Trash Total Maximum Daily Load

for the

Malibu Creek Watershed

May 22, 2008

California Regional Water Quality Control Board
Los Angeles Region
320 West Fourth Street, Suite 200
Los Angeles, California 90013

I. Introduction

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) has developed this total maximum daily load (TMDL) to attain the water quality standards for trash in Malibu Creek from Malibu Lagoon to Malibou Lake, Medea Creek, Lindero Creek, Lake Lindero, and Las Virgenes Creek in the Malibu Creek Watershed. The TMDL has been prepared pursuant to state and federal requirements to preserve and enhance water quality for impaired waterbodies within Coastal Watersheds of Los Angeles and Ventura Counties.

The California Water Quality Control Plan, Los Angeles Region (Basin Plan) sets standards for surface waters and ground waters in the Coastal Watersheds of Los Angeles and Ventura Counties. These standards are comprised of designated beneficial uses for surface and ground water, numeric and narrative objectives necessary to support beneficial uses, and the state's antidegradation policy. Such standards are mandated for all waterbodies within the state under the Porter-Cologne Water Quality Act. In addition, the Basin Plan describes implementation programs to protect all waters in the region. The Basin Plan implements the Porter-Cologne Water Quality Act (also known as the "California Water Code") and serves as the State Water Quality Control Plan applicable to the Malibu Creek Watershed, as required pursuant to the federal Clean Water Act (CWA).

Section 305(b) of the CWA mandates biennial assessment of the nation's water resources, and these water quality assessments are used to identify and list impaired waters. The resulting list is referred to as the 303(d) list. The CWA also requires states to establish a priority ranking for impaired waters and to develop and implement TMDLs. A TMDL specifies the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and allocates pollutant loadings to point and non-point sources.

The United States Environmental Protection Agency (USEPA) has oversight authority for the 303(d) program and must approve or disapprove the state's 303(d) lists and each specific TMDL. USEPA is ultimately responsible for issuing a TMDL, if the state fails to do so in a timely manner.

As part of California's 1996, 1998, and 2002 303(d) list submittals, the Regional Board identified Malibu Creek from Malibu Lagoon to Malibou Lake, Medea Creek, Lindero Creek, Lake Lindero, and Las Virgenes Creek in the Malibu Creek Watershed as being impaired by trash.

A consent decree between the USEPA, the Santa Monica BayKeeper and Heal the Bay Inc., represented by the Natural Resources Defense Council (NRDC), was signed on March 22, 1999. This Consent Decree requires that all TMDLs for the Los Angeles Region be adopted within 13 years. The consent decree also prescribed schedules for certain TMDLs. This TMDL for the Malibu Creek Watershed fulfills Analytical Unit #63 of the Consent Decree.

This TMDL staff report and accompanying Basin Plan Amendment incorporate the numeric targets, Baseline and Final Waste Load Allocations for point sources, and Baseline and

Final Load Allocations for nonpoint sources, margin of safety and implementation and compliance schedules.

The Trash TMDL for the Malibu Creek Watershed will be implemented by Basin Plan Amendments and are therefore subject to Public Resources Code Section 21083.9 that requires California Environmental Quality Act (CEQA) Scoping and Analysis to be conducted for Regional Projects. CEQA Scoping involves identifying a range of project/program related actions, alternatives, mitigation measures, and significant effects to be analyzed in an EIR or its Substitute Environmental Documents (SEDs). On December 13, 2007 a CEQA Scoping meeting was held at the City of Calabasas Council Chamber to present and discuss the foreseeable potential environmental impacts of compliance with the Trash TMDL for the Malibu Creek Watershed. Notices of the CEQA Scoping hearing were posted in the Ventura County Star on November 13, 2006, in the Los Angeles Times on November 9, 2007 and on Regional Board's website. Electronic mail was also sent to interested parties including cities and/or counties with jurisdiction in or bordering the watershed of concern. Input from all stakeholders and interested parties was solicited for consideration in the development of the CEQA document.

This Trash TMDL is based on existing, readily available information concerning the conditions in the CWA 303(d) listed watershed in Southern California, as well as TMDLs previously developed by the State and USEPA.

II. Problem Statement

The problem statement consists of descriptions of the watershed, climate, beneficial uses, water quality objectives, and impairments caused by trash to the listed waterbodies in the Malibu Creek Watershed.

A. Description of the Malibu Creek Watershed

The Malibu Creek Watershed is located roughly 35 miles west of Los Angeles. Approximately two-thirds of the watershed is in northwestern Los Angeles County, and the remaining third is in southeastern Ventura County. The watershed contains about 69,900 acres, and drains a 109 square mile area. Malibu Creek drains into Malibu Lagoon, and then into Santa Monica Bay.

The Malibu Creek Watershed is the most ecologically significant watershed in Los Angeles County and the Santa Monica Mountains National Recreation Area (SMMNRA). The Malibu Creek Watershed provides a wide variety of habitats for threatened and endangered species and has long been a popular locale for public access and public recreation. Some animal species, such as the steelhead trout, tidewater goby and brown pelican are endangered. Many others, such as the snowy plover and peregrine falcon, are threatened. A large percentage of the watershed remains in natural habitat. It encompasses unincorporated portions of Ventura and Los Angeles Counties, and seven cities—Malibu, Calabasas, Agoura Hills, Thousand Oaks, and Westlake Village and portions of Simi Valley and Hidden Hills. The Malibu Creek Watershed extends north from Santa Monica Bay and through the Santa Monica Mountains to the Simi

Hills and Santa Susanna Mountains providing a vital habitat and species corridor of regional and statewide significance.

The watershed is defined by US Highway 101 (Ventura Freeway) and California Highway 1 (Pacific Coast Highway). Malibu Canyon Road/Las Virgenes Road is the main north/south route through the watershed. Highway 101 is a well traveled corridor for commuters. Pacific Coast Highway and Malibu Canyon-Mulholland Highway are the main corridors for commuting within the watershed and between the cities of Ventura and Los Angeles.

The Santa Monica Mountains are part of the Transverse Ranges, which are primarily underlain by marine sandstones and shales deposited 70 to 20 million years ago. The watershed ranges in elevations from over 3,100 feet at Sandstone Peak in Ventura County, to sea level at Santa Monica Bay.

The larger tributaries to Malibu Creek have become perennial through most or all of the year since irrigation and the increased use of reclaimed water. The flows have also increased in average volume. (Topanga-Las Virgenes Resource Conservation District). Prior to irrigation and the widespread use of reclaimed water, most streams were intermittent to ephemeral with the exception of Las Virgenes Creek, lower Medea Creek, and Cold Creek, which were historically perennial to intermittent.

Malibu Creek

Malibu Creek flows year-round, beginning at Malibou Lake and ending at Malibu Lagoon, where Malibu Creek meets the Pacific Ocean in Santa Monica Bay. Malibu Creek is approximately 11 miles long, and is the catch point of all drainage in the watershed. The creek contains a good mixture of sand, gravel, large rocks and boulders. The banks are heavily vegetated with willows and cottonwoods, as well as exotic species. Malibu Creek meets Cross Creek at a bridge in a private neighborhood, which allows access for residents. Further north, Malibu Canyon Road runs along Malibu Creek. There is no large barrier between the road and the creek, and in some areas, the creek is far below the road along dense vegetation. Malibu Creek extends past Tapia County Park near Piuma Road, where the area is well vegetated, and the creek is not visible. Further north, Malibu Creek extends through Malibu Creek State Park to where it originates at Malibou Lake. Malibu Creek is home to endangered steelhead.

Malibu Lagoon

Malibu Creek outlets to Santa Monica Bay through Malibu Lagoon. Malibu Lagoon is closed most of the year by a sand and gravel bar. This opens up only when large storm flows come down the creek or when the lagoon overflows from continuous smaller flows. The lagoon is breached mechanically when the low flows have occurred for a long period of time. It only takes a few weeks for the bar to be replaced by the currents in the bay.

Malibou Lake

Lakes in the watershed are relatively small in surface area and depth. Most of the lakes are manmade, to be used for water supply or recreation. Las Virgenes Reservoir is currently used for regular water supply. Malibou Lake flows over the dam into Malibu Creek. Malibou Lake began in 1922 as a get away location for fishing and swimming in the great outdoors. Malibou Lake is adjacent to Malibu Creek State Park and just over the hill from Malibu itself.

Malibou Lake is primarily surrounded by private properties. There is a small bridge that crosses where Malibou Lake and Medea Creek meet.

Medea Creek Reach 1

Medea Creek Reach 1 is a moderate size stream that starts at the confluence with Lindero Creek, and ends at Malibou Lake. Reach 1 is approximately 2.6 miles, and runs parallel to Cornell Road, between Mulholland Highway and Kanan Road.

