of the improvement from the MOU implementation over the last five years has not been completed by the City, so an assertion that conditions would deteriorate is premature. Further, the City's plumbing code prohibits "bootleg systems", and the City remains obligated to enforce its own requirements.<br>(e) would violate CEQA (no plan for 400/year applicants)<br>Response: None of the proposed Board actions are a "project" within the meaning of CEQA. The Regional Board would continue to carry out the permitting duties delegated to the City of Malibu.<br>(f) would violate Malibu Lumber's rights.<br>Response: See response to paragraph "a" above. | |

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| Latham & Watkins | October 26, 2008 Via e-mail October 26, 2008 | General Comment<br><br>1. The proposal is unnecessary and would create significant disruption for no environmental benefit. States that the City has been doing its obligations in protecting water quality in Malibu.<br>2. Proposal would impose a De Facto Moratorium on State of the Art Treatment System. The City processes approximately 400 applications for small sized advanced OWTS to replace old and failing septic systems.<br>3. Proposal would harm the environment as the applications for residences and small commercial facilities are not processed in time. | General Response:<br><br>We acknowledge receipt of your comments. The Regional Board does not intend to impede the work the City is doing to protect water quality. Regional Board staff has changed its recommendation from termination of the MOU to renegotiation. The Regional Board is committed to work with the City to provide quality customer service while maintaining our mission to safeguard water quality. |
| | | Specific Comments noted on attached Letter with Responses<br><br>(a) status of MOU work is extensive.<br>Response: The City's accomplishments are noted.<br><br>(b) decision to terminate based only on Malibu Lumber<br>Response: The recommendation to terminate the MOU was based upon the City's actions this fall to (a) allocate the remaining assimilative capacity in the Civic Center area, as identified by existing City studies, (b) commit the largest portions of land which might otherwise be used for public projects, and (c) to use the MOU in a manner which staff found conflicted with Regional Board standards and MOU intent. Malibu Lumber is an example, not the sole issue, of a project which concerned the Regional Board staff which lead to the initial recommendation of termination.<br><br>(c) will cause decrease in water quality (bootleg systems)<br>Response: An increase in water quality as a result of the MOU has not been documented by the City. Further, the City's plumbing code prohibits "bootleg systems", and the City remains obligated to seek conformance with its own requirements.<br><br>(d) cannot make finding to terminate based on available evidence<br>Response: The MOU explicitly states that the MOU may be terminated by the Regional Board without cause.<br><br>(e) finding on MOU will affect Malibu Lumber<br>Response: The Malibu Lumber WDR will be heard in December. In response to comments, staff has removed much of the discussion of Malibu Lumber from the "findings" and the text of the proposed resolution. Staff agrees that no discussion of the specific Malibu Lumber WDR should take place at the November meeting except for the factual statements about process. That discussion is only to be used to illustrate the range of actions that led to staff's initial recommendation to terminate the MOU.<br><br>(f) Specific MOU resolution findings are challenged<br><br>(1) MOU language does not prohibit city from regulating itself.<br>Response: Comment noted. | |

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| | | (2) City MOU process meets their requirements, so is in accordance with applicable regulations.<br>Response: The MOU requires that the City meet State and Regional water quality standards. The City must meet the more stringent Regional Board requirements where they apply.<br><br>(3) Malibu Lumber has groundwater 10-15 feet below surface elevation and proposed maximum discharge will not result in less than 5 feet of separation.<br>Response: Comment deferred until Malibu Lumber WDR is heard.<br><br>(4) Malibu Lumber CEQA adequate<br>Response: Comment deferred until Malibu Lumber WDR is heard.<br><br>(5) No evidence that assimilative capacity exceeded.<br>Response: As described in the resolution and staff report, the City's own studies provide quantitative estimates that the capacity is exceeded.<br><br>(6) Ongoing study says mounding not a problem<br>Response: Staff understands that the City's ongoing study is not scheduled to be completed until October 2009.<br><br>(7) City will make sure Malibu Lumber will meet water quality standards, so need not provide engineering plans<br>Response: Comment deferred until Malibu Lumber WDR is heard.<br><br>(8) Unreasonable RB requests for technical changes at Lumber<br>Response: Comment deferred until Malibu Lumber WDR is heard.<br><br>(9) timeline of discussion about city using MOU suggesting confusion on RB part as to City plan<br>Response: Comment noted.<br><br>(10) Finding that RB notified City not to use MOU ignores fact that MOU could be used.<br>Response: Comment noted.<br><br>(11) RB staff cannot terminate MOU, so September 19 letter was premature and of no legal effect.<br>Response: The Executive Officer has been delegated the authority by the Regional Board to take a range of actions. The notice terminating the MOU is within the authority of the Executive Officer on behalf of the Regional Board.<br><br>(12) Malibu Lumber not being built but 'remodeled'<br>Response: Comment deferred until Malibu Lumber WDR is heard.<br><br>(13) GWDR 01-031 has no requirement and RB should have no expectation that WWTP would be built.<br>Response: See attached timeline listing the City's obligations and commitments to a long-term solution and the City's work on WWTP design.<br><br>(14) City is proceeding with WWTP, just no location to date.<br>Response: Comment noted.<br><br>(15) Uses technical arguments to say that assimilative capacity remains<br>Response: See staff report quoting City's own studies.<br><br>(16) Legacy will never be a WWTP, so should not be discussed in CEQA<br>Response: See time line showing City's original commitments at Legacy Park.<br><br>(17) Legacy DEIR does not purport to assess cumulative impacts<br>Response: Staff believes there will be cumulative impacts. |

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| | | (18) Statement that RB staff have not been consistent and/not truthful about discussions on model/permit<br>Response: Comment deferred until Malibu Lumber WDR is heard.<br><br>(19) Malibu Lumber is consistent with other permitted nitrogen limits<br>Response: Comment deferred until Malibu Lumber WDR is heard.<br><br>(20) All requested information was provided<br>Response: Comment deferred until Malibu Lumber WDR is heard.. | |
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KOSS Real Estate Investments

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CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

October 8, 2008

California Regional Water Quality Control Board
Los Angeles Region
Attn: Ms. Tracy J. Egoscue, Executive Officer
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

**RE: RESPONSE TO NOTICES OF VIOLATION FOR FAILURE TO COMPLY WITH AMENDED TIME SCHEDULE ORDER NOs. R4-2005-0011, 0012 and 0013 FOR MALIBU COUNTRY MARTS I, II and III (collectively "MALIBU COUNTRY MART"). LOCATED AT 3835 CROSS CREEK ROAD, 23410 CIVIC CENTER WAY AND 3900 CROSS CREEK ROAD, MALIBU, CA 90265**

Dear Ms. Egoscue:

It has always been Malibu Country Mart's desire to comply fully with the Regional Board's Waste Discharge Requirements (WDRs) and Time Schedule Orders (TSOs), and we have made every effort to do so and to keep the Regional Board abreast of key developments. For several years, we, along with other commercial property owners in the area, and the Regional Board, have all been looking to the City of Malibu to design and build its proposed centralized wastewater treatment plant to serve the Civic Center area. **Today, there is total consensus — the City, the Regional Board, interested environmental groups and commercial property owners in the area — that a centralized plant is by far the safest and best solution.**

Although we have worked diligently and spent a substantial amount of our staff's time and our financial resources including outside consultants exploring the possible construction of a new private wastewater treatment system on our property, it has become increasingly clear that multiple privately-owned and separately operated treatment systems in the Civic Center area would be a far less desirable and far less safe alternative than a centralized treatment plant. Among other problems, as compared to a centralized plant, multiple systems could result in (1) **multiple points of failure, (2) excessive water mounding, and (3) less effective water treatment.**

The Civic Center area in general poses many serious obstacles to utilizing multiple privately owned treatment systems, including the seasonally high water table and lack of the requisite separation between groundwater and leachfields. In addition, Malibu Country Mart's unique physical constraints impose enormous additional obstacles to constructing a private on-site system. Specifically, although two of our three properties are adjacent to each other, there is a significant grade variation between these two properties. The third property is separated by a

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city street and again is at a different elevation. Unlike the Cross Creek Plaza property that recently completed its onsite treatment system, our three properties do not have multiple vehicle access points, nor do we have the large amounts of flat parking areas available for staging construction and permanently installing system equipment. Instead, most of our system would need to be constructed below ground, which would add substantially to the project's overall cost and greatly increase the potential for large and open-ended cost overruns because of unknown (and unknowable) subsurface conditions. Also, unlike the Malibu Lumberyard project, we do not have the benefit of designing a system that will have the City's permission to dispose of our effluent at Legacy Park, a City-owned property. Our system design would need to process a larger quantity of effluent than other projects and this would require more advanced designs (and higher costs) for our system.

**We are also extremely concerned about the problem of a presently unquantifiable amount of water infiltrating into our system from the private on-site systems to be built on adjacent properties.** The cumulative effect of percolation into groundwater from these proposed systems could have serious adverse affects on our properties and ultimately on the Malibu community. These adverse affects may not be adequately quantified even with significant additional and costly studies that could require a year or more to complete. Even if a private on-site system was the correct solution (which it is not), it would be impossible for us to complete the design of such a system properly until these additional studies are completed and analyzed.

In addition to these complications, governmental process has delayed our planning and processing. In the past several years, we have had to abandon engineering plans, change engineering and design firms, develop a new plan and wait for comments and design suggestions from the City of Malibu, frequently for significant periods of time. If you would like, we can provide to you additional details regarding our activities over the last several years.

We have already spent hundreds of thousands of dollars to have engineers and other consultants explore the design and possible construction of a private treatment system that would serve only our own property. We have concluded that such a system would be the most costly, least effective and least feasible of the available alternatives and we believe the Regional Board, the City and various environmental groups agree with our assessment. Design and construction of a private system would require Malibu Country Mart to spend many millions of dollars which, especially in the current economic climate is not feasible. It does not seem reasonable or desirable for us to pursue a private system when there is strong political and community support for **the preferred and safest solution, a centralized plant**. From all indications, the best course of action for all concerned would be to push forward now and achieve as soon as possible the goal of constructing a City-owned centralized plant. **As indicated below, we are ready and willing to contribute our time and money to achieving this solution.**

Over and above the substantial expenditures for studies and consultants mentioned in the preceding paragraph, Malibu Country Mart has spent substantial additional sums over approximately the past eight years to upgrade its environmental systems and procedures, including (1) increasing the number of our monitoring wells from three to nine, (2) developing emergency response plans, including building three strategically located sheds and supplying them with equipment to enable faster access and response should an emergency occur, (3) adding

meters to monitor the water usage of all eateries, (4) installing six bio-effluent filters to further filter our water before it enters into our leachfields, (5) reducing the number of restrooms located in tenants' stores, and (6) otherwise managing our tenant mix with a view to conserving water. Also, we are in the process of investigating a desirable method of retrofitting the plumbing in all of our eateries so we can install 12 new "Big Dipper" grease traps within the next several months. In addition, we contributed $250,000 to support the City's purchase and development of Legacy Park which the City had stated would be used in part for a centralized water treatment plant to process both storm water and wastewater.

