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

Final Technical Staff Report

Evidence in support of an Amendment to the *Water Quality Control Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*

to Prohibit On-site Wastewater Disposal System in the Malibu Civic Center Area

Technical Memorandum #5:

Dischargers with Unsuitable Hydrogeologic Conditions for High Flows of Wastewaters Resort to Hauling Liquid Sewage and Sludge to Communities that have Sewer and Wastewater Treatment Facilities

by
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Ryan Thacher, Student Intern
Groundwater Permitting Unit

November 5, 2009

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Introduction

Relatively intensive land use on commercial facilities in the Malibu Civic Center area[1] (Figure 1) generate wastewater flows at rates that exceed the capacity of the on-site wastewater disposal systems (OWDSs) to discharge wastewaters into the subsurface. Lack of treatment equipment capabilities and capacities and lack of adequate space on their properties limit the dischargers' ability to dispose the treated wastewater into the subsurface. In addition to these limitations, there are hydrogeological constraints in the Malibu Civic Center area, such as a high water table, that further limit the dischargers' ability to transmit flow into the subsurface. Therefore, to avoid OWDS failure, and spills, many dischargers resort to hauling liquid sewage and sludge to communities that have wastewater treatment facilities.

In order to quantify the reliance of dischargers on the practice of hauling, Regional Board staff reviewed the self-monitoring reports submitted by twenty permitted facilities, shown in Figure 1, in the Malibu Civic Center area.

[1] The area subject to the proposed prohibition is referred to as the Malibu Civic Center area (Figure 1). The area was defined using topographic features and drainage patterns, and encompasses the hydrologic areas of Malibu Valley (also referred to as the lower Malibu Creek watershed), Winter Canyon, and adjacent coastal strips including Amarillo Beach, Malibu Beach, Malibu Lagoon, and Malibu Lagoon Beach (aka Surfrider Beach, including First, Second, and Third Points at Surfrider). For more discussion on the prohibition boundaries defining the Malibu Civic Center area, refer to the Technical Staff Report Overview and the Environmental Staff Report.

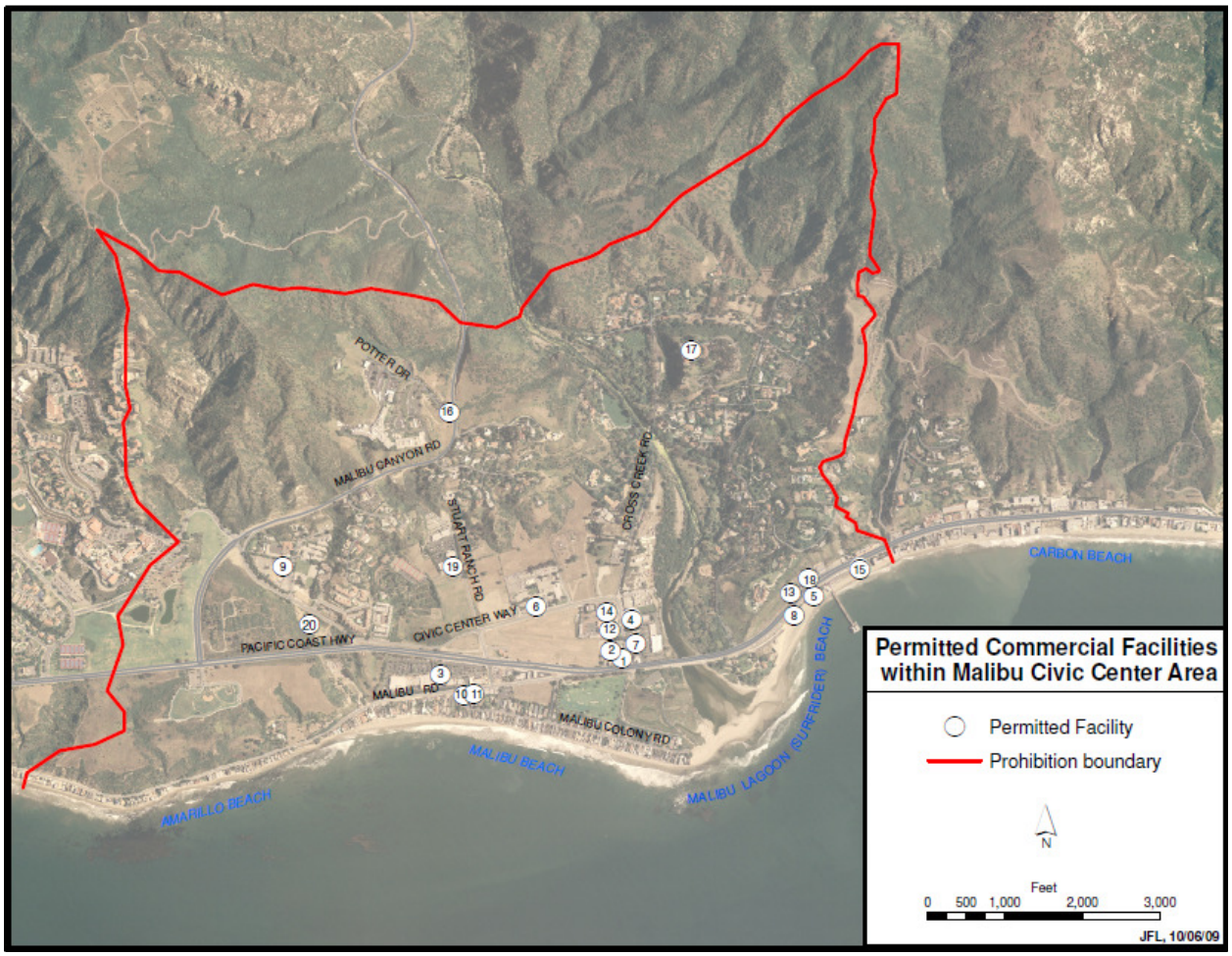


Figure 1. The Malibu Civic Center area includes Malibu Valley, Winter Canyon, and the adjacent coastal strips of land and beaches. Locations of twenty commercial facilities with a Waste Discharge Requirement (WDR) through the Regional Board are shown.

1. Prudnetial Malibu Realty	11. Los Angeles County Fire Station #88
2. Malibu Lumber	12. Malibu Country Mart I
3. Malibu Colony Plaza/Colony Plaza LLC	13. Malibu Shores Motel
4. Cross Creek Plaza/Malibu Creek Preservation	14. Malibu Country Mart II
5. Malibu Pier State Park	15. Malibu Beach Inn
6. Malibu Admin. Center (Malibu Civic Center)	16. Hughes Research Lab, Inc. (HRL)
7. Malibu Country Mart III	17. Serra Retreat Center
8. Surfrider Beach	18. Jack in the Box (Checker Board Properties)
9. Los Angeles County Road Maintenance Yard	19. Miramar Properties
10. Morton Gerson Colony Plaza	20. Malibu Water Pollution Control Plant (MWPCP)

Background

Septic systems, also known as on-site wastewater disposal systems (OWDSs), are used to reduce or eliminate the pathogenic organisms that are found in wastewater. Pathogenic organisms in wastewater pose a relatively minor threat to water resources when OWDSs are properly sited, designed, constructed, and operated. On the other hand, improperly, designed or operated OWDS can be a significant source of surface water and groundwater contamination that can lead to waterborne disease outbreaks and other adverse health effects. The bacteria and viruses found in the wastewater can cause numerous diseases including gastrointestinal illness, cholera, hepatitis A, and typhoid. Nitrogen, which is also found in the wastewater, primarily from urine, feces, and food waste, can cause methemoglobinemia (blue-baby syndrome) in infants.[2]

Malfunctioning OWDSs can lead to illicit discharges of septic waste, which is the subsurface or surface release, for any reason or cause, of sewage, wastewater effluent, or any material or substance from an improperly functioning OWDS. An illicit discharge includes dumping, leaking, overflowing, pumping and spilling. This technical memo will quantify reliance on pumping and hauling off-site of septic waste to control wastewater generated by relatively intensive land use activity in the Malibu Civic Center area.