Medea Creek Reach 2

Medea Creek Reach 2 is north of the confluence with Lindero Creek, and extends into Ventura County. The majority of the approximately 5.4 mile reach of the creek is left natural but portions (areas that flow under road bridges or adjacent to private properties) are concrete lined. Portions of the creek banks are left natural. Oak Canyon Community Park is located near the north end of Medea Creek Reach 2.

Lindero Creek Reach 1

Lindero Creek Reach 1 starts at Lake Lindero and ends at the confluence with Medea Creek Reach 2. Lindero Creek Reach 1 is approximately three miles long, and flows from a concrete ramp off Lake Lindero Dam, which continues into a concrete lined channel. The creek eventually flows into an underground tunnel where it meets Medea Creek Reach 2. The creek is lacking in vegetation due to concrete channeling.

Lindero Creek Reach 2

Lindero Creek Reach 2 is approximately 4.5 miles, and is north of Lake Lindero. Lindero Creek Reach 2 is a small creek that runs through property owned and managed by the Lindero Country Club and through residential areas. Portions of the creek along the golf course are concrete lined, which changes to soft creek bottom just before the sampling site. The creek continues down through the golf course, crosses Thousand Oaks Blvd. and eventually flows into Lake Lindero. Stream-side and in-stream vegetation consist of Cattails and Willows. During dryer months the stream may not be visible due to overgrowth of vegetation.

Las Virgenes Creek

Las Virgenes Creek joins Malibu Creek in Malibu State Park. The creek is approximately 12 miles long and flows along Las Virgenes Road. Las Virgenes Creek flows through two counties (Ventura and Los Angeles), as well as Malibu Creek State Park and along the Santa Monica Mountains National Recreation Area. Further north, Las Virgenes Creek flows through Juan Bautista de Anza Park. The park has a trail and playgrounds. The creek is below the trail approximately 25 feet. Rare and endangered species in this area are: Steelhead Trout, Southwestern Pond Turtle, Least Bell's Vireo, Yellow Billed Cuckoo.

Evidence indicates that the Malibu coast has been inhabited by humans for more than 10,000 years. Grazing was a predominant land use in the watershed. With the expansion and urbanization, the development pressures have reduced grazing and increased recreational activities and urban development.

The Malibu Creek Watershed still includes large areas of open space. A significant portion of the watershed lies within the Santa Monica Mountains National Recreation Area and other park areas. The numerous parklands within the Recreation Area's boundary provide

several recreational opportunities such as hiking, mountain biking, fishing, horseback riding trails, camping, birdwatching, and other outdoor activities.

Although there are still large areas of open space in the watershed, recent development has converted some open space into urban areas. The watershed includes the Cities of Malibu, Calabasas, Agoura Hills, Westlake Village, and Thousand Oaks, all of which have expanded significantly in population.

The National Park Service's Santa Monica Mountains National Recreation Area holds 6,740 acres in the Malibu Creek Watershed, and the California State Parks and Recreation Department holds 8,510 acres in the watershed. Each of the counties and cities also holds title to land for parks, schools, and other public uses.

B. Climate

Malibu Creek Watershed is located in the Southern California coastal belt and has a warm, Mediterranean climate. Summer is typically hot inland, and winter is mild. The average January air temperature is 53 degrees Fahrenheit, while the average July air temperature is 71 degrees Fahrenheit. The average annual air temperature is 61 degrees Fahrenheit with an average frost free season of 275 to 325 days.

Storm events and the resulting high stream flows are highly seasonal, grouped heavily in the months between November and April. Rainfall is rare in other months, and major storm flows historically have not been observed outside of the wet-weather season. Average rainfall is about 24 inches in the southern half of the watershed and 14 inches in the northern half (Topanga-Las Virgenes Resource Conservation District, 1995).

A "marine layer" or ocean haze of water droplets exists in the summer, which may decrease visibility. Coastal fog is common during the morning hours, but usually dissipates by early afternoon.

C. Beneficial Uses of Malibu Creek

The various uses of waters in the Los Angeles Region, referred as beneficial uses, are designated in the Basin Plan. These beneficial uses are the cornerstone of the State and Los Angeles Regional Water Quality Control Board's effort to protect water quality, as water quality objectives are set at levels that will protect the most sensitive beneficial use of a waterbody. Brief descriptions of the beneficial uses most likely to be impaired due to trash in the watersheds or waterbodies of concern are provided in this section.

The Basin Plan for the Los Angeles Regional Board defines several beneficial uses in the Malibu Creek Watershed. These uses are recognized as existing (E), potential (P) or intermittent (I) uses. Trash loading to the waterbodies in the Malibu Creek Watershed may result in impairments of beneficial uses associated with Municipal and Domestic Supply (MUN), Ground Water Recharge (GWR), Water Contact Recreation (REC-1), Non-contact Water Recreation (REC-2), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), Wildlife Habitat (WILD), Rare, Threatened, or Endangered Species (RARE),

Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), and Wetland Habitat (WET) (Table 1).

Table 1. Beneficial Uses in the Listed Waterbodies in the Malibu Creek Watershed.

Surface Water	**Beneficial Uses**	**MUN**	**GWR**	**REC 1**	**REC 2**	**WARM**	**COLD**	**WILD**	**RARE**	**MIGR**	**SPWN**	**WET**
Malibu Creek Watershed	Hydro Unit											
Malibu Creek *Lagoon to Malibou Lake*	404.21	P*		E	E	E	E	E	E	E	E	E
Medea Creek Reach 1 *Malibou Lake to confluence with Lindero Creek*	404.23	P*	I	Im	I	I	P	E	E			E
Medea Creek Reach 2 *Above confluence*	404.24	I*	I	E m	E	E		E				E
Lindero Creek Reach 1 and 2, and Lake Lindero	404.23	P*		I	I	I		E				
Las Virgenes Creek	404.22	P*		E m	E	E	P	E	E	P	P	E

E Existing beneficial use.
P Potential beneficial use.
I Intermittent beneficial use.
* MUN designation under SB88-63 and RB89-03. Some may be exempt.
m Access prohibited by LAC DPW in the concrete-channelized area.

The Malibu Creek Watershed includes large areas of open space. A large part of the watershed lies within the Santa Monica Mountains National Recreation Area and other park areas. The numerous parklands within the Recreation Area's boundary provide opportunities for hiking, mountain biking, fishing, horseback riding trails, camping, birdwatching, and other outdoor activities (Topanga-Las Virgenes Resource Conservation District, 1995). In addition, Malibu Beach is a popular spot for vacationers, beachgoers, and surfers. The Malibu Creek Watershed has also been the location of many movie studio sets.

The Malibu Creek Watershed contains more than 450 vertebrate species, including 50 mammals, 384 birds, and 36 reptiles and amphibians. It is estimated that 117 of the bird species are resident in the watershed, at least to breed and raise young. Thirteen raptors are known to breed in the area. Raptors include the golden eagle, red-tailed hawk, red-shouldered hawk, Cooper's hawk, prairie falcon, American kestrel, black-shouldered kite, barn owl, great horned owl, western screech owl, burrowing owl, short-eared owl, and turkey vulture.

There are 25 species of reptiles in the watershed. This includes two turtles, seven lizards, and sixteen snakes. The southwestern pond turtle is considered rare. There are other reptiles that may no longer exist in the area.

Malibu Lagoon offers many recreational opportunities, as well as habitat for rare and endangered species. The estuarine habitat in Malibu Lagoon is one of the last remaining estuaries in Los Angeles County. It is an important habitat for fish species including the tidewater goby, steelhead, California killifish, top smelt, and arrow goby. Several bird species are also attracted to the lagoon area, including gulls, coots, ducks, geese, snowy plovers, sandpipers, and least terns.

Approximately 134 acres of intermittent wetlands and 95 acres of perennial wetlands have been found in the Malibu Watershed. The largest areas of freshwater wetlands occur in upper Medea Creek, around the various reservoirs, and along creeks in the watershed. Wildlife that uses this habitat includes the great blue heron, American peregrine falcon, red-winged blackbird, and western aquatic garter snake.