The City insists that it is still planning to build a centralized treatment system for the Civic Center area in the near term (see attached City Schedule). Recently, City Manager Jim Thorsen, Mayor Pamela Conley Ulich and Councilman Jefferson Wagner have all publicly stated that they are dedicated to the development and implementation of a centralized treatment system as soon as practically possible. Also, at the City Council and Planning Commission meetings held in Malibu on September 22nd and 23rd, the urgency to develop a wastewater treatment plant to accommodate the entire Civic Center area was the main topic of discussion. At these meetings, Mayor Conley Ulich and City Manager Jim Thorsen reiterated that a wastewater treatment system for the entire Civic Center was both inevitable and planned. **Malibu Country Mart strongly favors and will fully support a centralized plant. Our financial support could include a significant contribution to the initial cost of construction of such a plant and to the on-going costs of its operation. Also, we want to provide whatever other assistance is reasonably possible, including the use of our property for access or other purposes to facilitate a centralized system.** 2b

We would like to arrange a meeting with the Regional Board to discuss our concerns and our options moving forward based upon the recent events that have taken place with the City of Malibu and the obvious urgency for the City to develop a wastewater treatment plant for the entire Civic Center area. We take the provisions and requirements of the Regional Board and the environmental interests of the City of Malibu and its residents extremely seriously.

We thank you for your consideration and look forward to hearing from you regarding the scheduling of a meeting with us. **As we stated above, we strongly believe that the primary focus at this time should be on a centralized plant for the entire Civic Center area, and not on multiple private systems for the individual commercial properties. Hopefully, the time is right for an all out concerted effort by all interested parties to promptly develop and construct a centralized plant, which we strongly support.**

Sincerely,

Michael Koss – General Partner
Malibu Country Mart, Ltd.

cc: Ms. Wendy Philips – Regional Water Quality Control Board (cont.)

(cont.)

cc: Ms. Rebecca Chou – Regional Water Quality Control Board
Ms. Elizabeth Erickson – Regional Water Quality Control Board
Mayor Pamela Conley Ulich – City of Malibu
Mr. Jim Thorsen – City Manager City of Malibu
Ms. Sharon Barovsky – City of Malibu
Mr. Andy Stern – City of Malibu
Mr. Jefferson Wagner – City of Malibu
Mr. John Sibert – City of Malibu
Mr. Craig George – City of Malibu
Dr. Andrew Sheldon – City of Malibu
Ms. Barbara Cameron – City of Malibu
Dr. Mark Gold – Heal The Bay
Mr. Tom Ford – Santa Monica Bay Keeper
Dr. Michael Stenstrom – UCLA

# City o 'ibu
## Wastewater Treatmen., Reclamation Facility
## Proposed Timeline

| Estimated Task and Timeline | | | 2008 | | | | 2009 | | | | 2010 | | | | 2011 | | | | 2012 | | | | 2013 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1st Qtr 200 | 2nd Qtr 200 | 3rd Qtr 200 | 4th qtr 200 | 1st Qtr 200 | 2nd Qtr 200 | 3rd Qtr 200 | 4th Qtr 200 | 1st Qtr 201 | 2nd Qtr 201 | 3rd Qtr 201 | 4th Qtr 201 | 1st Qtr 201 | 2nd Qtr 201 | 3rd Qtr 201 | 4th Qtr 201 | 1st Qtr 201 | 2nd Qtr 201 | 3rd Qtr 201 | 4th Qtr 201 | 1st Qtr 201 | 2nd Qtr 201 | 3rd Qtr 201 | 4th Qtr 2013 |
| | ### | ### | 8 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | |
| **Design** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RFP for Design Team | 2006 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Award Contract to Design Team for Preliminary Design Concepts | 2006 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Preliminary design concepts (min. 3 alternatives) | Dec-07 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Award Contract to Design Team for Final WW Design Concepts | Nov-08 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Public Outreach w/Commercial Property (Ongoing) | Ongoing | | | | | | | | | | | | | | | | | | | | | | | | | |
| Update of Project Cost Estimates (ongoing) | Ongoing | | | | | | | | | | | | | | | | | | | | | | | | | |
| MLPP TAC Review of Final Design Options | Ongoing | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gather detailed data to include water use, existing septic designs, etc | Mar-09 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Authorize Final Design to begin | Sep-09 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wastewater Facility & Collection System 30% Design | Jan-10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wastewater Facility & Collection System 60% Design | Jun-10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| MLPP TAC Review of Final Plans | Jul-10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wastewater Facility & Collection System 90% Design | Sep-10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Permits, Final Design, Plans & Specifications | Dec-10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Environmental Document** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RFP for Design Team | 2006 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Award Contract to Design Team | 2006 | | | | | | | | | | | | | | | | | | | | | | | | | |
| CEQA/NEPA meeting w/SRF | Apr-09 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Draft Environmental Document | Jul-10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Final Project Enviornmental Document | Apr-11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Land Acquisition** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Identify parcels for potential easements/acquisition | 2006 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Negotiate with Property Owner(s) | Dec-09 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Secure Land for Placement of Treatment Facility and/or dispersal areas | May-10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Assessment District** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hire Assessment Formation team | Mar-09 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Identify Boundaries of Assesment District | Dec-10 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Preliminary Engineers Report - Landowner Cost Estimate Evaluation | Jun-11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Priority Landowner Meetings | Ongoing | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wastewater Facility Assessment District & Financing Update | Oct-11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Vote of formation of Assessment District | Dec-11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Certification of Assessment District | Jan-12 | | | | | | | | | | | | | | | | | | | | | | | | | |
| **SRF Loan Application** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SRF Fund Priority Listing | 2003 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Preliminary SRF Loan Staff Meeting | Jan-07 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Update SRF Loan Priority Listing | Ongoing | | | | | | | | | | | | | | | | | | | | | | | | | |
| File Final Application | Nov-11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Confirmation on State Approval of Loan | Jan-12 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Receive Funding | Jan-12 | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Construction** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hire Construction Manager | Oct-11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Award Construction Contract | Jan-12 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Construction Begin/End | Dec-12 | | | | | | | | | | | | | | | | | | | | | | | | | |

52-53

Heal the Bay

1444 9th Street
Santa Monica CA 90401

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fax 310 496 1902

info@healthebay.org
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October 21, 2008

Ms. Tracy Egoscue
Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, CA 90013

**Re: Tentative Resolution for Termination of Memorandum of Understanding Regarding Onsite Wastewater Treatment System (OWTS) For the City of Malibu**

Dear Ms. Egoscue:

For nearly 20 years, Heal the Bay has been actively involved in water quality and habitat restoration issues within the Malibu Creek Watershed including sitting on the City's ERB for a decade. The City of Malibu faces many water quality challenges. As you know, Malibu Creek and Lagoon are listed on the State's 2006 303(d) List as impaired by numerous pollutants and TMDLs have already been adopted for bacteria and nutrients.

It has long been assumed and recently established that onsite wastewater treatment systems (OWTS) in the Civic Center area are a major source of nutrients and pathogens to the Creek and Lagoon. The Malibu Country Mart currently discharges wastewater to a leach field in the Civic Center area and has had chronic problems with its on-site system. As you know, this discharger is currently in violation of Regional Board adopted WDRs and TSOs. In addition, there are plans to increase the discharge volume to the area with the addition of the La Paz and Malibu Lumber developments. The addition of discharge to the already over-taxed system will lead to further water quality degradation and contribute to continued bacteria and nutrient impairments. New sources will absolutely cause or contribute further violations of water quality standards and TMDL requirements at a time when the City is legally obligated to reduce its nutrient and fecal bacteria contributions. This is unacceptable.

Heal the Bay has long maintained that the city can comprehensively address the bacteria and nutrient problems and meet TMDL requirements by constructing and operating a centralized wastewater treatment plant. While a wastewater component was initially included in the Legacy Park project, the current draft EIR puts off this essential element to a later phase. 1

Thus, we urge the Regional Board to place a moratorium on all new OWTS for new development in the subwatershed. We believe that no new sources of nutrients and bacteria are allowed because of continued TMDL violations. This moratorium should remain active until a comprehensive wastewater management plan, funding strategy, construction schedule, wastewater treatment CEQA document, and associated timeline is complete and implementation 2

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is underway. We further urge the Regional Board to ensure all existing OWTS within the subwatershed are included in the wastewater treatment plan.

Although revocation of Malibu's OWTS MOU is a bold action of the Regional Board for the purposes of water quality improvement, Heal the Bay believes that a more effective action is an OWTS moratorium. Also, existing systems should receive a sunset deadline for OWTS operation whenever their WDRs are up for renewal. 3

Thank you for your consideration of these comments. Heal the Bay would be happy to discuss the civic center water quality issues in more depth with all stakeholders including Malibu and the Regional Board. If you have any questions, please contact us at 310-451-1500.

Sincerely,

Kirsten James
Water Quality Director

Mark Gold, D. Env.
President



15-271

City of Malibu Wastewater Advisory Committee
23815 Stuart Ranch Road
Malibu CA 90265

October 24, 2008

via e mail

Regional Water Quality Control Board
Los Angeles Region
320 W. Fourth Street, Ste. 200
Los Angeles CA 90013

Dear Board Members:

The City of Malibu has fulfilled its responsibility and obligation with respect to the MOU.

The Wastewater Advisory Committee was established by the City of Malibu 15 years ago to advise the City Council with respect to the various wastewater treatment technologies after researching the best technologies that are supported by scientific studies throughout the country. The Committee is comprised of professionals including designers, civil engineers, environmental health specialists, and contractors. Accordingly, the Committee is helping the City implement cutting edge solutions for the treatment of wastewater. Each one of the new treatment systems in Malibu's Civic Center area have met or exceeded discharge requirements. All new or repaired treatment systems for houses along the beachfront and the vast majority of upland systems have been required to upgrade to tertiary recreational standard. 1

The City of Malibu now requires operating permits and has implemented a "Point of Sale" Ordinance. Since the average home in Malibu is sold once every seven years it is anticipated that 95% of all homes will have the upgraded systems within the next 10 years. 2

The City of Malibu is encouraging the use of highly treated recreational standard effluent in shallow subsurface drip disposal systems. The water is used by plants and reduces the amount of potable water that would normally be imported for this purpose.

Currently, Malibu's trained experts are reviewing approximately 380 applications per year for new treatment systems, repairs, modifications, and changes of use systems. It is important to note that any delays in the issuance of permits for repairs of treatment systems will result in effluent not being treated and disposed of properly. If it is ever stated or implied that a failed system could result in occupants being evicted from a home and that a permit to repair the system could take longer than 7-10 days to obtain, the occupants will probably not report the failure and continue using the system, and this could result in a danger to public health and safety. 4

Terminating the MOU will not result in the wastewater generated by Malibu's homes and commercial buildings being treated to any higher standard than it is being treated now. As stated above, Malibu is upgrading its residential and commercial onsite wastewater treatment systems as fast as reasonably possible and the effluent from these new systems is treated to the highest standard in the entire United States. 3

Sincerely yours,

Norman R. Haynie

Norman R. Haynie
Chair, Wastewater Advisory Committee

NRH/cek

cc: Malibu City Council, City Manager, Community Development Director

via email
10/24/08
5:14


October 24, 2008

Tracy J. Egoscue, Executive Officer
Los Angeles Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles, CA 90013

**RE: Tentative Resolution for Termination of Memorandum of Understanding Regarding Onsite Wastewater Treatment System (OWTS) for the City of Malibu**

Dear Ms. Egoscue,

Santa Monica Baykeeper strongly supports the tentative resolution to terminate the OWTS Memorandum of Understanding ("MOU") with the City of Malibu ("City" or "Malibu"). Termination of the MOU is warranted because the City has repeatedly failed to fulfill its obligations under the MOU and is unable to protect water resources and public health within its jurisdiction. Thus allowing Malibu to continue to regulate wastewater discharges under the MOU, which also serves as a California Water Code section 13269 waiver, is clearly not in the public interest. 1

## I. Background

It is a well-known fact that Malibu was incorporated in 1991 in large part because of the residents' desire to continue using onsite wastewater treatment systems ("OWTS" or "septics") instead of building or connecting to a centralized wastewater treatment plant. Septics were viewed as one of the means to prevent overdevelopment of Malibu rather than the more obvious approach of zoning or other land use planning tools. Unfortunately, septics also cause significant water quality problems to the coastal, inland and ground waters of Malibu.