Proper operation and maintenance of the OWDSs is a crucial preventive measure to avoid septic system failures. Inadequate septic system operation and maintenance can lead to failure even when systems are designed and constructed according to regulations; therefore, dischargers pump their OWDSs at regular intervals to avoid potential problems or complete failure of the system. Local health officers recommend that residential septic systems be pumped at least once every three years and commercial systems be pumped twice a year. They also recommend that restaurants, as part of their Best Management Practices, pump out their grease interceptors once a month. The presence of grease in the septic system causes scum formation that can lead to septic failure. However, it has come to the attention of Regional Board staff that some of the large commercial establishments in the Malibu Civic Center area are pumping their septic systems multiple times per week, for large volumes of waste. Regional Board staff believes that the septic systems may be adequately treating a portion of the wastewater generated by the relatively intensive land use activities, but lack sufficient on-site capacity to dispose of the effluent. Many of the seepage pits and leach fields in the area have been in use for decades and can no longer serve their purpose. Also there are hydrogeologic constraints, such as the lack of suitable surface area for new leach fields, as well as the extremely limited vertical separation between leach field disposal sites and the groundwater table, that further limit wastewater disposal on-site. These factors cause a trend of increasing reliance on septic pumping and hauling off-site.

Sources of Data

Within the Malibu Civic Center area, there are twenty commercial dischargers (listed in Table 1) with Waste Discharge Requirements (WDRs) from the Los Angeles Regional Water Quality Control Board (Regional Board). A WDR requires each discharger to submit quarterly monitoring reports, which must include septic waste flow data, and details of any septic system

[2] U.S. EPA Source Water Protection Practices Bulletin, "*Managing Septic Systems to Prevent Contamination of Drinking Water.*"

hauling and pumping. If pumping and hauling occurred, dates, quantities, and pumping company information must be provided. If no pumping occurred, this must also be stated. Regional Board staff used information supplied in monitoring reports to conduct their analyses.[3]

There are five additional commercial facilities (Equilon Enterprises, J & P Limited, Malibu Animal Hospital, Malibu Professional Arts Building, and Malibu Road, LLC) with discharges of less than 2,000 gallons per day (gpd) that were permitted by the Regional Board, but oversight was transferred to the City of Malibu in February 2005. The City of Malibu does not collect hauling data for the commercial dischargers under their oversight; therefore, no data are available for these five dischargers. Additionally, there are thirteen unpermitted dischargers within the Civic Center area, and no hauling information is available for these dischargers.

Table 1. Dischargers permitted by the Regional Board in the Malibu Civic Center area.

Discharger Name
Checker Board Properties (Jack in the Box)
Cross Creek Plaza/Malibu Creek Preservation
Hughes Research Labs (HRL)
Los Angeles County Fire Station #88
Los Angeles County Road Maintenance Yard 336
Malibu Admin. Center (Malibu Civic Center)
Malibu Beach Inn
Malibu Colony Plaza/ Colony Plaza LLC
Malibu Country Mart I (MCM 1)
Malibu Country Mart II (MCM II)
Malibu Country Mart III (MCM III)
Malibu Lumber
Malibu Pier State Park
Malibu Shores Motel
Malibu Water Pollution Control Plant (MWPCP)
Miramar Properties (MiraMar Investments Co.)
Morton Gerson Colony Plaza
Prudential Malibu Realty
Serra Retreat Center
Surfrider Beach

Seven dischargers included in Table 1 and located within the Civic Center area are left out of this analysis:

[3] Many monitoring reports are incomplete, missing data such as waste flow rates or lacking information about waste hauling (if no hauling was done during a quarter, dischargers are required to report that as well). For a more complete analysis, Regional Board staff made assumptions to fill these gaps in the data based on data that was available. For example, if no fourth quarter data was available for a certain year and the first three quarters contained complete data sets, an average value based on the first three quarters would be used for the fourth quarter data. All assumptions made for this analysis are outlined at the end of Appendix A.

- Miramar Properties is omitted because it did not submit monitoring reports. Subsequently the Regional Board issued a Notice of Violation (NOV) to MiraMar Investments Co. for non-submittal of monitoring reports.
- Prudential Malibu Realty, Morton Gerson Colony Plaza, and Los Angeles County Fire Station #88 are not included in the study due to relatively insignificant annual waste flows and volumes of septic waste hauled off-site.
- Malibu Pier State Park data is omitted due to infrequent and relatively low volume septic waste hauling. In 2008, Malibu Pier State Park disconnected its treatment system from the existing leach field and began transporting the effluent to an upgraded system at the Malibu Pier Wastewater Treatment Plant. During its start-up period, Malibu Pier State Park hauled septic waste off-site frequently, but hauling was minimal before and after this time.
- Cross Creek Plaza (Malibu Creek Preservation) is omitted based on the recent facility upgrades. From 2004 through 2007 Cross Creek Plaza was responsible for more combined hauling than any other discharger (combined total of 6.56 million gallons of septic waste hauled off-site), but in late 2007 they completed an upgrade of their treatment and disposal systems. Very little hauling has been done at this location since October of 2007.
- Malibu Lumber was permitted in late 2008 by the Regional Board, and the plant did not start operating until April of 2009.

Commercial dischargers are the main focus of this analysis, but it is also important to consider the impacts from the large number of residential septic systems within the Malibu Civic Center area. Using the list of residential properties in "Risk Assessment of Decentralized Waste Water Treatment System, City of Malibu" prepared by the Stone Environmental, Inc. in August 2004 and records from the Los Angeles County assessor's database, Regional Board staff determined that there are 391 residential homes in the Malibu Civic Center area. Regional Board staff determined the number of bedrooms in each residence using information gathered from the Los Angeles County assessor's database. The waste flows generated from each residence was estimated by multiplying the number of bedrooms in each house by 100 gallons per day, which is an accepted assumption of waste discharge from homes. It was estimated that 139,000 gallons of wastewater per day are discharged from the residences in the Malibu Civic Center area. These residences are regulated by the City of Malibu, which currently does not maintain septic hauling records for residences. However, local health officials recommend pumping residential septic systems once every three to five years depending on tank size, wastewater volume, and types of solids entering the system.[4]

Wastewater Generation Analysis

Waste flow volumes have been steadily increasing in the City of Malibu as shown in Figure 2.[5] Most dischargers do not use continuous flow meters to measure waste flows, but instead assume that 95% of the water used within the facility goes to the OWDSs. The remaining 5% accounts for water use outdoors (i.e. hosing down paved areas, irrigation). As a result, the waste flow values presented are estimates based on dischargers' assumptions.

[4] City of Malibu Clean Water Team. "The City of Malibu's Environmental Programs Office Presents: A Homeowner's Guide to Healthy Habits for Clean Water.".

[5] To further examine factors affecting wastewater discharge and hauling trends, an analysis of potable water consumption with regards to population trends and annual rainfall was performed. The results from these analyses can be seen in Appendix E.