D. Water Quality Objectives

Narrative water quality objectives are specified by the 1994 Los Angeles Regional Board Basin Plan. Water quality standards consist of a combination of beneficial uses, water quality objectives, and the State's Antidegradation Policy. Regional Board staff finds that the following narrative objectives are most pertinent to the Malibu Creek Trash TMDL:

Floating Materials: *"Waters shall not contain floating materials, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses."*

Solid, Suspended, or Settleable Materials: *"Waters shall not contain suspended or settleable material in concentrations that cause nuisance or adversely affect beneficial uses."*

State Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Water" in California, known as the "Antidegradation Policy," protects surface and ground waters from degradation. Any actions that can adversely affect water quality in all surface and ground waters must be consistent with the maximum benefit to the people of the state, must not unreasonably affect present and anticipated beneficial use of such water, and must not result in water quality less than that prescribed in water quality plans and policies. Furthermore, any actions that can adversely affect surface waters are also subject to the federal Antidegradation Policy (40 CFR 131.12). The proposed TMDL will not degrade water quality, and will in fact improve water quality as it is designed to achieve compliance with existing water quality standards.

E. Impairment of Beneficial Uses

Existing beneficial uses listed above are impaired by the accumulation of suspended and settled debris. Common items that have been observed by Regional Board staff include plastic

bags, aluminum cans, paper items, plastic and glass bottles, styrofoam, and construction debris. Heavier debris can also be transported during storms.

Trash in waterways causes significant water quality problems. Small and large floatables can inhibit the growth of aquatic vegetation, decreasing spawning areas and habitats for fish and other living organisms. Wildlife living in lakes and in riparian areas can be harmed by ingesting or becoming entangled in floating trash. With the exception of large items, settleables are not always obvious to the eye. This includes glass, cigarette butts, rubber, construction debris, and more. Settleables can be a problem for bottom feeders and can contribute to sediment contamination. Some debris (e.g. diapers, medical and household waste, and chemicals) are sources of bacteria and toxic substances.

For aquatic life, buoyant (floatable) elements tend to be more harmful than settleable elements, due to their ability to be transported throughout the water body and ultimately to the marine environment. Persistent elements such as plastics, synthetic rubber and synthetic cloth tend to be more harmful than degradable elements such as paper or organic waste. Glass and metal are less persistent, even though they are not biodegradable, because wave action and rusting can cause them to break into smaller pieces that are less sharp and harmful. Natural rubber and cloth can degrade but not as quickly as paper (U.S. EPA, 2002). Smaller elements such as plastic resin pellets (a by-product of plastic manufacturing) and cigarette butts are often more harmful to aquatic life than larger elements, since they can be ingested by a large number of small organisms which can then suffer malnutrition or internal injuries. Larger plastic elements such as plastic grocery bags are also harmful to larger aquatic life such as sea turtles, which can mistake the trash for floating prey and ingest it, leading to starvation or suffocation.

Trash in water bodies can threaten the health of people who use them for wading or swimming. Of particular concern are the bacteria and viruses associated with diapers, medical waste (e.g., used hypodermic needles and pipettes), and human or pet waste. Additionally, broken glass or sharp metal fragments in streams can cause puncture or laceration injuries. Such injuries can then expose a person's bloodstream to microbes in the stream's water that may cause illness. Also, some trash items such as containers or tires can pond water and support mosquito production and associated risks of diseases such as encephalitis and the West Nile virus.

Leaf litter is considered trash when there is evidence of intentional dumping. Leaves and pine needles in streams provide a natural source of food for organisms, but excessive levels due to human influence can cause nutrient imbalance and oxygen depletion in streams, to the detriment of the aquatic ecosystem. Clumps of leaf litter and yard waste from trash bags should be treated as trash in the water quality assessment, and not confused with natural inputs of leaves to streams. If there is a question in the field, check the type of leaf to confirm that it comes from a nearby riparian tree. In some instances, leaf litter may be trash if it originates from dense ornamental stands of nearby human planted trees that are overloading the stream's assimilative capacity for leaf inputs. Other biodegradable trash, such as food waste, also exerts a demand on dissolved oxygen, but aquatic life is unlikely to be adversely affected unless the dumping of food waste is substantial and persistent at a given location.

Wildlife impacts due to trash occur in Malibu Lagoon, Malibu Creek and its tributaries and lakes, and ultimately the ocean. The two primary problems that trash poses to wildlife are

entanglement and ingestion, with entanglement the more common documented effect (Laist and Liffmann, 2000). Marine mammals, turtles, birds, fish, and crustaceans all have been affected by entanglement in or ingestion of floatable debris. Many of the species most vulnerable to the problems of floatable debris are endangered or threatened by extinction.

Entanglement results when an animal becomes encircled or ensnared by debris. It can occur accidentally, or when the animal is attracted to the debris as part of its normal behavior or out of curiosity. Entanglement is harmful to wildlife for several reasons. Not only can it cause wounds that can lead to infections or loss of limbs; it can also cause strangulation or suffocation. In addition, entanglement can impair an animal's ability to swim, which can result in drowning, or in difficulty in moving, finding food, or escaping predators (U.S. EPA, 2001).

Ingestion occurs when an animal swallows floatable debris. It sometimes occurs accidentally, but usually animals feed on debris because it looks like food (e.g., plastic bags look like jellyfish, a prey item of sea turtles). Ingestion can lead to starvation or malnutrition if the ingested items block the intestinal tract and prevent digestion, or accumulate in the digestive tract, making the animal feel "full" and lessening its desire to feed. Ingestion of sharp objects can damage the mouth, digestive tract and/or stomach lining and cause infection or pain. Ingested items can also block air passages and prevent breathing, thereby causing death (U.S. EPA, 2001).

Common settled debris includes glass, cigarettes, rubber, construction debris and more. Settleables are a problem for bottom feeders and dwellers and can contribute to sediment contamination.

In conclusion, trash in water bodies can adversely affect humans, fish, and wildlife. Not all water quality effects of trash are equal in severity or duration. The water quality effects of trash depend on individual items and their buoyancy, degradability, size, potential health hazard, and potential hazards to fish and wildlife.

The prevention and removal of trash in the waterbodies in the Malibu Creek Watershed will ultimately lead to improved water quality and protection of aquatic life and habitat, expansion of opportunities for public recreational access, enhancement of public interest in the creeks and lakes and public participation in restoration activities, and propagation of the vision of the watershed as a whole and enhancement of the quality of life of riparian residents.

F. Trash Impairments of the Waterbodies in the Malibu Creek Watershed

According to the 1998 EPA 303(d) List, trash poses a water quality problem in the waterbodies in the Malibu Creek Watershed. Although Regional Board staff has not received any data chronically monitoring quantities of trash in the watershed by municipalities, site visits to several areas in the Malibu Creek Watershed were conducted to confirm the trash problem.

On November 5, 2007, initial site visits were made to the Malibu Creek Watershed by Regional Water Quality Control Board staff. These site visits were the initial step towards the

development of a Trash TMDL. Numerous photographs were taken at the following sites along the creeks and lakes in the Malibu Creek Watershed:

- Malibu Creek (from Malibu Lagoon to Malibou Lake);
- Medea Creek Reach 1 (from Malibou Lake to the confluence with Lindero Creek);
- Medea Creek Reach 2 (above the confluence);
- Lindero Creek Reach 1 (from Lake Lindero to the confluence with Medea Creek);
- Lindero Creek Reach 2 (above the confluence);
- Lake Lindero; and
- Las Virgenes Creek.

The overall observations included some trash in the creeks, along shores, fences, and roads surrounding the channels, and at the outlet of storm drains discharging into the channels.

The site visits focused on several areas in the Malibu Creek Watershed to observe the trash problem attributed to surrounding businesses, recreational uses, and urban runoff.

Malibu Creek extends from Malibu Lagoon north to Malibou Lake. A shopping center and parking lot allowed access to Malibu Creek in the area of Malibu Lagoon. A block wall fence approximately two and a half feet tall separated the parking lot from Malibu Lagoon. Within the parking lot, there were several trash dumpsters behind a restaurant. This access was on the west side of the lagoon. There was no trash observed in Malibu Lagoon, however walking from Malibu Lagoon to Malibu Creek, the presence of trash increased. Trash included aluminum beverage cans, paper, human waste, plastic bags, Styrofoam, fishing line, clothing, plastic water bottles, paper beverage cups, and the illegal disposal of plastic waste (multiple audio tapes). Malibu Creek meets Cross Creek at a bridge in a private neighborhood, which allows access for residents. There was no trash observed in this neighborhood, on the bank, or in the water, but there was a presence of algae. Further north, Malibu Canyon Road runs along Malibu Creek. There is no large barrier between the road and the creek, but in some areas, the creek is far below the road along dense vegetation, which may limit public access. Along Malibu Canyon Road traveling north along Malibu Creek, more trash was observed on the road side, including styrofoam food containers, paper and plastic cups, plastic bags and bottles, napkins, glass bottles, cardboard, and construction waste. Trash was also found along Piuma road, but similar to Malibu Canyon Road, the dense vegetation between the road and the creek make parts of the creek inaccessible and the visibility of Malibu Creek difficult from the road side. There is a trail along Malibu Creek behind Tapia County Park, however the area is well vegetated, and the creek is not visible. There was no trash visible along the trail. There was trash present in and along Malibu Creek from Malibu Lagoon to Malibou Lake, with a higher occurrence at areas of easy public access and along roads adjacent to the creek.