Indeed, over the years since the City's incorporation a number of studies have examined water quality pollution in Malibu and documented the groundwater contamination with septic



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effluent, the connection between contaminated groundwater and surface waters such as the Malibu Creek and Lagoon and Surfrider Beach and the presence of septic effluent in City stormdrains.[1,2] These problems continue to plague Malibu to this day.

Beginning in 1998, the Regional Board began to issue orders seeking to compel the City of Malibu to determine the extent of the septics problem and achieve solutions. As part of this effort, in 2004, the Los Angeles Regional Water Quality Control Board entered into an MOU allowing the City to regulate certain OWTS within its jurisdiction. The MOU also imposed obligations on the City with respect to wastewater pollution of Malibu's waters. As discussed below, the City has consistently missed the deadlines set out in the MOU and has completely failed to satisfy the majority of the MOU's requirements.

Rather than taking active steps to solve its water pollution problems, the City has instead made endless promises, plans and excuses.[3] Meanwhile, Malibu continues to pollute area creeks and beaches threatening public health and aquatic life.

## II. The MOU Should Be Terminated Because Malibu Has Violated Its Terms

Malibu and the Regional Board have mutual responsibilities under the MOU.[4] The MOU requires the City to implement a number of interim measures within a specific time after the MOU's effective date, September 17, 2004.[5] Malibu's substantive responsibilities under the MOU included the following:

- Adopt a Point of Sale Ordinance related to OWTS inspection and regulation by September 17, 2005.[6]

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[1] *See e.g.* URS Greinier Woodward Clyde "Study of Potential Water Quality Impacts on Malibu Creek and Lagoon from On-site Septic Systems (1999); University of California, Los Angeles "Lower Malibu Creek and Lagoon Resource Enhancement and Management" (2000); Los Angeles Regional Water Quality Control Board "City of Malibu Wastewater Disposal Issues" (2000); Stone Environmental "Final Report: Risk Assessment of Decentralized Wastewater Treatment Systems in High Priority Areas in the City of Malibu" (2004); Questa Engineering "Malibu Civic Center Integrated Water Quality Management Feasibility Study" (2005).

[2] Since all the documents cited in this letter are publicly available, copies are not attached. Where appropriate, the on-line location of the document is provided.

[3] *See e.g.* City of Malibu "Malibu Civic Center Integrated Water Management Concept Plan" (2003) at 1 (one of the components of the Malibu Civic Center Integrated Water Management Project is "the development of a state of the art wastewater reclamation facility").

[4] Memorandum of Understanding between California Regional Water Quality Control Board Los Angeles Region and City of Malibu Regarding Onsite Wastewater Treatment Systems (hereinafter "MOU") at 3.

[5] *Id.* at 4, 8.

[6] *Id.* at 4.



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- Draft and recommend for adoption by City Council ordinances mandating advanced treatment and disinfection by all OWTS within the six-month time-of-travel zone of the City's bacterial contributory areas by September 17, 2006.[7]
- Draft and recommend to City Council for adoption an ordinance requiring septic systems within the Malibu Lagoon contributory area to provide secondary treatment with denitrification and disinfection by September 17, 2007.
- Establish denitrification standards for residential OWTS within the contributory area by September 17, 2006.[8]
- Draft and recommend for adoption ordinances establishing registration criteria and programs for all associated disciplines of OWTS installation and management by September 17, 2008.[9]

In the face of these specific requirements and deadlines, Malibu has accomplished very little. The City managed to adopt a Point of Sale ordinance on March 10, 2008 (over three years past the MOU deadline). [10] Malibu, however, has failed to draft and recommend adoption of any ordinances requiring upgrades of OWTS contributing to bacterial and nitrogen impairment in the Malibu Creek, Lagoon and the beaches. In addition, the City continues to lack denitrification standards for residential septics as well as an ordinance establishing criteria and programs for all disciplines of OWTS installation and management.[11]

Clearly, the City has violated virtually every substantive term of the MOU and the MOU is not achieving its goal to improve water quality and protect public health and the environment. Since Malibu's recalcitrance has made the MOU ineffective, the Regional Board is required to terminate the agreement.

## III. The MOU Should be Terminated Because It Violates the California Water Code

### *A. The MOU Is Not in the Public Interest*

The MOU was intended to serve both as a California Water Code ("CWC") section 13269 waiver and a delegation of authority to Malibu to regulate certain septic effluent

[7] *Id.* at 5.

[8] *Id.* at 5-6.

[9] *Id* at 6.

[10] Malibu Ordinance No. 321, available at http://www.malibu-ca.gov/download/index.cfm?fuseaction=download&cid=11927 and incorporated as section 15.14.070 of Title 15 of the Malibu Municipal Code.

[11] Note that Malibu Ordinance No. 321 established some requirements related to inspection of some septics in limited circumstances. Malibu Municipal Code §§ 15.14.050, 15.14.060.



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discharges.[12] While the regional water quality control boards in California are the agencies regulating discharge of waste that may affect waters of the State, both the requirement to file a report of waste discharge with the appropriate regional board and to obtain a waste discharge requirement from that board may be waived.[13] The waiver, however, must be "consistent with any applicable state or regional water quality control plans and is *in the public interest.*"[14]

For the reasons discussed below, the continued existence of the MOU as a waiver violates the requirements of section 13269 of the CWC.

*1. Malibu's Violations of the Municipal Stormwater Permit and the Bacteria TMDL*

The purpose of the MOU was to "protect water quality and public health … in areas where onsite wastewater treatment systems are utilized."[15] Malibu, however, has failed to make any significant progress towards achieving either of these goals and instead continues to cause and contribute to water quality standards violations in the waters for which it is responsible.

Under the Los Angeles County Municipal Stormwater Permit, Malibu is prohibited from causing or contributing to exceedances of water quality standards in receiving waters.[16] In 2006, the Santa Monica Bay Beaches Bacteria TMDL for summer dry weather was incorporated in the Permit adding a prohibition on summer dry weather discharges of bacteria from the MS4 into the Santa Monica Bay "that cause or contribute to exceedances in the Wave Wash of applicable bacteria objectives."[17] Malibu has been violating the TMDL and the Permit since the TMDL incorporation into the permit.[18]

Starting May 2007, after trying to work with the City for years and witnessing the City's inaction and lack of commitment to solve its water quality problems and protect the health of its citizens and visitors, the Santa Monica Baykeeper, together with the Natural Resources Defense

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[12] MOU at 2 ( Malibu designated as the qualified local agency for regulating certain septic systems; the MOU meets the requirements of section 13269 of the CWC and "enables the Regional Board to issue waivers of WDRs for those onsite sewage treatment systems regulated by the City of Malibu as detailed by this document").

[13] Cal. Wat. Code §§ 13260 (a) (1), 13263 (a), 13269.

[14] Cal. Wat. Code § 13269 (a) (1) (emphasis added).

[15] MOU at 2.

[16] Order No. 01-182, NPDES Permit No. CAS004001, Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges within the County of Los Angeles, and the Incorporated Cities therein, Except the City of Long Beach (as amended) at 3, 23.

[17] *Id.* at 24.

[18] *See* Notice of Violation (Order No. 01-182 as Amended by Order No. R4-2006-0074 and Order No. R4-2007-0042, NPDES Permit No. CAS004001, WDID 4B190190001) to Bob Brager, Public Works Director, City of Malibu; *see e.g.* Heal the Bay Beach Report Card for Surfrider Beach, available at http://www.healthebay.org/brcv2/ (listing 76 violations of the Santa Monica Bay Beaches Bacteria TMDL for the summer dry weather season in 2008).



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Council notified the City of their intent to file a Clean Water Act citizen lawsuit against Malibu.[19] We notified the City of on-going violations of its municipal stormwater permit, which included violations of water quality standards, the non-stormwater discharge prohibitions, the Santa Monica Bay Beaches Bacteria TMDL, and the waste discharge prohibition for the Mugu to Latigo Area of Special Biological Significance.[20] The City continues to violate the Permit, including the Bacteria TMDL, even after the filing of our citizen suit in March of this year.[21] In fact, the City's most recent actions and decisions provide further evidence that Malibu does not intend to change its course of recalcitrance and delay.

### B. *Malibu's Actions Demonstrate the City Is Incapable of Solving Its Water Quality Problems*

The City's water quality standards violations and bacterial violations, in particular, should not be a surprise. As documented by several studies, the effects of septic effluent pollution in Malibu are not confined to groundwater or to the Civic Center area alone. Septic effluent in Malibu enters storm drains and is discharged to surface waters such as Malibu Creek and Lagoon and the beaches.[22] The connection between the groundwater in the Civic Center area and the Malibu Creek, Lagoon and Surfrider Beach is also well-established.[23]

Of course, the City is aware of these studies and knows that preventing septic effluent pollution, especially in the Civic Center area, will result in significant reduction of bacterial water quality standards exceedances and TMDL violations at the beach.[24] In fact, the most recent scientific studies and reports recommend the installation of a centralized wastewater treatment plant for the Civic Center area with onsite dispersal of the treated effluent.[25] Malibu's actions, however, continue to show the City's lack of foresight when making planning decisions with significant impacts on its water quality.

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[19] *See* Notice of Violations and Intent to File Suit under the Federal Clean Water Act (May 31, 2007); Notice of Supplemental Violations and Additional Information on Previously Noticed Violations under the Federal Clean Water Act (September 10, 2007); Notice of Supplemental Violations and Additional Information on Previously Noticed Violations under the Federal Clean Water Act (December 18, 2007).

[20] *See id.*

[21] One is left wondering if there is actually anything that will make the City take its responsibilities to stop water pollution and protect public health seriously.

[22] *See* Regional Board Report on Wastewater Disposal Issues and Malibu Technical Investigation (August 17, 2000) at 13.

[23] *Id.*

[24] *See* Stone Environmental Final Report "Risk Assessment of Decentralized Wastewater Treatment Systems in High Priority Areas in the City of Malibu, California" (2004) (available at http://www.ci.malibu.ca.us/index.cfm?fuseaction=detailgroup&navid=380&cid=9017).

[25] *See* Questa Engineering Final Report "Civic Center Integrated Water Quality Management Feasibility Study" (2005) at 10-1 – 10-2.