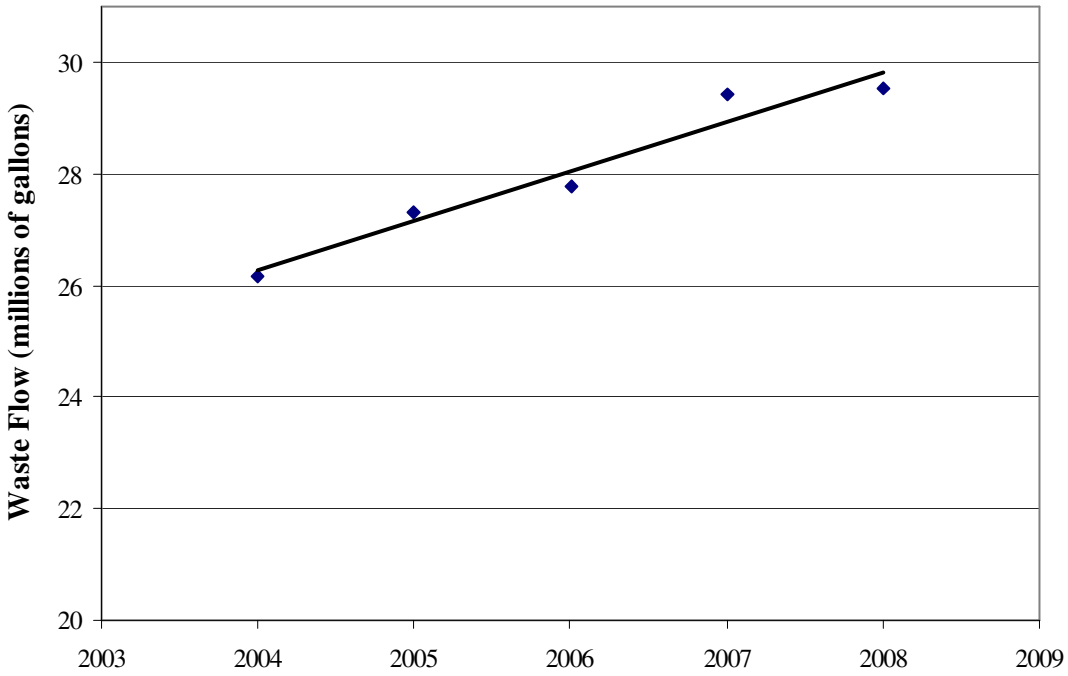


Figure 2. Combined annual waste flow trend for select dischargers in Malibu.

The dischargers included in Figure 2 are MCM I, MCM II, MCM III, Surfrider Beach, HRL, Malibu Shores Motel, Malibu Colony Plaza, Serra Retreat Center, Malibu WPCP, Malibu Civic Center, Road Maintenance Yard No. 336, Jack in the Box, and Malibu Beach Inn. The combined annual waste flows for the dischargers listed above have increased 13% from 26.2 million gallons in 2004 to 29.5 million gallons in 2008.

A breakdown of the total annual waste flows within the Civic Center area by discharger is shown in Figure 3. Among the 13 dischargers, two Winter Canyon dischargers predominate – namely, the Malibu WPCP (which servers several multi-family developments), and Malibu Colony Plaza (which lifts wastewater from multiple commercial activities for disposal in Winter Canyon).

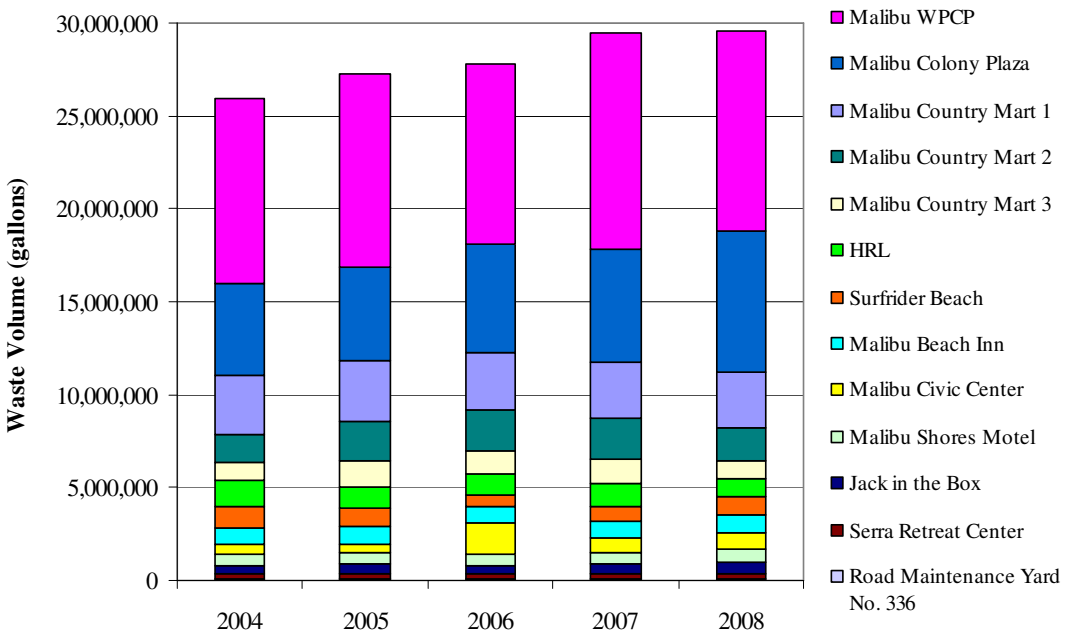


Figure 3. Combined annual waste flows for select dischargers.

Wastewater Hauling Analysis

Septic waste hauling has been steadily increasing in Malibu as shown in Figure 4.

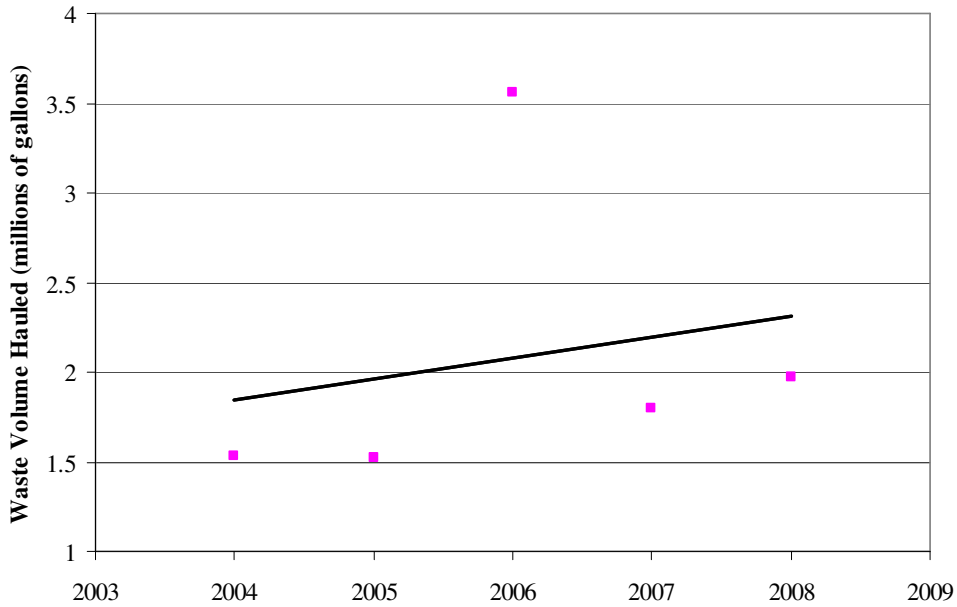


Figure 4. Septic waste hauling trend for select dischargers. The anomaly in 2006 is explained in Figure 5.

The dischargers included in Figure 4 are identical to those in Figure 2. Septic waste hauling increased 29% from 1.5 million gallons in 2004 to about 2 million gallons in 2008. Septic waste hauling data and the waste flow data are attached in Appendix A.