Medea Creek Reach 1 extends from Malibou Lake north to the confluence with Lindero Creek. Malibou Lake is primarily surrounded by private properties. There is a small bridge that crosses where Malibou Lake and Medea Creek meet. At this point, the lake and creek are very accessible with little vegetation. At the beginning of reach 1, just outside of Malibou Lake, there was no trash observed in the creek or on shore. Staff walked approximately 100 yards

from the lake up into the creek and observed no trash in or around the creek. Medea Creek Reach 2 is north of the confluence with Lindero Creek. At Cornell Road and Kanan Road, there is a corrugated pipe under Cornell Road. No trash was observed in the creek, but there was trash on the shore and the road side. Trash included plastic bags, aluminum foil and beverage cans, cardboard, and abandoned appliances. Further north, Medea Creek Reach 2 becomes a concrete channel surrounded by a chain linked fence without public access, adjacent to private properties. There was minor trash observed, including plastic bags and aluminum cans. In addition, there was a stormwater outlet. Medea Creek Reach 2 becomes a natural creek further north. At Fountainwood Street there is a chain link fence along the road with public access. Minor trash was observed here, including aluminum cans. There was no trash observed on shore. Oak Canyon Community Park is at the north end of Medea Creek Reach 2. No trash was observed in or around the water at the park. There were several trash cans present around the park. There was a school nearby, and some students were observed at the park feeding the ducks.

Lindero Creek Reach 1 is from the confluence with Medea Creek Reach 2 to Lake Lindero. Where the creek passes Agoura Road, it changes from a concrete channel to a natural channel. The concrete channel is approximately ten feet wide, and is north of the natural channel. Where the concrete channel becomes the natural channel, there is a bar screen with a mesh size of approximately six inches. The water in the natural channel was murky, with vegetation and algae. Plastic trash was observed on the bar screen, in the creek, and along the shore.

Lake Lindero is surrounded by private property and tall walls with limited access. There was no trash observed in the lake. On one side of Lake Lindero is a dam that is approximately 100 feet wide. There was no trash observed above the dam. The dam leads into a rectangular concrete channel. Inside the channel, there were aluminum cans, toys, beverage cups, and plastic bags. The channel flows into an underground conveyance with a screen at the entrance. Trash was accumulated on and at the screen.

Lindero Creek Reach 2 is north of Lake Lindero. Where Hackers Lane crosses with Lindero Creek, there is no public access, and it is not possible to see the creek. There was no trash observed here on the surrounding bank or in the neighborhood. At Bowfield Street, Lindero Creek Reach 2 is a natural creek about five feet wide. There is public access here, as there is no fence surrounding the creek. Minor trash was observed in the creek and on the shore, including a cup, lid, and plastic bag. At the north end of Lindero Creek, where Kanan Road and Collingswood Court meet, the creek cannot be identified. There was no trash observed in this area.

Las Virgenes Creek joins Malibu Creek in Malibu State Park. The creek flows along Las Virgenes Road. Mulholland Highway has a chain linked fence where it crosses over Las Virgenes Creek. Trash was observed trapped against this fence, but no trash was observed in the creek or on the shore. Mulholland Highway is approximately 25 feet above Las Virgenes Creek. The area is densely vegetated. Further north, Las Virgenes Creek flows through Juan Bautista de Anza Park. The park has a trail and playgrounds. The creek is below the trail approximately 25 feet. No trash was observed in or around the creek within the park area. On the trail itself, plastic bags were observed hanging on trees, and a couple of napkins were on the trail.

Another site visit was conducted on January 7, 2008 after a major rain event occurred on January 5 and 6. Based on the data provided by Los Angeles County Department of Public Works, the rain gauge recorded approximately 0.85 inches of rain at the Big Rock Mesa Station. Most of the creeks did not appear to have trash accumulated along shorelines or in the water since the rain event took place for multiple days. However, there was still trash observed in creeks adjacent to commercial areas or areas with busy traffic. Particularly at Malibu Lagoon where Malibu Creek exits to the Pacific Ocean, a substantial amount of trash was found on the beach.

Between year 2001 and 2004, Heal the Bay has documented the dump site conditions along Malibu Creek in almost all subwatershed. There were 742 dump sites located and is measured by the surface areas covered by trash (square feet). The results shown in the map below identified the similar trash impaired areas (Figure 1).

Proposition 13, Malibu Creek Watershed Monitoring Program funded by stakeholders including Los Angeles County, Ventura County, Cities of Calabasas, Malibu Agoura Hills and Westlake Village also selected multiple sites, LIN1 and LIN2 adjacent to Lake Lindero separately for Reach 2 and Reach 1 of Lindero Creek, MED2 for Medea Creek Reach 1, MED 1 for Medea Creek Reach 2, LV1 and LV2 for Las Virgenes Creek, and MAL for Malibu Creek near the City of Malibu, for trash impairment monitoring between 2005 and 2007. Locations of the monitoring sites are shown in the map below (Figure 1).

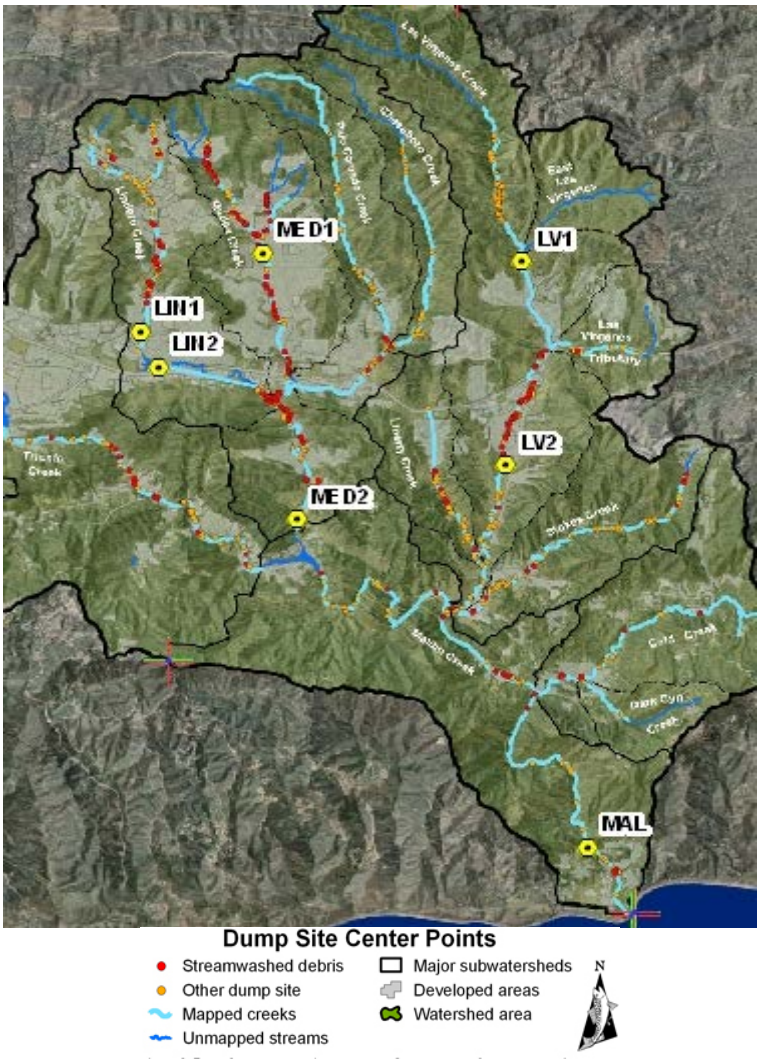

Figure 1 Trash Impacted Areas and Monitoring Locations in the Malibu Creek Watershed by Heal the Bay and Malibu Creek Watershed Monitoring Program.