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a. Malibu Lumber Yard Plaza

The City's attempt to self-permit the Malibu Lumber Yard Plaza septic system is an example of Malibu's desire to continue with business as usual and ignore the need for careful evaluation of the assimilative capacity of the Civic Center area.[26]

While the MOU gives the City the privilege to permit such lower-capacity non-food related commercial septic systems, it goes without saying that this privilege carries with it the responsibility to ensure the City's permitting decisions provide maximum protection to the groundwater and surface waters in Malibu and are supported by sound scientific analysis and planning. However, as evident from the extensive correspondence between the Regional Board and the City, this did not occur even after the Regional Board's technical staff explicitly stated its serious reservations to the proposed approval of the Lumber Yard non-food related OWTS because of the inadequate supporting analysis provided by the City.[27] In response, the City decided to permit the Malibu Lumber Yard commercial septic system anyway.[28] As discussed below, this decision would have had serious impacts on the operation of Civic Center wastewater treatment plant, which the City is purportedly committed to building, and on the Legacy Park stormwater treatment project.[29]

b. Legacy Park Project Environmental Impact Report

Another example of the City's inability to comprehensively deal with groundwater and surface water pollution caused by septic effluent is the Legacy Park project Environmental Impact Report ("EIR"). The Legacy Park Project includes a Civic Center wastewater treatment

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[26] On September 22, 2008, the Malibu City Council held a hearing to approve the proposed Malibu La Paz commercial development in the Civic Center area of the City. On September 23, 2008, the Malibu Planning Commission held a hearing to approve the Legacy Park Project which is also proposed for the same Civic Center area. Representatives of the Regional Board were at both hearings and informed City officials that they Regional Board is concerned about the capacity of the Civic Center area soils to assimilate subsurface wastewater dispersal associated with both projects. Members of the public, environmental organizations and experts also voiced their concerns about the projects and the delay in the development of the long-awaited wastewater treatment plant for the Civic Center area.

[27] *See* Notification of Incomplete Application for Waste Discharge Requirements, Weintraub Financial-Malibu Lumber Plaza, 23641 Pacific Coast Highway (File No. 08-019), Malibu, California, dated September 5, 2008, at 3.

[28] Letter from Jim Thorsen, City Manager, to Tracy Egoscue, Los Angeles Regional Water Quality Control Board, dated September 12, 2008 at 1.

[29] *See* Malibu Legacy Park Project EIR (September 2008) at 3H-37 (The Malibu Lumber Yard project "would affect the hydrology of the proposed Legacy Park site."); *see also supra* n. 21 ("Weintraub Financial-Malibu Lumber Plaza discharges may affect the operations of Legacy Park and will not be monitored or protected by the Regional Board if it s permitted by the City, despite the potential for unsuccessful operation to result in impact to public health and safety").



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plant but the City refused to provide any specifics on this element of the Legacy Park Project.[30] Moreover, in violation of CEQA and contrary to the requests of government agencies and the public, the City deferred analysis of the cumulative impacts of this project element to a future groundwater mounding study.[31] At the same time, the City proposes to allow percolation of treated wastewater from the Malibu Lumber Yard on the site of the Legacy Park project *before* the completion of the groundwater mounding study.[32] This decision to allow use of the remaining assimilative capacity of the Civic Center area defies logic and reason because the City will need the same assimilative capacity for percolation of treated effluent from its future Civic Center wastewater treatment plant.[33]

c. Country Mart I, II and III Notices of Violations

The City's inability to find a solution of its water quality problems has far-reaching serious effects on its citizens, visitors and businesses. For over 5 years, Malibu has promised both to the Regional Board and the public to build the Civic Center area wastewater treatment plant and both the Regional Board and commercial businesses with failing or undersized septic systems in the Civic Center area (such as the Country Marts) have relied on this promise.[34] As evidenced by the Notices of Violations which the Regional Board recently sent to the Country

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[30] Malibu Legacy Park Project EIR (September 2008) at 2-43 – 2-44 (available at: http://www.ci.malibu.ca.us/download/index.cfm?fuseaction=download&cid=12833).

[31] *Id.* at 4-1; *see e.g. id.* at 6-22 – 6-27 (Response to Comments from the Los Angeles Regional Water Quality Control Board available at http://www.ci.malibu.ca.us/download/index.cfm?fuseaction=download&cid=12852); 6-75 – 6-76 (Response to comments from Heal the Bay available at http://www.ci.malibu.ca.us/download/index.cfm?fuseaction=download&cid=12854).

[32] Malibu Legacy Park Project EIR (September 2008) at 3H-37 (available at http://www.ci.malibu.ca.us/download/index.cfm?fuseaction=download&cid=12842).

[33] Malibu Legacy Park Project EIR (September 2008) at 2-15 (available at http://www.ci.malibu.ca.us/download/index.cfm?fuseaction=download&cid=12832); *see also* Questa Engineering Final Report "Civic Center Integrated Water Quality Management Feasibility Study" (2005) at 10-1 ("The Chili Cook-off [current Legacy Park Project site] has the highest approximate capacity for wastewater reuse and dispersal.").

[34] *See* Los Angeles Regional Water Quality Control Board Order No. R4-2005-0011, Issuance of Amended Time Schedule for Malibu Country Mart III; Los Angeles Regional Water Quality Control Board Order No. R4-2005-0012, Issuance of Amended Time Schedule Order for Malibu Country Mart II; Los Angeles Regional Water Quality Control Board Order No. R4-2005-0013, Issuance of Amended Time Schedule for Malibu Country Mart I. *See also* Letter from Michael Koss to Los Anegeles Regional Water Quality Control Board Re: Response to Notices of Violation for Failure to Comply with Amended Time Schedule Order Nos. R4-2005-0011,0012 and 0013 for Malibu Country Marts I, II and III, dated October 8, 2008 (stating that "[f]or several years, we, along with other commercial property owners in the area, and the Regional Board, have all been looking to the City of Malibu to design and build its proposed centralized wastewater treatment plant to serve the Civic Center area").



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Mart I, II and III, Malibu's failure to deliver has grave repercussions on water quality and by extension on these businesses.[35]

**Conclusion**

The City of Malibu has blatantly violated the terms of the MOU. Moreover, Malibu has proven unable to protect its coastal, inland and ground waters from contamination and continues to endanger public health despite the well-known sources of bacterial pollution and the recommendations of numerous studies, the public and the Regional Board. The continued existence of the MOU is therefore not in the public interest and violates the California Water Code. For these reasons, the Los Angeles Regional Water Quality Control Board is justified in its decision to terminate the MOU.

Sincerely,

Tatiana K. Gaur

Tatiana Gaur, Staff Attorney
Santa Monica Baykeeper

Tom Ford, Executive Director
Santa Monica Baykeeper

[35] *See* Los Angeles Regional Water Quality Control Board Notice of Violation for Failure to Comply with Amended Time Schedule Order No. R4-2005-0011 (August 26, 2008); Los Angeles Regional Water Quality Control Board Notice of Violation for Failure to Comply with Amended Time Schedule Order No. R4-2005-0012 (September 4, 2008); Los Angeles Regional Water Quality Control Board Notice of Violation for Failure to Comply with Amended Time Schedule Order No. R4-2005-0013 (September 4, 2008).



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October 26, 2008

**VIA E-MAIL AND HAND DELIVERY**

Francine B. Diamond, Board Chair
Members of the Board
Tracy J. Egoscue, Executive Officer
California Regional Water Quality Control Board,
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, California 90013

**Re: Opposition to November 13, 2008, Board Agenda Item Regarding Proposed Termination of MOU Between Regional Board and City of Malibu**

Dear Chair Diamond, Members of the Board, and Executive Director Egoscue:

We are writing on behalf of our client, Malibu Lumber LLC, to express our concerns with and opposition to the proposal to terminate the Memorandum of Understanding between the California Regional Water Quality Control Board, Los Angeles Region, and the City of Malibu. The proposal suggests that the Regional Board assume responsibility for all onsite septic systems in Malibu in spite of the City's four-year history of implementing the MOU carefully to protect the environment. The sole basis offered for the proposed termination directly relates to the processing of Malibu Lumber's request for waste discharge requirements (WDRs) for its modest commercial project in the Malibu Civic Center. The proposal would prejudice our client's due process rights. Further, we believe that termination of the MOU would harm the environment and would violate the California Environmental Quality Act. a

The proposal is unnecessary and would create significant disruptions for no environmental benefit. We respectfully urge that the Regional Board: (1) take no action on the MOU, (2) remove any findings pertaining to our client from any draft resolution that might be presented at the November 13 meeting, and (3) promptly process for approval at the Regional Board's December 11 meeting the WDRs for which our client has applied to the Regional Board.

A. The City Is A Careful Steward Of The Environment.

The proposal presumes that the City is not doing a good job carrying out its duties. No evidence to that effect is provided. Instead the proposal addresses a single matter where the Regional Board staff is unhappy with the City's planned actions. We respectfully suggest that four years of Malibu's good work on about 400 applications per year should not be discarded over one issue. b

The facts show that the City has worked hard and has done a very good job carrying out its duties under the MOU and protecting the environment.[1] The City has imposed restrictions on wastewater systems that exceed any of which we are aware anywhere else.

Further, even the matter that prompts the current reaction – our client's project at the former location of the Malibu Lumber Yard – shows that the City is a careful steward of its duties. Our client has been working for many months to obtain the City's approval for an onsite, state-of-the-art wastewater treatment system not to exceed 2,000 gallons per day. That application included extensive technical data supporting that request, and in the months since then the City has analyzed that technical data and has made multiple, extensive requests for further study and further information. Most recently, the City's outside engineering expert, Carollo Engineers, devoted two months of careful review to our client's engineer's August 13 "Advanced Onsite Wastewater Treatment System Design" report, and responded on October 9 with an 18-page assessment of our client's engineer's design, requesting that our client's engineers create and submit extensive additional data and information. As of the date of this letter, the City still has not approved our client's application. Even though our client's application would create the most advanced wastewater treatment system ever used in Malibu, the City is undertaking a detailed review of every aspect of its design.

We think this history makes a compelling case. The City of Malibu has a long-established track record of being vigilant in enforcing environmental protections strictly. There is no evidence to the contrary.

B. The Proposal Would Cause A *De Facto* Moratorium On State-Of-The-Art Treatment Systems.

The Regional Board staff is already severely overburdened with its existing work load. The Regional Board staff is challenged in carrying out its myriad duties with limited resources, whether in overseeing contaminated site clean-ups, closing sites that have been cleaned up, issuing Waste Discharge Requirements for new or altered facilities, or carrying out the countless other duties that the Regional Board staff has been assigned.

Under the existing MOU, the City of Malibu invests substantial resources to process approximately 400 applications per year for smaller-sized onsite wastewater treatment systems (*i.e.*, those processing less than 2,000 gallons per day). An overwhelming proportion of those applications are for new, high-performing onsite wastewater treatment systems that will improve or replace older, low-tech, and failing systems. It is very important that those applications be processed and approved expeditiously, as that is the only way older, failing systems can get upgraded. The fact that the City of Malibu has accepted this burden improves the environment, helps clean the creeks and ocean in and adjacent to Malibu, takes a substantial burden off of the Regional Board staff, and shifts that burden to the City. We are not aware of

[1] To avoid repetition and needless length, we incorporate by this reference the entirety of the City's submittal to the Regional Board on this matter. We will not repeat here the facts and evidence provided there, but we rely on them as though fully set forth here.

any evidence showing that the Regional Board staff can assume that additional work load in these times of severe budget constraints and increasing work demands.

Accordingly, rescinding the MOU suddenly would mean that, from the moment the MOU is rescinded, those 400 applications per year would come to a halt, as there would not be adequate resources to process them. That would amount to a *de facto* moratorium on those applications, and that moratorium would last for as long as it takes for the Regional Board to figure out some way of processing that additional volume of work.