A breakdown of annual hauled quantities by discharger is shown in Figure 5. Most septic waste hauled off-site came from Malibu Colony Plaza, Malibu WPCP, MCM I, MCM II, and MCM III. Septic waste hauling records for all three Malibu Country Marts show increasing hauling trends since 2004.

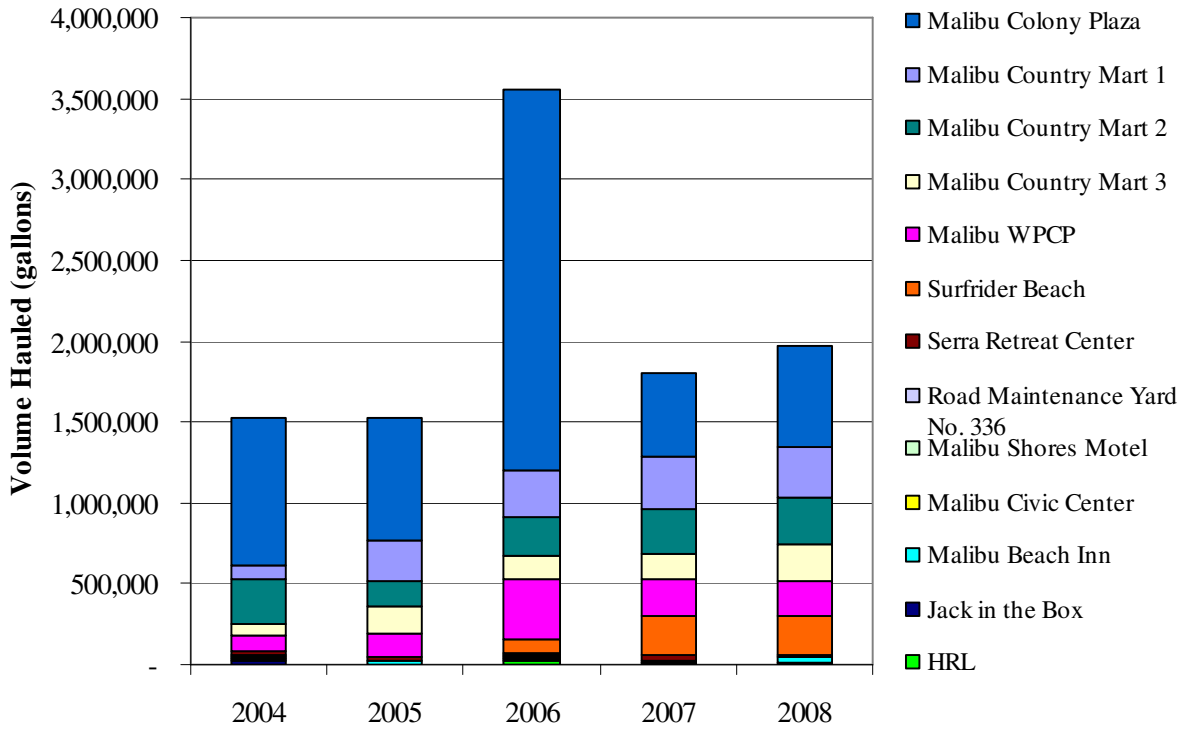


Figure 5. Septic waste hauling for select dischargers. The large spike in hauled waste in 2006 from Malibu Colony Plaza was due to the completion and start-up of its treatment plant. The plant was unable to meet the effluent limitations during its start-up period and the waste had to be hauled off-site for treatment.

In 2004, 5.8% of the total waste generated by the dischargers in Figure 5 was hauled off-site for treatment, and this increased to 6.1% in 2008. Certain dischargers contribute much more to the percent of annual hauled septic waste to total waste flows than others. For example in 2008, Malibu Colony Plaza hauled 41% of its total generated waste flow off-site, MCM III hauled 23.2% of its total waste flow off-site, and MCM II hauled 16% of its total waste flow off-site. Data regarding annual percentages of septic waste hauled are included in Appendix A.

Septic Pumping and Hauling Regulations

Regional Board staff also reviewed regulations related to the pumping and hauling of septic waste. The firms that engage in the business of cleaning of septic tanks, chemical toilets, cesspools, sewage seepage pits, or disposing of the cleanings are regulated under California Health and Safety Code Section 117400-1177450. These firms must register with the local health officer before they can engage in these activities. In Los Angeles and Ventura counties, the

county health officers regulate these firms.[6] A public information bulletin from the City of Malibu lists five firms that are engaged in hauling septic waste in the area. They are A & B Malibu Pumping, County Sanitation Company, Ely Jr's. Pumping, McDermott Pumping and W.A.S.T.E.C.[7] All these firms have valid registrations from Los Angeles County Environmental Health. The registrations are good for one year and their vehicles are scheduled for annual inspection each June. The County inspects the vehicles on an annual basis to make sure that they are not leaking, that their openings can be tightly closed and that the pumps are functioning properly. The inspectors also make sure that the drivers of the trucks are trained to handle septic waste properly, and have the necessary safety equipment to handle spills. In the case of a spill, the drivers must make sure that the discharge is contained and the spill area properly sanitized.

There is one recorded complaint against septic waste haulers in the Civic Center area. Residents complained about an odor caused by septic wastes being transferred from a "milk run" truck to a bigger truck for disposal. There are no regulations related to the transfer of waste from one truck to another. However, City of Malibu local health officers directed the truck drivers to transfer waste at locations away from residences to mitigate the odor nuisance.

To further gather information regarding the transportation of septic waste, two Regional Board staff conducted a drive-through type of inspection on June 16, 2009. They observed waste being pumped from one of the dischargers in the Malibu Civic Center area. The observations of that inspection are documented in the inspection report included as Appendix B.

Carbon Footprint Analysis

Sources of Data

Three pumping companies do the majority of septic pumping and hauling in the City of Malibu: Ely Jr's Pumping, A & B Malibu Pumping, and McDermott Pumping. Regional Board staff interviewed representatives from the pumping companies to gather information on the types of trucks used to haul waste and the frequency of waste pick-up done in the City of Malibu. Regional Board staff used this information to calculate the carbon footprint. A carbon footprint analysis was done to determine the impact of septic waste hauling trucks on climate change. A reasonable estimate of carbon dioxide emissions from a truck is based on the miles traveled per trip, the miles driven per gallon of fuel burned, and the amount of carbon dioxide generated per gallon of fuel burned. Miles per gallon estimates were based on truck information provided by each pumping company, and miles per trip estimates were based on the distance from the company's headquarters to the pumping sites, pumping sites to the disposal location (the Joint Water Pollution Control facility in Carson), and disposal location back to headquarters.

Data Analysis

Regional Board Staff used the data obtained from septic waste hauling contractors and septic waste hauling information from monitoring reports to develop Table 2.

[6] Staff determined that the health officer for the County of Los Angeles does not require reports on the location of septic tanks/seepage pits/cesspools being cleaned, the locations of the disposal points, the frequencies of cleanouts, and any observed violations. In the past, the County did require such reports, but no longer has resources to review such reports.

[7] The City of Malibu does not endorse any of these firms. Also, the City provides recommendations for pumping frequencies for properly functioning OWDSs.