III.Numeric Target

The numeric target is derived from the narrative water quality objective in the Basin Plan for floating material:

> *"Waters shall not contain floating materials, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses";*

and for solid, suspended, or settleable materials:

> *"Waters shall not contain suspended or settleable material in concentrations that cause nuisance or adversely affect beneficial uses."*

The numeric target for the Malibu Creek Watershed Trash TMDL is 0 (zero) trash in or on the water and on the shoreline. Zero is defined as, for nonpoint sources, no trash immediately following each collection and assessment event consistent with an established Minimum Frequency. The Minimum Frequency is established at an interval that prevents trash from accumulating in deleterious amounts in between collections. For point sources, zero means that no trash is discharged into the waterbody of concern, shoreline, and channels. Regional Board staff has not found information to justify any value other than zero that would fully support the designated beneficial uses. Further, court rulings have found that a numeric target of zero trash is legally valid. The numeric target was used to calculate the Load Allocations for nonpoint sources and Waste Load Allocations for point sources, as described in the following sections of this Staff Report.

IV. Source Analysis

The major source of trash in the creeks and lakes of the Malibu Creek Watershed results from litter, which is intentionally or accidentally discarded to the channels, creeks, and lakes. These potential sources can be categorized as point sources and nonpoint sources depending on the transport mechanisms which include:

1. Storm drains: trash that is deposited throughout the watershed is carried to the various sections of the creeks and lakes during and after rainstorms through storm drains. This is a point source.

2. Wind action: trash can also blow into the channels, creeks and lakes directly. This is a nonpoint source.

3. Direct disposal: direct dumping or litter into the channels, creeks and lakes. This is a nonpoint source.

According to the characteristics of the land uses which include high and low residential areas, open space and parks, both point and nonpoint sources contributetrash to the waterbodies in the Malibu Creek Watershed. However, more accurate information will be provided by responsible jurisdictions in the Los Angeles and Ventura counties.

A. Point Sources

Trash conveyed by storm water through storm drains to the creeks and lakes in the Malibu Creek Watershed is evidenced by trash accumulation at the base of storm drains discharging to the creek and catch basins which collect runoff from surrounding lands.

Based on reports and research on other watersheds, the amount and type of trash washed into the storm drain system appears to be a function of the surrounding land use. The City of Long Beach has recorded trash quantity collected at the mouth of the Los Angeles River; the result suggested that the total trash amount is somewhat linearly correlated with the precipitation (see the table below). A similar conclusion also found that the amount of gross

pollutants entering the stormwater system is rainfall dependent but does not necessarily depend on the source (Walker and Wong, December 1999). The amount of trash which enters the stormwater system depends on the energy available to re-mobilize and transport deposited gross pollutants on street surfaces rather than on the amount of available gross pollutants deposited on street surfaces. Where gross pollutants exist, a clear relationship between the gross pollutant load in the stormwater system and the magnitude of the storm event has been established. The limiting mechanism affecting the transport of gross pollutants, in the majority of cases, appears to be re-mobilization and transport processes (i.e., stormwater rates and velocities).

Year	Trash (Tons)	Precipitation (inches)
95-96	4162	12.44
96-97	3993	12.4
97-98	9290	31.01
98-99	3091	9.09
99-00	3844	11.57
00-01	4437	17.94
01-02	1858	4.42
02-03	4630	16.42
03-04	2636	9.25
04-05	12225	37.25
05-06	1059	13.19

Table 2 Storm Debris Collection Summary for Long Beach: Debris is measured in Tons (Signal Hill 2006)

To estimate trash generation rates, research from other watershed was analyzed by Regional Board staff. The most relevant study to the Malibu Creek Watershed was done by the City of Calabasas for Continuous Deflective Separation (CDS) installed in December of 1998 for runoff from Calabasas Park Hills to Las Virgenes Creek. It is assumed that this CDS unit prevented all trash from passing through. The calculated area drained by this CDS Unit is approximately 12.8 square miles. The urbanized area estimated by Regional Board staff is 0.10 square miles. The result of this clean-out, which represents approximately half of the 1998-1999 rainy season, was 2,000 gallons of sludgy water and a 64-gallon bag about two-third full of plastic food wrappers. It is assumed that part of the trash accumulated in the CDS unit over roughly half of the rainy season had decomposed in the unit due to the absence of paper products. Given the CDS unit was cleaned out after slightly more than nine months of use, it was assumed that this 0.10 square mile urbanized area produced a volume of 64 gallons of trash over one year. This data will be referenced for the consideration of the Baseline Waste Load Allocation.

B. Nonpoint Sources

Nonpoint source pollution is commonly caused by a wide range of activities including urban development, agriculture, and recreation, and is identified as a parallel attribute to the trash problem in the waterbodies in the Malibu Creek Watershed. The creeks and lakes in the Malibu Creek Watershed support recreational activities such as picnicking, boating, fishing, and

camping. The trash deposited in the creeks and lakes resulting from nonpoint sources is a function of transport mechanisms including wind and stormwater.

There are limited studies, particularly to define the relationship between the strength of winds and movement of trash from a land surface to a waterbody. Lighter trash with a sufficient surface area to sail with the wind, such as plastic bags, beverage containers, paper or plastic convenient food containers are easily lifted and carried to waterbodies. Also, as described in the point source section, stormwater carries trash from shore areas to waterbodies. Transportation of pollutants from one location to another is determined by the energy of both wind and stormwater.

In consideration of transport mechanisms, existing trash in the environment nearby the creeks and lakes is the fundamental cause of nonpoint sources trash loading. Based on observation, land use can be generally divided into categories of low density single-family residential and open space/parks areas. Residents may accidentally discard trash to the backyard, grass or trails in the parks, or roads which initiate the journey of trash to waterbodies via wind or stormwater. Different use of the open space/park may be responsible for different degrees of trash impairment. For example, areas with picnic tables closer to the creeks and lakes have a higher likelihood of having more trash on the ground near the waterbodies than in parking lots. Visitation rates also appear to be correlated to the amount of trash from nonpoint source.

Most of the nonpoint source trash that is eligible to travel with wind or stormwater into the waterbodies is the result of human activities. Records of cleanup days at Lake Erie in 2006 indicate that the top items found were cigarette butts, beverage containers, food wrappers/containers, caps and lids, and eating utensils (Pennsylvania, 2006). The findings are consistent with the items found in the Malibu Creek Watershed during site inspections.

V. Linkage Analysis

This TMDL is based on numeric targets derived from narrative water quality objectives for floating materials and solid, suspended, or settleable materials. The narrative objectives prescribe that waters shall not contain these materials in concentrations that cause nuisance or adversely affect beneficial uses. Based on these targets, staff finds the capacity of the waterbodies in the Malibu Creek Watershed to accumulate trash is zero.

VI. Waste Load and Load Allocations

Both point sources and nonpoint sources are identified as sources of trash in the waterbodies in the Malibu Creek Watershed. For point sources, the strategy for attaining water quality standards focuses on assigning Waste Load Allocations (WLAs) to the Principal Permittee and Permittees of the Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit, and the Ventura County MS4 Permit (hereinafter referred to as Responsible jurisdictions). The WLAs will be implemented through permit requirements. For nonpoint sources, the strategy for attaining water quality standards focuses on assigning Load Allocations

(LAs) to land owners, municipalities and agencies having jurisdictions over the waterbodies of concern and the vicinity of the listed watersheds. Final WLAs and LAs are zero trash. The LAs will be implemented through regulatory mechanisms that implement the State Board's 2004 Nonpoint Source Policy such as conditional waivers, waste discharge requirements, or prohibitions.

WLAs and LAs are based on a phased reduction from the Baseline Waste Load and Load Allocation, estimated as the current discharge, over an eight-year period for point source trash reduction compliance, and five-year period for nonpoint source trash reduction compliance by using a program of minimum frequency of trash assessment and collection (MFAC) program discussed below. WLA assignees may comply with WLAs through implementation of full capture systems, partial capture systems, nonstructural BMPs, or any lawful methods with Regional Board Executive Officer approval. LA assignees may comply with LAs through implementation of Regional Board Executive Officer approved nonstructural BMPs or an MFAC program.

Waste Load Allocations for point sources are assigned to the Principal Permittees and Permittees of MS4 permits and Caltrans. WLAs may be issued to additional facilities in the future under Phase II of the US EPA Stormwater Permitting Program. The Baseline Waste Load and Load Allocations for Permittees may be revised with data collected during the Trash Monitoring and Reporting Plan (TMRP) in the first year of the implementation period.

A. Waste Load Allocations

Baseline Waste Load Allocation for MS4 Responsible jurisdictions

Municipal stormwater permittees may implement their TMRPs to obtain site specific trash generation rates for the first two years of the implementation period, and, if approved by the Regional Board's Executive Officer, ultimately define the trash Baseline Waste Load Allocations. The TMRP will derive a representative trash generation rate for various land uses from responsible permittees discharging stormwater to the waterbodies. This TMRP shall include, but is not limited to, assessment and quantification of trash collected from the surfaces and shoreline of listed reaches and waterbodies of Malibu Creek Watershed and from responsible jurisdiction land areas where stormwater discharges to any type of conveyance leading to the waterbodies of concern. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in the listed waterbodies in the Malibu Creek Watershed and on the surrounding land areas. The derived trash generation rate may be used to define an appropriate Waste Load Allocation, which will be implemented upon approval by the Executive Officer.