The proposal is silent on this critical issue. The proposal does not explain how the Regional Board staff will be able to take over this work, nor where the Regional Board will get the funds to add to its staff resources, nor whether any available funds will be sufficient to handle the new work, nor how long it will take for the staff to figure out all of these difficult issues. In the absence of any data or evidence, the sudden rescission of the MOU can be expected to create an immediate *de facto* moratorium on permit processing for the residents of Malibu, which would last indefinitely until the staff finds some way to handle these new burdens.. That would force old, failing septic systems to remain in place, where they will continue to pollute Malibu's creeks and ocean areas.

C. The Proposal Would Harm The Environment.

Throwing the 400 applications per year that Malibu handles into disarray will do more than just harm the residents of Malibu who will be unable to get their applications processed. The proposal would also harm the environment. Malibu has among the strictest wastewater treatment standards anywhere and has an unprecedented ordinance requiring inspections and upgrades when property is sold. Also, as noted above, an overwhelming proportion of the applications Malibu processes are for upgrades to bring old, failing septic systems up to the newest state-of-the-art wastewater treatment standards.

d

Rescinding the MOU would freeze all of that for an indefinite period. People who are trying to upgrade their current, failing systems will not be able to do so, so their failing systems will remain in place. People who are trying to install state-of-the-art new systems to accommodate existing or planned development will face pressures to install waste treatment systems without permits, and there is a lack of inspection resources to have any meaningful chance of ensuring that unpermitted systems do not get built.

Further, the Regional Board is already challenged with enforcing violations of existing laws when septic systems fail. Much of the problem about which the staff proposal complains – *i.e.*, area-wide septic system failures in Malibu's Civic Center – are within the Regional Board's existing enforcement jurisdiction, and freezing the conversions of existing systems to new, state-of-the-art systems will add to that existing problem.

D. The Proposal Would Violate CEQA.

The proposal has no action plan to ensure that the 400 applications per year that Malibu has been processing under the MOU can continue to be processed carefully and timely.

That lack of planning will harm the environment by preventing or greatly delaying the conversion to and installation of new, state-of-the-art wastewater treatment systems.

For these reasons, there is a fair argument that the proposal would cause significant adverse environmental effects on many areas of environmental inquiry, including:[2]

a. on hydrology and water quality (due to forcing failing systems to remain in place longer and increasing the risk of unpermitted systems being built),

b. on Malibu's streams and on the Malibu Lagoon (which will be impacted by the continuance of the existing failing systems and by the likely new unpermitted systems),

c. on biological resources (which will be impacted by that same contamination),

d. on land use planning (as the *de facto* moratorium will interfere with the completion of approved projects and planned development in conformance with the City's adopted general plan and zoning code),

e. on housing (as the *de facto* moratorium will interfere with the completion of approved housing projects),

f. on public services (as the staff proposal would interfere with the Malibu Legacy Park completion and the City's plans to put a stormwater treatment system in the planned Legacy Park), and

g. on recreational resources (as the staff proposal would cause new ocean pollution and would prevent the improvement of existing ocean pollution along some of the most famous beaches in the world, along with delaying or killing the Legacy Park plans).

Whenever there is a fair argument that a discretionary governmental action might have an adverse effect on the environment, as there clearly is here, the California Environmental Quality Act (CEQA) mandates that the lead agency take no action unless and until it prepares an environmental impact report (EIR). Here, the proposal is silent on CEQA. An EIR is needed to assess the potentially significant impacts of the staff proposal. The Regional Board may not proceed without first preparing an EIR, and such an EIR must first assess and adopt any feasible mitigations or alternatives that could lessen or avoid the proposal's significant impacts.

The threshold for requiring an EIR under CEQA is set intentionally low. The law strongly favors requiring an EIR before any action is taken for which even just a "fair argument" can be made that the proposed action might have an adverse environmental impact.

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[2] *See* State CEQA Guidelines, App. G, Environmental Checklist Form, specifying these and other areas of environmental inquiry that the Regional Board and all lead agencies must utilize before taking actions that can affect the environment.

Here, there can be no doubt but that the proposal to rescind the MOU creates at least a "fair argument" that there might be an adverse impact on the environment. There is no plan to ensure the processing of those 400 applications per year without delay and with the same degree of care that the City of Malibu has used in the past four years. Accordingly, it would violate CEQA for the MOU to be rescinded without first preparing an EIR.

E. The Proposed Resolution Would Violate Malibu Lumber LLC's Rights.

The question of whether to rescind the MOU should not implicate our client's rights, but because the text of the proposed resolution makes findings specific to our client, it does. Our client is a private party which holds a lease from the City for a portion of City-owned property on which the City plans to locate the "Legacy Park" that will include a much-needed stormwater treatment system. Our client's project merely involves the remodeling of the long-existing Malibu Lumber Yard structures to allow them to re-open as community-serving commercial and retail uses, featuring several long-time Malibu businesses that might otherwise be forced out of Malibu. Our client's equity principals are both Malibu residents, and this remodeling project has not been controversial. Our client's proposed new wastewater treatment system will be a state-of-the-art system that will treat wastewater to a higher quality standard than any system ever permitted in Malibu – or anywhere else in California, to our knowledge.

Further, the City's plans for Legacy Park and the stormwater treatment system cannot be accomplished unless our client's project is completed because our client's rent payments to the City will provide the critical funds the City needs to create Legacy Park and the new stormwater treatment system. The City's plans for Legacy Park and the stormwater treatment system would unquestionably be good for the environment. We understand that the Regional Board staff would also like the City to include a large wastewater treatment system for the area, and we respectfully suggest that this is something over which the Regional Board staff should negotiate with the City, which it has a right to do under the MOU, and that this larger matter should not implicate our client's modest project.

Our client is a private business which has expended substantial funds and personnel resources in reliance on the actions and statements of the Regional Board staff. Our client has been following, and will continue to follow, all of the rules of the Regional Board and of the City, and it is entitled to due process. Our client would also be very substantially harmed if it is prevented from opening and operating the remodeled site in December. If our client is prevented from opening and operating in December, that could give rise to failures of subleases that will greatly harm the subtenants (including long-time small businesses in Malibu), our client, and the City. It could also give rise to severe potential liability, potentially even assertions of personal guarantees under loan documents. We cannot overstate the urgency our client faces – it must be allowed to open and operate the remodeled site in December.

The draft resolution contains proposed findings adverse to our client that we believe are unsupported by substantial evidence and are contradicted by the substantial evidence that does exist. Given that the MOU rescission matter pending before the Regional Board on November 13 does not technically even involve our client, we believe that it would violate our

client's rights to due process and equal protection of the law to pre-adjudicate issues involving our client prior to presentation to the Board of the adjudicatory matter involving our client.

For these reasons, we reiterate our proposal that the Regional Board take no action on the MOU at the November 13 meeting. If the Regional Board is to proceed with taking action, however, our client will be forced to invoke for that meeting its right to be presented in advance with all evidence to be used against it, to be informed of all testimony and staff presentations that will be used against it, to administrative discovery as allowed under the law, to have adequate time to assess the matters that the Regional Board must produce to it, to have adequate time to prepare and present its defense, and to have the ability to cross-examine all witnesses, including all Regional Board staff members who are participating in the staff proposal. Our client also has a right not to be forced to present all of its arguments and evidence at this time, and so we object to the consideration of any findings at the November 13 meeting that pertain to our client or its project, as that would prejudice the December 11 Regional Board hearing on our client's own permit request.

We respectfully request that the staff remove any proposed findings from the MOU matter that relate to our client or its project. We further urge that the Regional Board take no action on the MOU rescission proposal at the November 13 meeting. Our client is entitled to due process and a fair, impartial assessment of its application, which is scheduled to be presented to the Regional Board on December 11. Our client wants merely to be able to complete the remodeling work that it has already spent a great deal of money doing, and to open promptly with its proposed state-of-the-art wastewater treatment system, so that it, its tenants, and the residents of Malibu can enjoy the benefits of this new commercial and retail space.

Very truly yours,

*James L Arnone*

James L. Arnone
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cc: Ms. Christi Hogin
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Via email

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October 26, 2008

**VIA E-MAIL AND HAND DELIVERY**

Francine B. Diamond, Board Chair
& Members of the Board
Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Re: City of Malibu Comments on Revised Tentative Resolution for Termination of Memorandum of Understanding Regarding Onsite Wastewater Treatment Systems in the City of Malibu

Dear Chair Diamond and Board Members:

I write on behalf of the City of Malibu. The Board staff recommends termination of the Memorandum of Understanding (MOU) regarding Onsite Wastewater Treatment Systems (OWTS) between the City and the Board. The MOU memorializes an agreement reached several years ago under which the City assumed responsibility for permitting OWTSs for single family homes and small commercial development, except restaurants. If the Board terminates the MOU, that responsibility would transfer back to the Board. The MOU also obligates the City to undertake certain programs that the City and the Board agreed would enhance water quality in connection with the management of OWTSs. In this letter, I will provide an update on those programs. The MOU has been a central part of a productive working relationship between our two agencies for several years. Either party may terminate the MOU. The City accepts that the Board may wish to follow its staff recommendation and assume permitting authority over all OWTSs in Malibu and related programs.

However, the staff's recommendation to terminate the Board/City partnership created by the MOU is based entirely on the Board staff's issues with one project, the proposed Malibu Lumber retail project. Consequently, the City wishes to provide the Board additional information that addresses allegations contained in the Revised Tentative Resolution for Termination of the MOU. b

The City is steadfast in its commitment to clean water and proud of its progress made in partnership with the RWQCB and its staff. This relationship has grown over the years since the MOU has been in effect and the City believes that the experience gained through these programs can be used productively to map out the next steps in our joint clean water efforts. In this regard, on October 21, 2008, Councilmembers Sharon Barovsky and John Sibert, on behalf of the City of Malibu, sent a letter to the Regional Board proposing that the MOU be renegotiated, rather than terminated. Renegotiation of the MOU would allow the City and the RWQCB to establish new programs to further our shared clean water goals. a

In support of this course of action, we note that the MOU has worked well over the past four years. As the Qualified Local Agency, the City has diligently carried out the terms of the MOU by reviewing and enforcing the siting, permitting, construction, inspection, monitoring, and performance requirements for nearly 1500 residential and small commercial onsite wastewater treatment systems in all areas of Malibu, including all new, replaced, repaired and upgraded systems. The City has the equivalent of three full-time staff members dedicated to performing these duties and the City Manager estimates that the City spends approximately $500,000 - $750,000 annually to carry out the requirements of the MOU. a

The City has completed or made significant progress on each of the seven specific programs it agreed to implement under the MOU (set out in Section VI of the MOU concerning "Interim Measures.") A short summary of the status of each program follows:

Point of Sale Ordinance: The City requires inspections and permits on all applications for repairs, additions or remodels. Although it took two years to work out the details and obtain the confidence of the real estate community in Malibu, strong support is now behind Ordinance No. 321, which provides for inspection and certification of OWTS upon the sale of property.

Integrated Wastewater Information Management System (IWIMS): Completed with a $667,000 Clean Beach Initiative grant, the web-based program is in use and is essential in the management of the Operating Permit Program, the Point-of-Sale Program, and implementation of the Malibu Wastewater Management Program. Two full-time staff positions have been created for data input and management of this system.