Table 2. Tons of carbon dioxide emitted each year by tanker trucks from the three main septic waste pumping companies in Malibu.[8]

Pumping Contractors	Round Trip Distance (miles)	Miles per Gallon (MPG)	Frequency[9] (days/week)	Number of Trucks	Tons CO2 per Year
A&B Malibu Pumping	67	6	3	1	19
Ely Jr's. Pumping	178	6	5	2	171
McDermott Pumping	64	6	5	2	62
				Sum	**252**

Diesel engines produce approximately 22.2 pounds of carbon dioxide per gallon of fuel burned according to *Emission Facts: Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel*[10]. The diesel trucks used for hauling are estimated to get anywhere from four to ten miles per gallon, but more often on the lower end of that scale. Due to constant stop and go driving on the Pacific Coast Highway, six miles per gallon is used for the calculation. The result of 252 tons of carbon dioxide produced per year from septic waste hauling within the Malibu Civic Center area is an estimate based on available data.

Another possible method of calculation would take the total volume of waste hauled per year, and divide that by the capacity per pumping truck (3,500 gallons to 8,000 gallons), which would yield the number of trips necessary to haul that amount of sewage. The same calculation as above proceeds from here to determine the amount of CO2 produced each year. This leads to a significant underestimate for a two main reasons: One is that this assumes each trip, the tanker truck fills to capacity, which according to hauling records is not the case. Two, our calculated amount of hauled sewage each year is only based on the larger permitted commercial dischargers within the Malibu Civic Center area, as there are no hauling records available for the unpermitted dischargers, meaning there is a large amount of undocumented hauling occurring.

Manhattan Beach, California, is a coastal city with almost three times the population of Malibu, and the city inventories its emissions. Manhattan Beach officials calculated that in 2005, 6,245 tons of carbon dioxide were released into the atmosphere. The inventory includes emissions associated with city operated facilities and parks, vehicle fleet fuel usage, employee commute emissions, water and sewage pump stations, street lights, and traffic signals.[11] If the City of Manhattan Beach reduced its emissions by 252 tons per year (estimated amount of CO_2 produced from hauling in Malibu per year), this would equate to a 4% decrease in carbon dioxide emissions from municipal activities.

[8]Information gathered from interviews with Ely Simental of Ely Jr's' Pumping and Amy McDermott of McDermott Pumping Company.

[9] Both trip frequency and the number of trucks in service at once were determined from conversations with representatives from pumping contractors. The representatives could only provide educated guesses regarding trip frequency and average number of trucks out at once.

[10] http://www.epa.gov/oms/climate/420f05001.html

[11] http://www.ci.manhattan-beach.ca.us/Index.aspx?page=1510

Implications

The California Air Resource Board, Local Government Action for Climate Change, does not have standards for Greenhouse Gas Emissions for each municipality at present. Most actions taken by the municipalities are voluntary. Some cities such as Manhattan Beach have conducted an inventory of Greenhouse Gas Emissions from their municipal activities for the purpose of studying how to reduce such emissions, and help meet Kyoto Protocol type goals.

Although currently the State of California does not have a mandate base for carbon dioxide emissions, eliminating septic waste hauling in the City of Malibu has the potential to lower greenhouse gases emitted from Civic Center activities.

Discussion of Spills in the Study Area

In response to comments about the spill data that included many spills on problematic sites outside of the prohibition area, staff deleted these data (Appendix C) and the explanatory text from the July 31, 2009 draft.

Dischargers are taking some extreme actions to prevent spills within much of the prohibition area, through the practice of frequently pumping large quantities of raw sewage and hauling this waste off-site, as analyzed in the tech memo. On some sites where systems have completely failed - e.g. the comfort station at First Point on Surfrider Beach (see Appendix D), large volumes of raw sewage are hauled on a frequent basis to prevent sewage from surfacing on the beach sand, as it has in the past.

Conclusion

Our analyses show that the volume of waste generated by dischargers in the Malibu Civic Center area has increased since 2004 by 13%. Septic waste hauling has increased at an even greater rate, with 2008 values 29% higher than 2004. Because of the pumping frequency and volume of waste that is hauled off-site, Regional Board staff concludes that waste is being hauled off-site for disposal to prevent OWDS failure, and not as part of regular septic system maintenance.

Our study also shows that the ongoing practice of frequently hauling septic waste off-site emits an estimated 252 tons of carbon dioxide per year. All vehicles on the road contribute to greenhouse gas emissions, but tanker trucks contribute much more due to their inefficient miles per gallon rating, and because they run on diesel fuel.

Wastewater flows in the Civic Center area have been increasing consistently each year. Many of the discharge sites are constrained by hydrogeologic conditions mentioned earlier, making them unsuitable for disposal of high flows of wastewater. Many commercial facilities produce wastewater flows at rates that exceed their capacity to discharge on-site. These dischargers rely on pumping significant volumes into tanker trucks that haul liquid sewage and sludge via public roadways to communities that have sewer and wastewater treatment facilities.

Appendix A: Septic Waste Flow and Hauling Data

See last page of Appendix A for assumptions used in data sets marked with an asterisk

Site	Year	Annual Total Hauled (gal)	Monthly Average (gal)	Annual Waste Flow (gal)	Daily Capacity (gal)	Monthly Capacity (gal)	Percent Annual Flow Hauled
Malibu Country Mart 1							
*	2004	85,000	7,083	3,116,916	18,000	540,000	2.73
	2005	255,000	21,250	3,331,380	18,000	540,000	7.65
	2006	290,000	24,167	3,126,045	18,000	540,000	9.28
	2007	320,000	26,667	3,002,800	18,000	540,000	10.66
	2008	320,000	26,667	3,022,084	18,000	540,000	10.59
Malibu Country Mart 2							
	2004	280,000	23,333	1,537,140	14,000	420,000	18.22
	2005	160,000	13,333	2,094,399	14,000	420,000	7.64
	2006	230,000	19,167	2,182,840	14,000	420,000	10.54
	2007	280,000	23,333	2,265,040	14,000	420,000	12.36
	2008	280,000	23,333	1,753,612	14,000	420,000	15.97
Malibu Country Mart 3							
*	2004	70,000	5,833	991,976	5,000	150,000	7.06
*	2005	163,000	9,417	1,388,200	5,000	150,000	11.74
	2006	150,000	12,500	1,249,280	5,000	150,000	12.01
	2007	160,000	13,333	1,292,000	5,000	150,000	12.38
	2008	230,000	19,167	991,576	5,000	150,000	23.20
Malibu Beach Inn							
*	2004	17,000		900,000	12,000		
*	2005	17,000		900,000	12,000		
*	2006	15,000		900,000	12,000		
*	2007	1,400		900,000	12,000		
	2008	26,700	2,225	964,600	12,000	360,000	2.77
Surfrider Beach							
	2004	2,500		1,105,817	2,250	67,500	0.23
	2005	2,500	208	968,801	2,250	67,500	0.26
	2006	86,853	7,238	652,985	2,250	67,500	13.30
	2007	245,430	20,453	764,006	2,250	67,500	32.12
*	2008	238,267	19,856	971,022	2,250	67,500	24.54

Site	Year	Annual Total Hauled (gal)	Monthly Average (gal)	Annual Waste Flow (gal)	Daily Capacity (gal)	Monthly Capacity (gal)	Percent Annual Flow Hauled
Malibu Civic Center							
	2004	8,000		502,514	16,000		
	2005	-		449,254	16,000		
	2006	-		1,602,989	16,000		
	2007	-		745,999	16,000		
	2008	4,800		899,056	16,000		
Malibu Shores Motel							
*	2004	5,000		647,928	2,500		
*	2005	5,000		647,928	2,500		
	2006	6,500		631,629	2,500		
*	2007	5,000		625,494	2,500		
*	2008	3,000		706,767	2,500		
Malibu Colony Plaza							
	2004	918,500	76,542	5,000,000	45,000	1,350,000	18.37
	2005	752,450	62,704	5,000,000	45,000	1,350,000	15.05
*	2006	2,359,700	196,642	5,753,176	45,000	1,350,000	41.02
	2007	515,600	42,967	6,099,999	45,000	1,350,000	8.45
*	2008	625,500	104,250	7,616,840	45,000	1,350,000	8.21
Public Works Road Maintenance Yard No. 336							
	2004	0		123,218			
	2005	0		126,929			
	2006	0		81,943			
	2007	1,500		96,573			
*	2008	0		91,919			
Jack in the Box							
	2004	24,550	2,046	41,2085	1,200		5.96
	2005	2,500	208	48,8005	1,200		0.51
	2006	15,000	1,250	47,0941	1,200		3.19
	2007	200	17	54,8139	1,200		0.04
	2008	10,000	833	60,7299	1,200		1.65