Based on the study conducted by the City of Calabasas, 640 gallons of uncompressed trash per square mile per year may be used as trash generation rate for MS4 permittees, or the municipality may choose to propose and implement a TMRP with Regional Board Executive Officer approval, to establish a site specific trash generation rate. The derived trash generation rates from areas where responsible permittees discharging stormwater to the waterbodies in the

first two years of the TMRP implementation, may be specifically for various land uses, or for all land uses if applicable.

The Baseline Waste Load Allocation for any single permittee is the sum of the products of each land use area multiplied by the Waste Load Allocation for the land use area, as shown below:

$$WLA = \sum \text{for each city} \left(\text{area by land uses} \bullet \text{allocations for this land use} \right)$$

Southern California Association of Governments (SCAG) classified twelve types of land uses for every city and unincorporated area in the watershed. The land use categories are: (1) high density residential , (2) low density residential , (3) commercial and services, (4) industrial, (5) public facilities, (6) educational institutions , (7) military installations, (8) transportation , (9) mixed urban , (10) open space and recreation , (11) agriculture , and (12) water . Given that the minimum mapping resolution is 2.5 acres, a non-critical land use unit may not be mapped if it is less than 2.5 acres in size. The details of land use categories are provided in the Appendix I.

Data collected during implementation of the Trash Monitoring and Reporting Plan will be used to establish specific trash generation rates for various or all land uses. The land use categories relevant to the Malibu Creek Watershed are:

- Low density residential,
- High density residential,
- Commercial,
- Educational institutions, and
- Open space and recreation.

Transportation land use under Caltrans' jurisdiction will be covered under Caltrans' permit. Caltrans will be required to submit a monitoring plan for that land use, and will be assigned a Waste Load Allocation. Major boulevards that are currently under Caltrans' jurisdiction, but are affected by trash generated on municipal sites will be addressed by the cities concerned.

All different land uses may be assumed to have the same litter generation rate unless data is collected separately for specific land uses.

Responsible jurisdictions may provide acreage of above mentioned land uses within their jurisdiction in order to revise their contributions from their assigned Baseline Waste Load Allocations. The Baseline Waste Load Allocations for Responsible jurisdictions are presented in Table 5. The values shown are uncompressed volumes in gallons. A more detailed breakdown along land uses is provided in Appendix II and III. The appendices contain tables which show the square mileage for each land use for each responsible jurisdiction in the watershed, and a list of maps showing land uses for each responsible jurisdiction. For responsible jurisdictions that are only partially located in the watershed, the square mileage indicated is for the portion in the watershed only.

Baseline Waste Load Allocations for Caltrans Stormwater Permit

During the 1998/1999 and 1999/2000 rain seasons, a Litter Management Pilot Study (LMPS) was conducted by Caltrans to evaluate the effectiveness of several litter management practices in reducing litter that is discharged from Caltrans storm water conveyance systems. The LMPS employed four field study sites, each of which was measured with the amount of trash produced when separate BMPs were applied. The average total loads for each site normalized by the total area of control catchments is presented in Table 3, adapted from the LMPS report:

Table 3. Preliminary Weight and Volume for Freeways by Litter Management Pilot Study (LPMS)

Weight lbs/sq mi/year	Volume cu ft/sq mi/year
7,479.36	892.64

Subsequently, Caltrans launched a Gross Solid Removal Devices (GSRDs) Pilot Program to study trash removal efficiencies of various systems installed along freeways in 2000. Three preliminary designs for different GSRDs which are the Linear Radial, the Inclined Screen, and the Baffle Box were developed. These GSRDs fulfill the criteria of being certified as Full Capture Systems, to be drained within 72 hours, requiring cleanup once a year, and needing no maintenance throughout the storm season.

The Linear Radial utilizes a casing with louvers to serve as screens or mesh screen. Flows are routed through the louvers and into a vault. The Inclined Screen uses wedge-wire screen with the slotting perpendicular or parallel to the direction of flow. This device is configured with an influent trough to allow solids to settle. The Baffle Box applies a two-chamber concept: the first chamber utilizes an underflow weir to trap floatable solids, and the second chamber uses a bar rack to capture material. All of these designs were certified as Full Capture Systems by the Executive Officer of the Regional Board on October 7, 2004.

Table 4 below summarizes the annual trash loads normalized with the drainage areas at multiple sites for years 2000-2001 and 2001-2002.

Table 4. Average Weight and Volume of Trash for Freeways by Caltrans Phase I Gross Solids Removal Devices Pilot Study at Year 2000 through 2002

Year	Weight lbs/sq mi/year*	Volume cu ft/sq mi/year
2000-2001	157,240	4,184
2001-2002	146,280	4,760
Average	151,760	4,472

*The trash weight was measured after drip dry.

According to the GSRD phase I study, the baseline WLA is 4,472 $ft^3/mi^2/yr$. However, according to the LMPS study, the baseline WLA is 892.64 cubic feet per square mile per year ($ft^3/mi^2/yr$), or 6,677 gallons/mi^2/year. The LMPS study is more applicable to the Malibu Creek Watershed based on the land use, population density, and average daily traffic conditions.

Therefore, the baseline WLA is 892.64 cubic feet per square mile per year ($ft^3/mi^2/yr$), or 6,677 gallons/mi^2/year.

Baseline Wasteload Allocation

Table 5 shows the Baseline WLAs for all point sources, in gallons per year, assuming a trash generation rate of 640 gallons of uncompressed trash per square mile per year. If the MS4 Permittees use their TMRPs to derive site specific trash generation rates, the Baseline WLAs will be calculated by multiplying the point source areas by the derived trash generation rates. The Baseline WLA for Caltrans was based on a trash generation rate of 6,677 gals per square mile per year as determined by LMPS studies.

Areas under jurisdiction of Ventura County Watershed Protection District are assessed based on the length recorded in the GIS system, multiplied with width which is estimated approximately 10 feet since these creeks in the Ventura County are considered headwaters.

Table 5. Malibu Creek Watershed Trash TMDL Baseline Waste Load Allocations, assuming a trash generation rate of 640 (gallons of uncompressed litter)

Responsible Parties	Point Source Area ($Mile^2$)	Baseline WLA (gals/year)
Agoura Hills	2.83	1810
Calabasas	1.05	673
Hidden Hills	0.11	71
Los Angeles County	1.75	1117
Malibu	0.35	226
Thousand Oaks	0.87	555
Ventura County	1.69	1081
Ventura County Watershed Protection District	0.03	20
Westlake Village	0.22	142
Caltrans	0.32	2136

B. Load Allocations

Load Allocations (LAs) for nonpoint sources also follow phased reduction from Baseline Load Allocations. According to the Porter-Cologne Act, Load Allocations may be addressed by the conditional Waivers of WDRs, or WDRs.

Responsible jurisdictions shall monitor the trash quantity deposited in the vicinities of the waterbodies of concern as well as that on the waterbody to comply with Baseline Load Allocation. Data collected through Trash Monitoring and Reporting Plan may define the percentage of trash migrating from land to waterbodies.

The area adjacent to the waterbody, or defined as nonpoint source, is the composition of multiple land uses. There are parking lots, recreational areas, picnic areas, and hiking areas under the jurisdictions of municipalities, California Department of Parks and Recreation, and National Forest Services. Other land uses such as residential areas, commercial areas, public services, roads, educational institutions, and open space/park areas in Los Angeles County's and Ventura County's unincorporated lands, school districts, and municipalities also contribute trash to the creeks and lakes. By applying the similar concept that is applied for the Waste Load Allocation calculation, the Load Allocation for the land use subarea, as shown below:

$$LA = \sum \textit{for each Nonpoint source}\left(\textit{subarea by land uses} \bullet \textit{allocations for this land use}\right)$$

It may be appropriate to assume the same trash generation rate or allocation for different types of land uses.

The boundary of point sources for the Malibu Creek Watershed is defined by areas which contain conveyances discharging to the waterbodies of concern. Conveyances include, but are not limited to, natural and channelized tributaries, and stormwater drains. Nonpoint source areas are where trash may be carried over ground by stormwater or wind to waterbodies. Due to the transportation mechanism by wind and stormwater to relocate trash from land to waterbodies, the potential nonpoint source area may be smaller than the defined subwatershed. Figure 2 below illustrates the subwatershed used to calculate Baseline Waste Load and Load Allocation by each land use's surface.