Malibu Lagoon and Beaches Bacterial Contributory Areas: The City requires that all new, renovated, modified, or replaced OWTSs provide a minimum secondary treatment with disinfection (City-defined tertiary treatment), including properties adjacent to the Malibu Lagoon and ocean. The City also works closely with RWQCB staff to implement Waste Discharge Requirement (WDR) permits for all new, renovated, modified, or replaced commercial, restaurant and multifamily OWTSs requiring the issuance of a WDR to assure compliance.

Malibu Lagoon Nitrogen Contributory Areas: Similar to the Malibu Lagoon and Beaches Bacterial Contributory Areas, the City works with RWQCB staff to achieve compliance with water quality criteria through the plan review process. Additionally, the nitrogen limits for Malibu Lagoon and Malibu Creek were adopted by the United States Environmental Protection Agency (EPA) in March 2003.

Water Resource Management: The City has adopted provisions in the Malibu Plumbing Code to require the use of low-flow fixtures when plumbing fixtures are newly installed or replaced. The City, through the Public Works Department, is also implementing conservation programs for the reduction of water consumption. The City also works with the West Basin Municipal Water District to ensure that Malibu commercial properties are taking advantage of rebates to replace high water use fixtures. Since 2005, the Civic Center commercial area reduced water use by nearly 2,000,000 gallons per year, reducing inputs to the groundwater table. Additionally, the City is also investigating programs for rainwater harvesting and use, gray water use, and subsurface irrigation of wastewater for landscaping. The City has met with State representatives and personnel from the State Water Quality Control Board and the Department of Public Health to discuss how to promote these initiatives, including water quality.

Registration Programs: A training and registration program is required for all OWTS inspectors, who must be registered and approved by the City. In order to qualify as an inspector, persons must posses a valid California License as a Certified Engineering Geologist, Registered Professional Geotechnical, Civil Engineer, or a Registered Environmental Health Specialist. In addition, all inspectors must have attended specific OWTS inspection training provided by a nationally recognized entity and a City sponsored training. The City is also working with the National Association of Wastewater Transporters (NAWT), a national organization, and the California Onsite Wastewater Association (COWA) in the development and implementation of training programs for the use in the City for OWTS designers, installers, and maintenance providers. These well-qualified organizations have several industry-recognized programs already developed. It is anticipated that this ordinance will be provided to the City Council by December 2008.

OWTS Information Manuals: These informational brochures are produced and mailed out to all property owners in the City. The brochure has been well received and many OWTS designers include this brochure in their homeowner information packets.

Given this progress, the City is concerned about the effects that termination of the MOU may have. For example, if the MOU is terminated, responsibility for managing and permitting OWTS in Malibu transfers back to the RWQCB staff, including responsibilities for the IWIMS, Point of Sale, inspector certification, and other programs for which the City has been responsible to date under the MOU. Although the City will accept the course of action the Board chooses, the City is concerned about the likely consequences of dissolving the MOU partnership.

City staff is concerned that the City will see a decrease in water quality in Malibu should the Board have insufficient staff to process Malibu permits in a reasonable timeframe. Our past experience suggests that property owners sometimes bootleg systems or avoid upgrading failing systems in order to avoid the anticipated long delays associated with permitting. One of the unsung successes of the MOU has been a marked decrease in the number of bootlegged systems and incidence of delayed maintenance, which we can directly attribute to the efficiency and accessibility of our highly trained permitting and inspection staff. If the MOU is terminated, RWQCB staff assumes this set

C

of responsibilities, and depending on staffing levels and other obligations, may not be able to give the required level of attention to these situations in the Malibu area.

With respect to the tentative resolution to terminate the MOU itself, the City understands that the Board may terminate the MOU without cause, which the City accepts. However, the proposed findings in the draft resolution are contrary to, and not supported by, the available evidence. We strongly contend that the Board cannot make a decision to terminate the MOU based on the proposed findings considering the available evidence. The City is also concerned that, by making the findings proposed by Board staff, the Board will be making determinations that directly affect Malibu Lumber's pending application for WDRs, compromising the fairness of the subsequent hearing on the application. This procedural irregularity is serious and warrants your attention.

Our specific comments on the draft resolution that follow are organized in two sections: the first section deals with what appear to be the key reasons provided by staff for terminating the MOU, and the second addresses other allegations in the draft resolution which are not supported by the evidence.

**Responses to Key Proposed Findings:**

(a) Finding #25: *The existing MOU allows the City to regulate its own discharge. The City did not impose and enforce Regional Board requirements for (a) public notice, (b) evaluation of impacts to adjacent properties, and (c) maintaining 5 feet of separation, despite Regional Board staff collaboration. Specifically, for sufficient public notice, the City should provide a minimum of 30 day public notice and comment period and notification of neighbors within 500 feet of the discharge before permitting or modifying any residential or commercial facility. In the presence of a negative public response, the City should forward the application to the Regional Board and not permit the facility under the MOU. To evaluate impacts to adjacent properties and before permitting a commercial or residential facility, the City should require a hydrological evaluation demonstrating that the additional discharge will not elevate the groundwater beneath adjacent properties to less than 5 feet under any conditions. The five feet of separation should be maintained at all times between the base of the leach or disposal field and the groundwater. Monitoring wells should be used or installed by the City to document the*

*performance of all septic systems. If the separation to groundwater is not maintained, the City should forward the permit to the Regional Board for enforcement action and rescind the permit granted under the MOU. Finally, dischargers currently holding Regional Board WDRs and awaiting City approval for upgrades, should promptly receive or be denied that approval.*

There are several statements in this finding which are not correct. First, the MOU does not restrict the City from issuing a permit to an operator leasing property owned by the City, even if the practical effect is that the City is a co-permittee because of its ownership interest. f1

Second, all hearings for the Malibu Lumber Yard project were duly noticed in accordance with the applicable regulations. As with all noticed meetings, notice of the proposed project was posted on the City's website 10 days in advance of the scheduled hearing, published in the local newspaper and mailed to property owners within a 500' radius of the subject property. The Environmental Review Board (ERB) heard this item on March 28 and May 23, 2007 at duly noticed public meetings. The Planning Commission approved the land use permit and environmental document on August 21, 2007 and the environmental documentation (Mitigated Negative Declaration NO. 07-004) fully discussed known and reasonably foreseeable impacts. There were no appeals filed for the project. f2

The groundwater is known to be 10-15 feet below surface elevation and the proposed maximum discharge from the Malibu Lumber Yard project, as modeled, will not result in less than 5 feet of separation. This hydrological analysis has been documented by Van Beveren & Butelo, Inc. and provided to the City on September 26, 2007. This document, along with updated geotechnical reports, was submitted to the Regional Board staff and also included as Appendix C of the Ensitu Report dated August 13, 2008. The undisputed evidence is that the groundwater depth is more than adequate to maintain 5 feet of separation. Even with this evidence, the applicant will provide index wells to monitor separation as required by the Regional Board staff. While there is no substantial evidence that less than 5 feet of separation might occur from this discharge, if it did, the City is prepared to enforce the requirement under its authority or to refer the matter to the Regional Board for enforcement. f3

(b) *Finding #23: The City has not provided sufficient public process. In August 2008, the City moved the location of the Malibu Lumber leach field to discharge within Legacy Park. This action allocated subsurface disposal capacity, previously committed by the City to waste water disposal for the Civic Center to a private facility leasing City property, after a Negative Declaration was certified by the City as lead agency, thereby limiting public comment on the change.*

The City has followed all applicable State laws, including CEQA, in the processing of the Malibu Lumber Yard application. The City did not change the proposed location of the proposed leach field after the Negative Declaration was certified. As defined by the recorded legal description, the proposed Legacy Park and the Malibu Lumber Yard facility are both located on the same piece of property owned by the City. It was anticipated with the Malibu Lumber Yard that the land adjacent to the project in the area proposed for Legacy Park could be used for a leach field. These issues were discussed as alternatives in the CEQA document. f4

(c) Finding #18: *During the review of the Malibu Lumber ROWD, Regional Board staff found that the assimilative capacity of the Civic Center area is already exceeded under certain conditions. The existing Onsite Waste Water Treatment commercial systems in the Civic Center have systems which fail to adequately treat the entire volume of waste generated and which do not maintain the minimum 5 feet of separation. Existing mounding studies completed as part of WDR applications demonstrate that additional technical analysis will better characterize, but not eliminate, evidence that discharge may not be assimilated into the groundwater during periods of 30 days to 6 months during wet conditions without the creation of an unacceptable separation with the surface. Groundwater discharge during these periods violates State Board Resolution 68-16, "Statement of Policy with respect to Maintaining High Quality of Waters of California." Continued residential permitting, and pending requests for waste discharge applications for commercial facilities to the Regional Board are predicted to utilize an unknown, but growing, portion of the remaining disposal capacity for uses other than a waste water treatment system.*

Despite requests, the Regional Board staff has never identified or provided any extant scientific evidence for the assertion in this draft finding that the assimilative capacity of the Civic Center has been exceeded or may be exceeded. Nor has staff explained under what conditions the proposed discharge from the Malibu Lumber Yard would cause such an occurrence. In contrast, the City does not judge the results of the mounding studies currently underway to support the conclusion asserted in this draft finding. The City reaches a different conclusion and would appreciate receiving an explanation of the Regional Board staff's analysis so that the City and Regional Board staff could discuss the implications for additional discharges in this area. f5 f6

(d) Finding #22: *The City has failed to maintain the standards required in the MOU. The City has failed to provide sufficient engineering documentation to reasonably demonstrate that the low-flow high-strength discharge from Malibu Lumber will meet state and regional water quality control plan standards.*

In a letter to Tracy Egoscue dated September 12, 2008, Jim Thorsen stated "The City will ensure through the plan check and construction process that the system will operate at the proposed low levels to meet water quality standards. The design engineer has stated that minor design and operational changes can be implemented to ensure system compliance for low flows. The City will permit the project only if and when it is satisfied that these conditions can and will be met." The engineering documentation identified in this draft finding has been requested for the Malibu Lumber Yard project and will be evaluated by the City against the relevant standards before any permit is issued. In addition, there will be no high-strength effluent generated in Phase I of the Malibu Lumber Yard project. Phase II will generate some high-strength effluent from the planned restaurants and other planned businesses, which will be treated along with the low-strength effluent in the Malibu Lumber Yard's advanced treatment plant before discharge. Because of the high-strength component and the increased volume of effluent from the expected higher occupancy in Phase II, any discharge of the treated effluent from Phase II will require permitting by the Regional Board. f7

**The remaining proposed findings omit certain key information and create the misleading impression that the City and Malibu Lumber LLC are attempting to get permitted a facility in circumvention of the applicable requirements and over the objections of Regional staff.**

(e) Finding #21: *The City of Malibu MOU states that Sections 13290 and 13291 of the California Water Code (CWC) "authorize the Regional Board to delegate implementation of these standards [state and regional water quality control plans] to a Qualified Local Agency (QLA)." Between 2007 and 2008, Regional Board staff clearly and repeatedly described the standards which the City should use in the oversight of Malibu Lumber project.*

*(f) Finding #1: The Regional Board completed a Memorandum of Understanding (MOU) with the City of Malibu (City) on September 17, 2004, delegating the Boards authority to the City as a Qualified Local Agency to manage residential and small commercial septic systems to improve water quality in the Civic Center area, requiring that their discharge be 'consistent with any applicable state or regional water quality control plans and in the public interest.'*

The decision of how to proceed with respect to the Malibu Lumber Yard project has been the subject of many meetings and communications among the Regional Board staff, representatives of the City, and Malibu Lumber LLC. One such meeting occurred on November 30, 2007, where it was agreed that the City would prepare an RFP and hire a team of experts to model the groundwater for the entire Civic Center area. The Board staff agreed that knowing that this study was underway for civic center wide issues led the Board staff members to indicate they would support the project construction as scheduled and agreed that they would support a WDR authorizing dispersal of the Lumber Yard effluent prior to the study being completed. It was acknowledged that the mounding study would not be completed prior to the anticipated opening of the remodeled Malibu Lumber Yard. It was also understood from available evidence and information that opening of the Lumber Yard would not adversely affect water quality.

f8

There then followed a series of communications raising questions or concerns and resulting in responses normal to any such complicated project. Another meeting occurred

on July 23, 2008 when representatives of the City and Malibu Lumber LLC met with the Executive Officer to discuss the staff proposal that the wastewater treatment plant be designed to meet a nutrient (nitrogen) level of 1 mg/l requirement. It was pointed out that there is no Advanced OWTS (AOWTS) known to be capable of meeting the proposed 1mg/L nitrogen level. However, Malibu Lumber LLC agreed that it could and would design a system that could meet a 3 mg/L nitrogen level, even though there is no State-mandated nutrient level this stringent.