Site	Year	Annual Total Hauled (gal)	Monthly Average (gal)	Annual Waste Flow (gal)	Daily Capacity (gal)	Monthly Capacity (gal)	Percent Annual Flow Hauled
Malibu WPCP	2004	90,000	7,500	9,935,987	45,000		0.91
	2005	140,000	11,667	10,413,640	45,000		1.34
	2006	369,280	30,773	9,750,365	45,000		3.79
*	2007	222,720	18,560	11,584,832	45,000		1.92
	2008	215,540	17,962	10,707,434	45,000		2.01

HRL							
	2004			1,389,829			
	2005			1,192,739			
*	2006	22,000		1,141,598			
*	2007	11,000		1,251,311			
	2008	8,000		923,572			

Serra Retreat				262,800	21,600		
	2004						
	Q1	6,700	2,233				10.3
	Q2	3,750	1,250				5.8
	Q3	9,850	3,283				15.2
	Q4	9,000	3,000				13.9
	Sum	**29,300**	9,767				
	2005						
	Q1	2,200	733				3.4
	Q2	8,000	2,667				12.3
	Q3	8,300	2,767				12.8
	Q4	8,050	2,683				12.4
	Sum	**26,550**	8,850				
	2006						
	Q1	2,700	900				4.2
	Q2	0	0				0.0
	Q3	0	0				0.0
	Q4	10,000	3,333				15.4
	Sum	**12,700**	4,233				
	2007						
	Q1	19,400	6,467				29.9
	Q2	10,200	3,400				15.7
	Q3	3,000	1,000				4.6
	Q4	3,900	1,300				6.0
	Sum	**36,500**	12,167				
	2008						
	Q1	4,200	1,400				6.5
	Q2	3,200	1,067				4.9
	Q3	3,000	1,000				4.6
	Q4	3,000	1,000				4.6
		13,400	4,467				

Assumptions for Sewage Hauling Data

Malibu Country Mart I:

2004, Q1: Assume 10,000 gallons hauled based on hauling data from Q2.
2004, Q4: Waste flow estimated based on Q3 waste flows.

Malibu Country Mart III:

2004, Q4: Hauled volume estimated from trends seen from Q1-Q3
2004, Q4: Waste flow estimated based on trends seen from Q1-Q3.
2005, Q1: Hauled volume estimated to be the same as Q2.
2005, Q1: Waste flow estimated based on trends from Q1-Q3.

Surfrider Beach:

2008, Q4: Q4 data estimated as the average value of data from the first three quarters.

Malibu Colony Plaza

2004: No waste flow data was available until the Q3 of 2006, therefore based on available data from 2006, 2007, and 2008, annual waste flow is estimated to be 5 million gallons.
2005: No waste flow data was available until the Q3 of 2006, therefore based on available data from 2006, 2007, and 2008, annual waste flow is estimated to be 5 million gallons.
2006, Q4: Hauled volume estimated to be the same as Q3
2006: Annual waste flow estimated as four times the value reported in Q4 (the only quarter with data provided)
2008: Annual waste flow estimated as two times the sum of Q1 and Q2 (Q3 and Q4 waste flow data missing)

Malibu WPCP

2006, Q4: Q4 data estimated as the average value of data from the first three quarters.

Public Works Road Maintenance Yard No. 336

2008, Q3 and Q4: Q3 and Q4 monitoring reports missing, therefore estimates were made from Q1 and Q2 data.

HRL

2005: Q4 data estimated as the average value of data from the first three quarters.
2006: Only Q3 data available; this was used as data for the other three quarters.
2008: Q3 data estimated as the average value of data from the first three quarters.

Appendix B:
INSPECTION REPORT
CITY OF MALIBU HAULERS

Name of Inspectors: Dionisia Rodriguez
Ryan Thacher

Date of Inspection: June 16, 2009

PURPOSE

In order to gather some information about septic waste hauling in the City of Malibu, we decided to conduct a drive-through the city. The following pictures were taken during that drive-through conducted on Tuesday, June 16, 2009 between 10:00 a.m. and 11:30 a.m.

OBSERVATIONS

We chose Malibu Colony Plaza as our primary destination due to the frequent pumping of large volumes of waste from its septic system as reported by quarterly Monitoring Reports. We believed this site would provide us the best probability of seeing a pumping truck. This photo is the entrance of Malibu Colony Plaza, at the intersection of the Pacific Coast Highway and Webb Way.

Behind the Malibu Colony Plaza, just off of Malibu Road, we observed an Ely Jr's Pumping truck.

The operator was preparing to pump, so we waited and watched to observe any notable information about this process.

While pumping, there was a very strong stench of raw sewage, and noise levels required raising your voice significantly for conversation. No spills or leaks were observed during the pumping process.

We were interested in observing pumping in a residential area, so we arbitrarily chose to drive north on Winter Canyon Road. At this location at 11:00 a.m. we encountered a large, unmanned sewage hauling truck belonging to Ely Jr's Pumping. We believe it was parked next to the leach field at Winter Canyon Road.

Upon further inspection, we noticed a length of piping with one end attached to the truck's tank, and the other laying freely on the side of the road.

Driving on the Pacific Coast Highway we saw three separate pumping vehicles belonging to McDermott Plumbing, apparently pumping residential septic tanks. We were only able to photograph one shown below at 11:20 a.m. It was unclear whether these trucks were performing routine sludge removal or pumping due to septic tank capacity problems.

CONCLUSION

We will use this inspection report for our technical memo regarding septic hauling in Malibu for the Malibu Prohibition case.

Report Prepared by: Dionisia Rodriguez

Ryan Thacher

Report Approved by: Dr. Rebecca Chou

Appendix D:
INSPECTION REPORT
SURFRIDER BEACH

FACILITIES INSPECTION REPORT

1870125

OFFICE NO: 4 (CA RWQCB – LA)

INSPECTOR: Wendy Phillips and Rebecca Chou

PCA System Task No: 12601

	Co of Los Angeles, Dept of Public Works	Surfrider Beach Comfort Station (First Point)
WDID NUMBER	AGENCY NAME OR PARTY RESPONSIBLE FOR DISCHARGE	FACILITY NAME
CI 8532	900 South Fremont Avenue	23060 W Pacific Coast Highway
CI NUMBER	AGENCY STREET	FACILITY STREET
	Alhambra, CA 91803	Malibu, CA 90625
NPDES NUMBER	AGENCY CITY AND STATE	FACILITY CITY AND STATE
	Alexander Villarama	Alexander Villarama
(YY/MM/DAY) SCHED INSPECT DATE	AGENCY CONTACT PERSON	FACILITY CONTACT PERSON
2009/09/23	(626) 458-6102 office; (626) 543-3385 cell	none
ACTUAL INSPECTION DATE	AGENCY PHONE NO.	FACILITY PHONE NO.