The appendix I also shows the surface areas of various types of land use considered potential nonpoint sources.

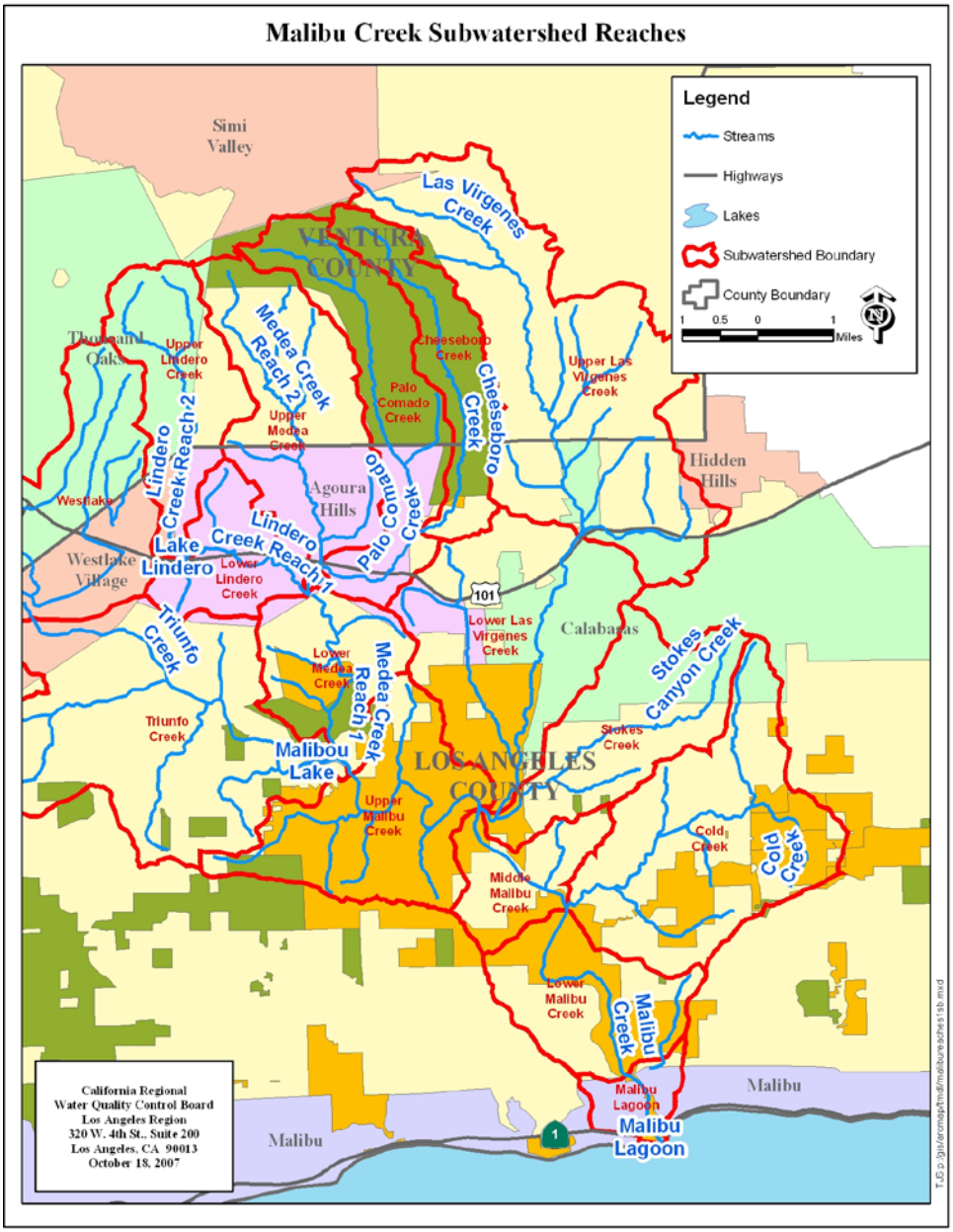

Figure 2. Areas of the Malibu Creek Watershed

Further imply the study by the City of Calabasas, the trash generation rate from nonpoint sources areas, including, but not limited to, schools, commercial areas, residential areas, public services, road, open space and parks areas, is 640 gallons per square mile per year. Responsible jurisdictions may propose and implement the Regional Board Executive Officer approved TMRPs to obtain site specific trash generation rates for the first two years of the implementation period. The data collected including, but not limited to, the details of the frequency, location, and reporting of trash monitoring, as well as a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in Malibu Creek Watershed and on the land area surrounding Malibu Creek Watershed may be used to ultimately define the trash Baseline Load Allocations, if approved by the Executive Officer of the Regional Board. Data collected shall

include the trash at the creeks and lakes, their shorelines, and trash accumulated in the vicinities of the waterbodies of concern, which could possibly be carried directly to the surface water by stormwater, wind, or human activities. Analyzing data may define the relationship between the trash quantities in the water and the shorelines of the surrounding environment.

Assuming that trash within a reasonable distance from the waterbodies of concern has a high potential to reach the waterbodies and excluding the areas addressed by NPDES or any other existing permits for point sources, the nonpoint source surface areas along the waterbody perimeter are calculated and separated by the following categories:

- Parks including picnic areas, trails,
- Schools,
- Commercial areas immediately adjacent to waterbodies
- Open channels/waterbodies allowing deposition of nonpoint source trash, and
- Open space.

Based on the information collected, some permittees or entities such as Las Virgenes Unified School District (LVUSD) already have programs including a routine schedule of trash removal from school premises six days per week, continuous education programs which discuss the importance of recycling and inform students of littering ordinances and environmental protection activities, and maintenance of sufficient exclusion from school properties to waterbodies, to minimize the possibility of being nonpoint source of trash. The effectiveness of trash abatement programs may be monitored. Entities currently undergoing programs may be considered as responsible jurisdictions if it is demonstrated that the entities actually contribute nonpoint source trash to the waterbodies of concern.

On January 16, 2008, Los Angeles Regional Board staff conducted a site inspection in response to the City of Simi Valley's request brought during the CEQA Scoping meeting. The City of Simi Valley requested that Regional Board staff evaluates the responsibilities of the City as a responsible jurisdiction of the Malibu Creek Watershed Trash TMDL. Based on geographical information system (GIS) data, Simi Valley has approximately 118 acres of property within the upper Las Virgenes Creek subwatershed. According to the 1991 land use data published by the Southern California Association of Governments (SCAG), all of the subject land area is undeveloped open space. Access to the area is limited to two fire roads, and is restricted because the entrance is within gated private properties. During the inspection, there was no trash found along the road and within the range of visibility. Given these findings, the Regional Board staff considers removing Simi Valley from the list of Responsible Jurisdictions since the responsibilities of Simi Valley related to the Malibu Creek Watershed Trash TMDL is minimal, if any. However, if there are any changes in land use in the portion of the City within the upper Las Virgenes Creek subwatershed, the Los Angeles Regional Board reserves the right to reconsider the City's responsibility under this TMDL, and to impose TMDL requirements on Simi Valley to ensure that water quality is protected.

Regional Board staff has investigated the Calabasas Landfill as a potential source of trash to Malibu Creek and its tributaries. The Calabasas landfill operates under the Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities (General Industrial Storm Water Permit). Water Quality

Order No. 97-03-DWQ. Receiving Water Limitation C.2. states that storm water discharges shall not cause or contribute to an exceedance of any applicable water quality standards contained in a Statewide Water Quality Control Plan or the applicable Regional Water Board's Basin Plan.

In addition, the Los Angeles County Sanitation District (Sanitation District) operates under a Solid Waste Facility Permit, issued by Los Angeles County Department of Public Health (LACDPH), and National Park Service (NPS) Special Use Permit. LACDPH is the Local Enforcement Agency (LEA) for the California Integrated Waste Management Board on issues related to the Calabasas Landfill. These permits contain conditions and require trash best management practices (BMPs) for the control of litter from the landfill as described below:

Solid Waste Facility Permit (19-AA-0056), Part II. "Conditions", A. "Requirements", Item 6:

"The Operator shall comply with an established Customer Litter Control Program."

National Park Service Special Use Permit (DOC# 826152), Item (4) "Litter Removal" states as follows:

"The Permittee shall prepare a litter control protocol which shall be submitted for NPS Review and Approval within three months of the effective date of the Permit. This Protocol shall, at a minimum, require the Permittee to patrol areas immediately adjacent to the landfill property at lease twice a month to remove litter and to have personnel available at all times during landfill operating hours to respond to unusual litter situations (e.g. during and immediately following Santa Ana wind conditions)."