At this meeting, the Regional Board and Malibu Lumber LLC representatives also discussed the potential to include tertiary treatment as part of the design for the AOWTS so that the effluent could be spray irrigated at Legacy Park. Malibu Lumber LLC also agreed to add such treatment capacity to its treatment plant. These modifications, along with certain others, make the new wastewater treatment system at the Malibu Lumber Yard facility state-of-the-art and will treat wastewater to higher quality standards than any other system permitted in Malibu.

In response to this discussion on spray irrigation, the City later submitted calculations to demonstrate that the park could utilize the spray irrigation within the park, which would thereby eliminate all dispersal of effluent into the dispersal field except for just 2 months of the year. Although not relevant to the current Malibu Lumber Yard permit applications, spray irrigation is potentially a significant future benefit because it does not generally contribute to increased groundwater levels since sprayed discharge is absorbed by plants or evaporates. Plant uptake of spray irrigation offers another significant benefit, namely phytoremediation, since the normal uptake of nitrogen by plants reduces or eliminates the addition of nitrogen from the treated wastewater to the groundwater, one of Regional Board's major concerns. However, issues such as the frequency of spray irrigation and the location of the irrigation devices cannot be addressed until the Legacy Park EIR is certified and the design of the Park is underway.

18 Cont.

(g) Finding #2: *On September 4, 2008, the City notified the Regional Board of its intent to regulate its own discharge at Malibu Lumber under the MOU.*

On August 7, 2008, in a telephone call to the Regional Board staff and with a follow up email dated August 8, 2008, the City notified the Executive Officer of the Regional Board of its intent to utilize its authority under the MOU to permit small commercial discharges. The MOU states "the City of Malibu shall have lead responsibility for onsite

wastewater treatment systems that discharge waste from non-food related commercial facilities that generate 2000 gallons per day or less." This decision was made in light of the fact that it seemed highly unlikely that an individual WDR would be issued by the Regional Board prior to December 8, 2008, the date by which Malibu Lumber LLC needs to open certain parts of Phase 1 of the Malibu Lumber Yard project to occupancy to avoid serious economic harm. The Malibu Lumber LLC's engineer submitted calculations to demonstrate the flows from the opening of Phase 1 of the Malibu Lumber Yard project would be less than 2,000 gpd. Further, it was stated that the treatment facility for Phase 1 would fully comply with all of the requirements identified by the Regional Board staff that are applicable to the project.

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On August 11, 2008, Regional Board staff notified the City that it objected to this use of the City's MOU authority due to the belief that 1) the Civic Center has a rising water table, 2) the groundwater assimilative capacity has been met, and 3) water quality will be impaired because the system would not remove any significant amount of nitrogen. It was suggested that enrolling the Malibu Lumber Yard facility under the GWDR for small commercial facilities be pursued in lieu of the City issuing a permit under its delegated MOU authority.

On August 14, 2008, the City notified the Regional Board staff that the AOWTS would be designed and constructed in accordance with the Regional Board staff requirements. The operational methods would need to be adjusted for the lower flows. It was reiterated that 1) the flows will be less than 2000 gpd; 2) the engineer had confirmed the low-flow calculations; 3) the dispersal area would easily allow percolation of this amount; and 4) index wells would be installed to monitor any changes in groundwater.

On September 3, 2008, the Regional Board staff notified the City that it was in receipt of all the latest submittal information. It was stated that in order to process a GWDR, the only items missing were fees, Form 200, and address labels.

On September 4, 2008, City notified the Regional Board staff that the City was evaluating whether to issue a permit for less than 2000 gpd to the Malibu Lumber Yard project, as it is authorized to do by the MOU, and the application information sent to the staff is for an individual WDR and not a GWDR.

(h) Finding #3: *On September 5, 2008, the Regional Board notified the City and Weintraub Financial [Malibu Lumber LLC] (Dischargers) of its intent to issue General Waste Discharge Requirements (GWDR) Order No. 01-031 for the discharge of non-restaurant flows less than 3,200 gallons per day and advised the Dischargers that "should Weintraub Financial [Malibu Lumber LLC] - Malibu Lumber open without WDR (Waste Discharge Requirements), the Regional Board may, without further notice, take enforcement action for illegal discharge."*

This draft finding ignores the fact that through the MOU the Board delegated to the City the authority to permit such discharges below 2000 gpd. If the City so permits the Malibu Lumber Yard, it will have a valid permit to discharge, subject to the limitations noted above and any others the City imposes as a result of its review of the permit application, which is currently underway. Provided that the Malibu Lumber Yard less-than-2,000 gpd discharge meets the requirements for such a permit and complies with the permit terms and conditions, any such discharge will not be unlawful. f 10

(i) Finding #5: *On September 19, 2008, the Regional Board issued a 30 days notice letter informing the City of Malibu of their intent to terminate the MOU for the City of Malibu.*

On September 27, 2008, the City notified the Regional Board Executive Officer that the September 19, 2008 letter was premature and of no legal effect under the MOU. The MOU explicitly states that the Regional Board (not its staff) has the authority to terminate the MOU. Issuance of a 30 day notice letter must come after the duly noticed public hearing. More importantly, based on the statements in this tentative resolution and by individual Board staffers, the basis for terminating the MOU appears to be that the City is about to permit a discharger, the Malibu Lumber Yard, that the Regional Board staff does not think should be permitted by the City. The City has not yet made a final decision, as it is still evaluating the permit application, but it has always been mindful that any such permit must comply with the requirements of Order 01-031 to be issued. f 11

(j) Finding #6: *The City is proceeding to construct and permit Malibu Lumber.*

The Malibu Lumber Yard project involves the remodeling of the long-existing Malibu Lumber Yard structures so that they can be re-opened for commercial and retail use. Malibu Lumber LLC is responsible for this renovation, not the City. Renovation was only started after a meeting on November 30, 2007 meeting of representatives of the Regional Board, the City and Malibu Lumber LLC where the path forward, including the decision to allow the start of renovation, was agreed to by the parties. f12

(k) Finding #7: *After 2001, existing businesses in the Civic Center area, near Legacy Park and Malibu Lumber Plaza, were enrolled by the Regional Board in GWDR Order No. 01-031 with the expectation that a centralized waste water treatment plant would be constructed and/or the businesses' substandard septic systems would be upgraded.*

The GWDR Order No. 01-031 has no requirements or expectations that a centralized wastewater treatment plant would be constructed. Nonetheless, the City is proceeding with the planning process for a centralized wastewater treatment plant, as described below. f13

(l) Finding #8: *A letter to interested parties from the Malibu City Manager dated July 11, 2003, states that "the Malibu City Council voted unanimously to embark on a course that will resolve sewage treatment issues in the Civic Center by installing a City operated clean water facility...The concept involves the installation of a wastewater treatment facility along with storm water retention facilities near the Civic Center on the area currently known as the Chili Cook-off site." The Malibu's Civic Center Integrated Water Management Concept Plan of that date further defines the City's plans. The document cites a detailed analysis of waste water collection, reclamation and reuse alternatives (Fugo 1997). It further quotes the findings of the 2003 draft Questa study saying: "the Chili Cook-off property [Legacy Park] is a suitable area to provide capacity for the treatment, reuse and dispersal of waste water effluent produced in the study area when combined with recycling of treated waste water to the greatest extent feasible, groundwater recharge/percolation systems in the study area and irrigation of landscape/open space area.... (page 2)." In*

*2005, Questa completed a final study quantifying options for sewage disposal in the Civic Center area.*

f 14

A close reading of the tentative resolution reveals that concerns over the Malibu Lumber Yard project are created by the Regional Board staff's view that the City no longer intends to proceed with plans for a centralized wastewater treatment plant. This view is inconsistent with the City's position and not supported by any available evidence. To the contrary, the City's "Civic Center Integrated Water Management Concept Plan" of that date sets out the City's plans. The document cites a detailed analysis of wastewater collection, reclamation and reuse alternatives (Fugo, 1997). It further quotes the findings of the 2003 draft Questa study saying: 'the Chili Cook-off property [Legacy Park] is a suitable area to provide capacity for the treatment, reuse and dispersal of wastewater effluent produced in the study area when combined with recycling of treated wastewater to the greatest extent feasible, groundwater recharge/percolation systems in the study area and irrigation of landscape/open space area...." (page 2)."

In furtherance of those plans, in 2005 Questa completed a set of studies addressing options for sewage disposal in the Civic Center area, including: 1) Final Integrated Water Quality Management Feasibility Study – Questa (4/28/2005), 2) Integrated Water Quality Management Feasibility Study – Questa (Addendum 7/1/2005), 3) Malibu Civic Center Integrated Water Quality Management Project Financing Plan dated July 18, 2005, and 4) Wave Property Analysis for Wastewater Reclamation Facility – FINAL report prepared by Questa Engineering Corporation – August 16, 2005. The final Questa study in 2005 identified the "Wave" property as the ideal site for a treatment plant. The City has had ongoing discussions with the Wave property owners, but no agreement has been yet reached. The City has also hired RMC Engineering to complete preliminary plans for a wastewater treatment facility. The City has spent over $300,000 on that design. In addition, the City has committed $330,000 for the groundwater mounding study negotiated with the RWQCB staff, which needs to be completed before further design work is undertaken. In sum, the City remains fully committed to pursuing a centralized wastewater treatment facility for the Civic Center area as initially set out in the 2003 documents.

(m) Finding #9: *In 2007, City consultants found that the percolation capacity at Legacy Park was less than anticipated (pages 5-1, 6-1, 6-5). In 2008, the City proposed that additional effluent from the commercial*

> *development, Malibu Lumber, be discharged through irrigation and subsurface disposal in Legacy Park. These factors diminish the subsurface assimilative capacity in the Civic Center area. The subsurface disposal capacity estimated in the City's final 2005 Questa report, when mounding is considered, is 58,000, to 67,000 gallons per day (gpd) and even without the reduced capacity at Legacy Park these flows are less than Questa's predicted waste water treatment flows of 120,000 to 200,000 gpd.*

The allegations in this finding point to a possible future scenario that has not yet developed and misrepresents the available evidence concerning the Malibu Lumber Yard project. The existing capacity of the vacant property to be used for the Malibu Lumber Yard leach field is indeed estimated to be 58,000 to 67,000 gpd, as shown above. However, current uses of that capacity are not causing an exceedance of assimilative capacity. The infiltration of 2000 gpd or less from the Malibu Lumber Yard has approx. 4% impact to available percolation capacity as identified in the report, and will not cause an exceedance of assimilative capacity or reduction in the required 5 feet of separation.

f15

The impact of unpermitted future projects, while not relevant to the Malibu Lumber Yard project application, is also overstated. More recent estimates of City stormwater discharge quantities are much less than quantities initially projected in the Questa report. And in light of the Questa analysis, the City now plans to relocate such future flows, to other locations, possibly to the "Wave" property as noted above.