INSPECTION TYPE (Check One)

(A1) ___ "A" type compliance -- Comprehensive inspection in which samples are taken. (EPA Type S)

(B1) ___ "B" type compliance -- A routine nonsampling inspection. (EPA Type C)

(02) ___ Noncompliance follow-up -- Inspection made to verify correction of a previously identified violation.

(03) ___ Enforcement follow-up -- Inspection made to verify that conditions of an enforcement action are being met.

(04) ___ Complaint -- Inspection made in response to a complaint.

(05) ___ Pre-requirement -- Inspection made to gather info, relative to preparing, modifying, or rescinding requirements.

(06) X Miscellaneous -- Any inspection type not mentioned above. If this is an EPA inspection not mentioned above, please note type.

To check on conditions of backup sanitation facilities. (e.g. - biomonitoring, performance audit, diagnostic, etc.)

(Type)

N* Were VIOLATIONS noted during this inspection? (Yes/No/Pending Sample Results)

___ Was this a Quality Assurance-Based Inspection? (Y/N)

___ Were bioassay samples taken? (N = No. If YES, then S = Static or F = Flowthrough)

INSPECTION SUMMARY (REQUIRED) (100 character limit)

This inspection focused on presence, in the Surfrider Parking lot, of nine portable toilets that serve as a backup sanitation facility to a comfort station.* See attached photos for details. Conclusion: The portable toilets at the First Point of Surfrider Beach function not only as a backup sanitation system for the Surfrider comfort station, but as additional toilet capacity during periods of heavy demand by visitors at the beach.

*No discharge from the comfort station. Discharge ceased after sewage daylighted onto beach in 2007. (Following this incident, the Discharger disconnected the leachfield and has been holding sewage from the comfort station in a septic tank for periodic pumping and off-site hauling to legal point of disposal.)

Page 1 of 3

INITIALS WP/RC SIGNATURE [signature] DATE 10.7.09

For Internal Use: Reviewed By: (1) [signature] (2) _____ (3) _____ Reg. CIWQS Coordinator

CIWQS Data Entry Date: _____ Regional Board File Number: _____

Malibu – Surfrider Beach – First Point (CI 8532)

Comfort Station and Backup Sanitation Facility

September 23, 2009, at approximately 1 p.m. (Phillips/Chou)
page 2 of 3

Photo 1 (right): Surfrider Beach – View of beach near First Point, on a warm, weekday afternoon.

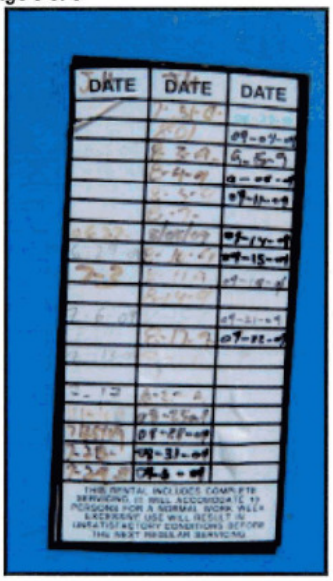
Photo 2 (above): Surfrider Beach – View of comfort station (which was open to the public during the inspection).

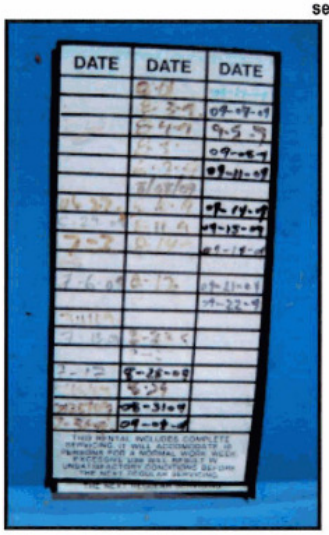
Photo 3 (right): Surfrider Beach – View of nine, free-standing portable toilets, made of molded plastic, in parking lot near First Point. These toilets not only serve as backup sanitation for periods when the comfort station has been shut down, but also to handle a portion of visitors' sanitation needs while the comfort station is open.

Malibu – Surfrider Beach – First Point (CI 8532)

Comfort Station and Backup Sanitation Facility

September 23, 2009, at approximately 1 p.m. (Phillips/Chou)
page 3 of 3





Photos 4 and 5 (above and right): Surfrider Beach – Labels on two of the portable toilets showing maintenance schedule (with a frequency of several cleanouts per week).

Photos 6 and 7 (right): Surfrider Beach – Despite almost daily maintenance, portable toilets, such as the ones in the photos on the right, needed cleaning and emitted a strong odor of raw sewage.

Appendix E:
Malibu Potable Water Consumption Trends and Population Analysis

Ryan Thacher, Student Intern, September 30, 2009

Potable Water Consumption and Population Analysis

Figure 1 below illustrates the relationship between potable water use in the City of Malibu and population increase from the late 1980s to the present. The linearization of the data reveals a trend of increasing water demand. Analysis of endpoints from the best fit line of this data shows that between 1989 and 2008 there has been a 49 percent increase in potable water consumption. Due to the yearly fluctuations in potable water consumption, using the best fit line for this calculation provides a more accurate perspective of the increasing water demand in the City of Malibu. The population of the City of Malibu has increased 31 percent from 10,479 people in 1990 to 13,700 people in 2008. Potable water consumption is increasing at a much greater rate than the population (49 percent versus 31 percent), indicating the per capita potable water consumption rate is not a static value, but is increasing as well.

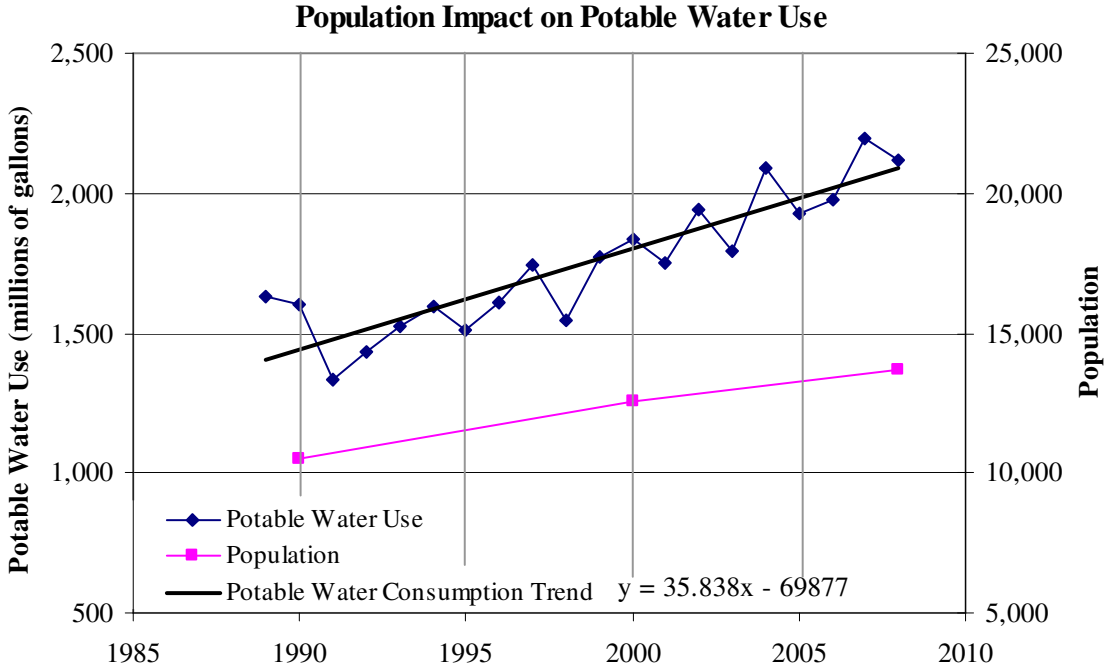


Figure 1. Potable water consumption in the City of Malibu plotted with population increases over the past two decades. Annual potable water consumption is increasing at a greater rate than population.