The City Manager has repeatedly made these points to the Regional Board staff, and as recently as his letter dated September 12, 2008, has asked that staff provide any scientific studies or other evidence that the Civic Center area has more subsurface discharge than can be currently assimilated.

Also important, in the event that future projects do put pressure on the assimilative capacity of the Civic Center area, the plan to channel most of the Malibu Lumber Yard's discharge into spray irrigation for Legacy Park could be very beneficial. The combined spray irrigation/City stormwater reclamation use would result in a good balance by providing spray irrigation during Malibu Lumber Yard's peak periods (i.e. summer), which fortunately occurs during the driest months when Legacy Park vegetation would need supplemental irrigation. Conversely, Malibu Lumber Yard's lowest discharge would occur during relatively "wet" months when supplemental (spray) irrigation would be much less in demand.

(n) Finding #10: *Recycling and Waste Water Treatment Plant (WWTP) capacities were again investigated by the Legacy Park contractor, but not quantified in the Legacy Park Final Environmental Impact Report (FEIR), uncertified at the September 23, 2008 Malibu Planning Commission meeting. The Legacy Park FEIR states that "a final decision has not been made regarding the type of technology or size of the waste water system... the waste water treatment system is addressed at a programmatic level (page S-16)." This statement contrasts with the City's integrated water management plan, completed in response to the Santa Monica Bay Bacteria Total Maximum Daily Load (TMDL).*

The Legacy Park project is a combined stormwater project, passive park, habitat restoration, and educational center. It will have the potential to utilize treated wastewater for irrigation purposes, but it is not a wastewater treatment project. The wastewater project is a separate project that is being developed on a separate path, as described above. Accordingly, any future wastewater treatment project for the Civic Center area would not necessarily be discussed in detail in the Legacy Park documents. f16

(o) Finding #11: *The Legacy Park FEIR lists 10 residential projects and 4 commercial and municipal projects in the Civic Center area which are proposed, in the planning stage, under construction, or recently completed. These projects create additional subsurface discharges that are or will be permitted by the City, or have pending Reports of Waste Discharge (ROWD) with the Regional Board. The City further states that the cumulative impacts of these projects are to be mitigated through Malibu's Legacy Park Project because "the proposed project would have an overall beneficial impact on cumulative water quality by increasing the City of Malibu's stormwater treatment capacity (page 4-10." The FEIR does not quantify water quality effects produced by groundwater level rise where ongoing development increases the volume of waste water generated. Cumulative discharge impacts may be resolved by a WWTP and/or other long term remedy.*

The Legacy Park project is not a wastewater treatment project and does not propose to discharge stormwater or wastewater into the ground to address future impacts from other projects. The draft FEIR, which has not been certified yet, does not purport to evaluate the cumulative impacts of the potential future or pending projects in the Civic Center area mentioned above. Rather, cumulative impacts of proposed development are being investigated as part of the Groundwater Mounding study that is currently underway, and to the extent that adverse impacts may be identified, those impacts and their possible mitigation will need to be addressed in the context of the future individual projects. f17

(p) Finding #12: *On May 7, 2007, the Regional Board received an ROWD or application for Waste Discharge Requirements (WDRs) for Malibu Lumber. On July 27, August 17, and September 27 of 2007, the Regional Board staff provided written comments on the Final Environmental Impact Report for Malibu Lumber, noting that it did not assess the cumulative impacts from the project and other project in the Civic Center area. Staff met with representatives of the City of Malibu every month there after until January 2008, when the Dischargers, the City of Malibu and Weintraub Financial [Malibu Lumber LLC], met with the Regional Board's Executive Officer. At that time, the City agreed to complete a groundwater study to assess mounding and cumulative impacts before Malibu Lumber opened.*

The City and Malibu Lumber LLC have a different understanding than the representation in this finding that the mounding study was to be finished before Malibu Lumber opened. In one of his most recent letters to Tracy Egoscue, dated September 12, 2008, the City Manager, Jim Thorsen, repeated a point he has raised many times with the E.O. and her staff: "...upon your request, the City agreed to perform a regional groundwater modeling study for the civic center area, which we undertook at great expense to the City. The City agreed to do the study based on your assurance that the applicant would be able to construct and open for business prior to the study results, which would lag the opening of the site by several months. We both recognized that this verbal agreement would be beneficial in order to avoid delay of this project which will generate lease revenue that will be used to help fund our Legacy Park project and provide the water quality benefits the RWQCB has been seeking." f18

Further, the allegations in this finding ignore the fact that many of the comments raised by the Regional Board staff were based on evaluating outdated plans. In a letter to John

J. O'Brien dated August 20, 2007, John N Yaroslaski states "As directed Ensitu Engineering Inc. (EEI) reviewed the July 27, 2007 and August 17, 2007 letters from the California Regional Water Quality Control Board (RWQCB) and determined that the letters were written based upon superseded designs submitted to RWQCB prior to EEI's involvement. We are surprised at the tenor of the August 17 letter, particularly because I held a conference call with Elizabeth Erickson, RWQCB, and Andrew Shelton, Environmental Health Administrator for the City of Malibu in early August. In that conference call I advised Elizabeth and Andrew that I had been retained to redesign the proposed waste treatment system, and reviewed our intended design for the treatment and dispersal of wastewater. Both Elizabeth and Andrew expressed support of the proposed new design. Further, Elizabeth [Erickson] confirmed that she has no concerns about the new design achieving full compliance with all requirements for a general permit."

f18 cont.

(q) Finding #13: *In January 2008, Malibu Lumber began construction and the Malibu City Council approved funding for a groundwater study. However, the Request for Proposal (RFP) was not released until April 2008. Despite a meeting between Regional Board staff and the City and a March 3, 2008, letter from the Regional Board on deficiencies in the RFP concerning the absence of transient tests to assess short term critical conditions, the RPF was limited to an expansion of a previous steady state model based on existing Malibu well coverage and future collection of data from those wells.*

This finding insinuates that the City negligently or purposefully delayed the mounding study, which absolutely is not the case. On December 14, 2007, the City Council approved the funding for a groundwater study and authorized staff to prepare an RFP. Staff then consulted with groundwater modeling professionals from across the country to put together an RFP. The draft RFP was sent to Regional Board for review in February of 2008. Nearly a month later, in March, the City received comments from the Regional Board staff and circulated them to the modeling professionals to determine what changes should be included. At that time, there was no discussion of need for a transient model by Board staff. The time lag from March to release of the RFP in April was largely due to the time needed to assure that the RFP complied with State bidding procedures and to prepare legal and defensible documents. Apparently the Regional Board staff member who commented on the RFP thought she was requesting a transient modeling study, but her choice of terms led the City staff to believe that the RFP was properly drafted for

f18 cont.

what the Board staff wanted. It should also be noted that the City's experts, who are acknowledged leaders in the field, believe that a steady state model will provide the answers the Regional Board staff is seeking. However, the City's consultant is willing to provide a transient model for an additional cost of approximately $50,000. The City would like to discuss this option further with the Regional Board staff to make sure it is necessary, before authorizing this work.

f 18 cont

(r) Finding #14: *Between February 2008 and August 2008, staff had multiple contacts with the City and Weintraub Financial [Malibu Lumber LLC] representatives in an attempt to revise the engineering design to comply with state and regional water quality control plans and TMDLs.*

This finding fails to acknowledge that the City and Malibu Lumber LLC did respond to the comments and repeatedly made changes to meet the concerns of the Regional Board staff. The engineering design does comply with State mandated TMDLs for bacteria and includes certain requested additional features for the wastewater treatment facility that exceed current State drinking water requirements, such as a 3 mg/L rather than a 10mg/L nitrogen limit. By contrast, it is noted that the recently completed wastewater treatment facility on a project located less than 100 feet from the same Creek with a much larger discharge, had nitrogen limits of 10mg/L imposed upon it from the RWQCB. The Malibu Lumber Yard dispersal area is approximately 2,000 feet from Malibu Creek.

f 19

(s) Finding #15: *A conditional approval for a ROWD was sent on May 16, 2008, signaling the Regional Board's readiness to prepare a WDR. The letter specified the commitments and additional technical documentation to be provided by the City and Weintraub Financial [Malibu Lumber LLC], specifically (a) engineering design for an upgrade treatment system to provide disinfection at the highest level of Title 22 standards, (b) locations for monitoring wells to continuously measure elevation of the water-table to ensure a minimum of five feet of separation is maintained from the base of the leach field to shallow groundwater and specifying modifications to facility operations sufficient to postpone discharge if five feet of separation was not maintained, (c) design ensuring the leach field is constructed to maintain a water quality of 1 milligrams per liter (mg/L) total nitrogen in the summer in the underlying groundwater and (d) use of the highest*

*recorded groundwater levels and conservative percolation values in the final design of the leach field. Further, (e) documentation was required showing that the operation of Malibu Lumber would not preclude the operation of Legacy Park and/or a WWTP.*

(t) Finding #16: *The technical material supplied by the Dischargers by August 25, 2008 did not address all of these issues and on September 5, 2008, the Regional Board issued a letter indicating that the ROWD was still considered to be incomplete.*

Both of these findings (#15 and #16) fail to acknowledge that this information requested has been provided with the exception of the 1mg/L total nitrogen. As explained previously, there is no AOWTS that presently can meet this requirement. ) f20

**Conclusions**

The City of Malibu understands that, under the terms of the MOU, the Board may terminate the MOU without cause. However, the City is concerned about the effects of termination with respect to the processing of OWTS applications within Malibu and on the environment. There is no evidence in the tentative resolution or staff report that these serious potential impacts have yet been assessed or addressed.

Additionally, the proposed findings in the draft resolution are contrary to, and not supported by, the available evidence. The City does not see how the Board can make a decision to terminate the MOU based on the proposed findings considering the available evidence.

The City is also concerned that, by making the findings proposed by Board staff, the Board will be making determinations that directly affect Malibu Lumber LLC's pending application for WDRs, compromising the fairness of the subsequent hearing on the application. This procedural irregularity is serious and warrants your attention.

Finally, unrelated to Malibu Lumber's proposed project, the City Council believes this may be a good time for the Board and the City to sit down together and reassess the MOU. The City believes that its successful implementation of programs contemplated by the MOU provide valuable information and experience that can be used to develop

further programs. Should the Board wish to renegotiate the MOU, the City is eager to engage in that discussion. Should the Board wish to terminate the MOU, the City, of course, will cooperate in transferring the information and files associated with the OWTSs permitting and management program, which the City has developed in connection with the authority delegated to it under the MOU.

Thank you for your consideration.

Very truly yours,

Christi Hogin
City Attorney
City of Malibu

cc: Tracy Egoscue, Executive Officer
Gene Lucero, Esq.
James Arnone, Esq.