Potable Water Consumption and Annual Rainfall Analysis

To analyze the large yearly fluctuations in potable water consumption, this data was compared with annual rainfall data gathered from the Lechuza Point/Fire Station 72 rain gauge located in Malibu. Historical rainfall data by month from the early 1980s up to present day was provided to the Regional Board by the Los Angeles County Department of Public Works. This is shown in Figure 2.

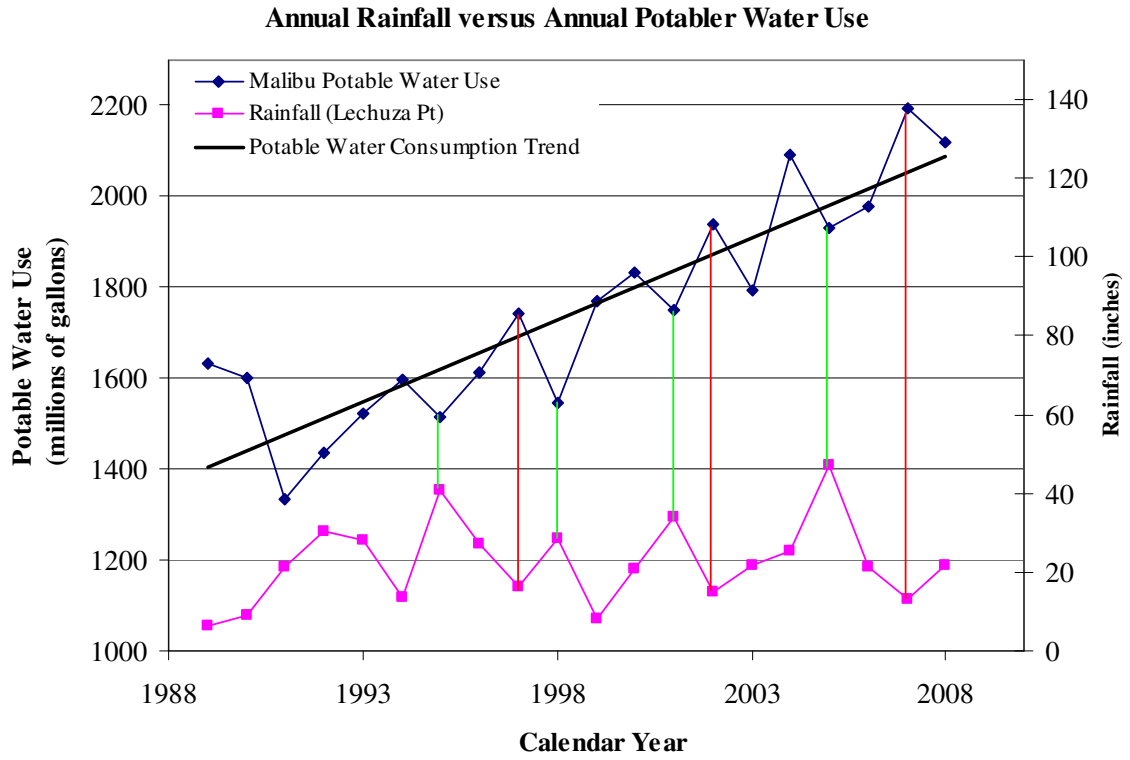
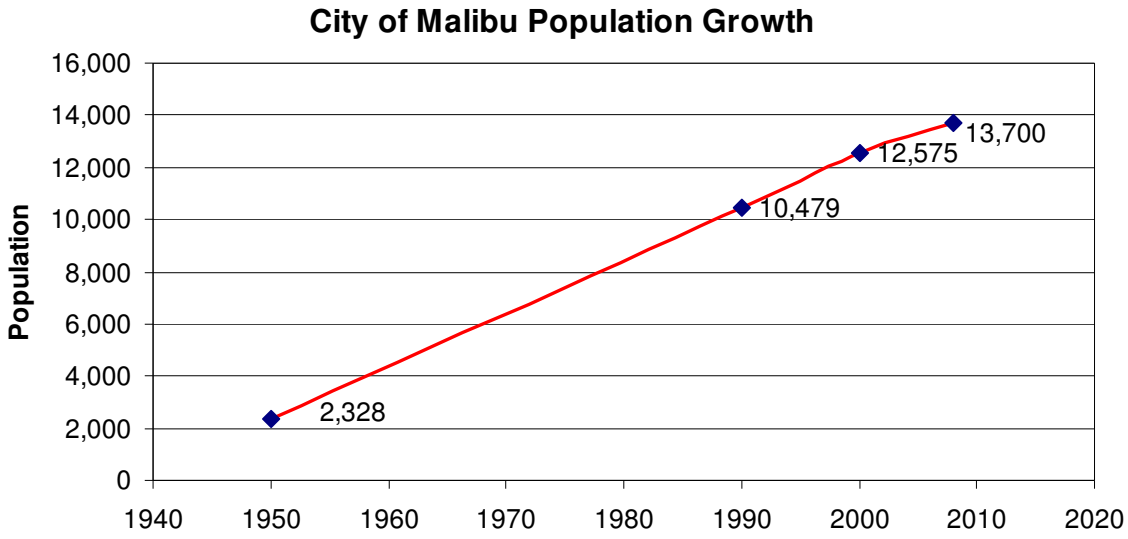


Figure 2. Annual rainfall data (by calendar year) compared with annual potable water use in the City of Malibu.

Looking at the relationship between potable water use in the City of Malibu and the amount of rainfall recorded during the corresponding year shows a strong inverse relationship. The red and green vertical lines emphasize years that clearly exhibit this behavior. Assuming water consumption per capita increases at a fairly constant rate despite weather patterns, the large seasonal fluctuations in annual water consumption seen in the City of Malibu can be attributed to potable water use for irrigation purposes.

City of Malibu Population Growth Analysis

Orlando Gonzalez, Staff Water Resource Engineer, September 30, 2009



The population trend of the City of Malibu has increased as shown in the above figure. According to the Malibu Coastal Vision Report titled "Malibu Yesterday, Today, and Tomorrow" (page 9), the population of Malibu was 2,328 in 1950. The 2000 Census indicates that the population in 1990 and 2000 was 10,479 and 12,275, respectively. Updated information presented in the report titled "Profile of City of Malibu" funded by the Southern California Association of Governments and dated May 2009, indicated in page one that the population in 2008 was 13,700. Based in the above information, the population grew at an average rate of 3.83% per year from 1950 to 1990, 1.84% per year from 1990 to 2000, and 1.08% per year from 2000 to 2008.

Regional Board staff estimates the population in 2009 at 1,842 for the proposed prohibition area. Based on the County of Los Angeles Assessor's data, there are 391 single family houses. The average number of bedrooms per house is four and assuming one person per bedroom, the population is 1,564 people for the houses. In addition, there are four multifamily complexes that have a total of 191 units with an estimated of 278 bedrooms. Again, assuming one person per bedroom, this indicates 278 additional people.

The estimated population does not include daytime and evening workers who are employed in the Malibu Civic Center area. Nor does it include daytime and evening visitors, who enjoy the beaches and patronize the businesses and public facilities. Based on Beach Activity Report prepared by Los Angeles County Fire Department, Lifeguard Division, Malibu Beach visitors have increased from 233,500 in August 1999 to 355,000 in August 2006, which is about an average annual increase of 6%.