The Sanitation Districts prepared a litter control protocol and submitted it to the NPS on February 16, 1999. After receiving comments from NPS, the revised protocol was submitted to the NPS on April 6, 1999.

The litter control measures are described in the Report of Disposal Site Information (RDSI) dated January 2008. The RDSI is similar in nature to a Report of Waste Discharge (ROWD) in that it is the basis for the Solid Waste Facility Permit.

- Daily inspection of the entrance area, all interior roads and the access roads for litter and debris.
- Litter is controlled at the landfill working face by the daily application of cover material and the use of portable litter fences at the perimeter.
- Active disposal area is confined to as small an area as possible and is moved to a more sheltered location based on wind conditions.
- All potential litter-producing loads received are required to be covered. A surcharge is levied for uncovered loads arriving at the site with the potential to cause litter.

Litter Control Protocol per the NPS Special Use Permit

- Approximately five workers are assigned each day for litter patrol and removal.
- Visual inspection of adjacent properties in the Santa Monica Mountains National Recreation Area (SMMNRA) is made every two weeks. All litter is removed to the extent feasible.
- During high wind conditions, a litter crew is dispatched to remove any litter to the extent possible that has blown to the edge of the landfill or offsite.
- Litter removal is also performed within 48 hours of excessive litter notification from the NPS.
- Notification to the Sanitation Districts regarding offsite litter in adjacent park areas will be responded to on or before the next operating day.

Based on the above conditions and staff inspections, Staff has not assigned WLAs to the Calabasas Landfill. If during the implementation of the TMDL such allocations are deemed necessary by staff, staff can reconsider the TMDL to assign WLAs.

Table 6 summarizes the area and the tentative Baseline Load Allocations for responsible jurisdictions, assuming a trash generation rate of 640 gallons of uncompressed trash per square mile per year. If data collected from the Trash Monitoring and Reporting Plan is used to define a site specific trash generation rate, the Baseline Load Allocation will be calculated by multiplying the nonpoint source area by the trash generation rate.

Areas under the jurisdiction of the Ventura County Watershed Protection District are assessed based on the length recorded in the GIS system, multiplied by the width, which is estimated approximately 10 feet since the creeks in Ventura County are considered to be headwaters.

Table 6. The Malibu Creek Watershed Trash TMDL Baseline Load Allocations, assuming a trash generation rate of 640 (gallons of uncompressed litter)*

Responsible Jurisdictions	Nonpoint Source Area ($Mile^2$)	Baseline Load Allocations (Gals/year)
Agoura Hills	3.28	2098
Calabasas	3.00	1923
California Department of Parks and Recreation	9.79	6263
Santa Monica Mountains Conservancy	0.31	198
Los Angeles County	8.71	5571
Malibu	0.43	277
National Park Service	1.41	904
Hidden Hills	0.04	25
Thousand Oaks	1.52	971
Ventura County	10.18	6513
Ventura County Watershed Protection District	0.03	20
Westlake Village	0.23	146
*Not including nonpoint source areas and load allocations for local land owners.		

Staff notes that there are a number of private land owners and residences in the vicinity of Malibu Lagoon, Malibu Creek, Malibou Lake, Medea Creek, Lindero Creek, Lake Lindero, Las Virgenes Creek and other tributaries of Malibu Creek. In some cases, these land owners may own or operate drainage systems to the waterbodies in the Malibu Creek Watershed. However, trash from these land owners has not been assessed or quantified. The TMDL may be reconsidered to allocate trash loads to these private property owners if necessary to attain numeric targets.

VII. Margin of Safety

A margin of safety (MOS) accounts for uncertainties in the TMDL analysis. The MOS can be expressed as an explicit mass load that is not allocated to responsible parties, or included implicitly in the WLAs and LAs that are allocated. Because this TMDL sets WLAs and LAs as zero trash, staff finds the TMDL includes an implicit MOS and that an explicit MOS is not necessary for this TMDL.

VIII. Critical Conditions

Critical conditions for the Malibu Creek Watershed are based on three conditions that correlate with loading conditions:

- Major Storm (as proposed by responsible jurisdictions and responsible parties in the Trash Monitoring and Reporting Plan and approved by the Executive Officer);

- Wind advisories issued by the National Weather Service for the Angeles National Forest area or by the California Highway Patrol for Highway 5 in the Santa Clarita Valley;

- High visitation – On weekends and holidays from May 15 to October 15. The critical condition of high visitation only applies to Malibu Lagoon.

Critical Conditions are considered while establishing the minimum frequency of trash monitoring, assessment and collection.

IX. TMDL Implementation and Compliance

This section describes TMDL implementation programs for compliance with the TMDL. Compliance with the TMDL is based on the Numeric Target and the Waste Load and Load Allocations which are defined as zero trash in and on the shorelines of the listed reaches and lakes of the Malibu Creek Watershed. Consequently, compliance is based on installation of structural best management practices such as full capture or partial capture systems, or implementing a program for trash assessment and collection, or any best management practices approved by the Executive Officer of the Regional Board, to attain a progressive reduction in the amount of trash in the waterbodies of concern. Nonpoint source trash dischargers may propose a program for a minimum frequency of assessment and collection in conjunction with best management practices (MFAC/BMP program). The MFAC/BMP program is required to attain a progressive reduction in the amount of trash collected from the water surface and shorelines through routine trash removal and implementation of BMPs. Dischargers may implement structural and/or nonstructural BMPs as required to attain a progressive reduction in the amount of trash in the listed waterbodies in the Malibu Creek Watershed.

The TMDL Implementation Plan provides separate schedules for responsible jurisdictions to achieve zero trash for point sources by implementing full capture systems or other structural and/or nonstructural BMPs, and for nonpoint sources by using MFAC/BMP programs. Key provisions of the Implementation Plan include:

- Baseline Waste Load and Load Allocations based on a reference/antidegradation approach;
- Trash monitoring to provide data to revise Baseline Waste Load and Load Allocations, assess effectiveness of BMPs and trash abatement programs, and assess levels of trash in the listed waterbodies in the Malibu Creek Watershed;
- A conditional waiver of waste discharge requirements for nonpoint source dischargers who implement MFAC/BMP programs; and
- TMDL Reconsideration by the Regional Board to revise Baseline Waste Load and Load Allocations and the minimum frequency of the MFAC program.

TMDL compliance is assessed in accordance with Dischargers' implementation of programs for point and nonpoint source trash abatement and attainment of the progressive trash reductions in accordance with the schedules below (Tables 7 and 8).

Baseline Waste Load and Load Allocations

If responsible jurisdictions do not use their TMRP to derive a new trash generation rate and acceptable Baseline Waste Load and Load Allocations, the WLAs and LAs may be based on a reference system/antidegradation approach using data from the City of Calabasas, normalized to the subwatershed area in the vicinity of the Malibu Creek Watershed. The "reference system/anti-degradation approach" means that on the basis of historical trash generation rates at an existing monitoring location most similar to the Malibu Creek Watershed, an amount of trash discharged to the listed waterbodies in the Malibu Creek Watershed is permitted initially under the TMDL schedule. The allowable amount of trash is set such that (1) water quality at any site is at least as good as at the designated reference site and (2) there is no degradation of existing water quality based on existing amounts of trash.

Trash Monitoring

The TMDL includes monitoring based on a Trash Monitoring and Reporting Plan (TMRP) developed by responsible jurisdictions and approved by the Executive Officer of the Regional Board. Minimum requirements for trash monitoring include assessment and quantification of trash collected from the surfaces and shoreline of the waterbodies listed in the Malibu Creek Watershed. The monitoring plan shall provide details of the frequency, location, and reporting of trash monitoring for the creeks and lakes. Responsible jurisdictions shall propose a metric (e.g., weight, volume, pieces of trash) to measure the amount of trash in the creeks, lakes, and on the surrounding land areas. Responsible jurisdictions may include other metrics to provide data for revision of the Baseline Waste Load and Load Allocations, determine effectiveness of BMPs, and assess compliance with the TMDL. Responsible Jurisdictions may coordinate their trash monitoring activities for the Malibu Creek Watershed. Monitoring requirements are described in greater detail in Section X.

Reconsideration of Revised Baseline Waste Load and Load Allocations

Baseline Waste Load and Load Allocations may be based on a reference approach. Data from a City of Calabasas study in which trash recovered from a continuous deflector system were quantified. Site-specific conditions at the Malibu Creek Watershed may differ from conditions of the Calabasas Study. As a result, it is recommended that responsible jurisdictions use the data from their TMRP in order to derive a site specific trash generation rate and Baseline Waste Load and Load Allocations. The Baseline Waste Load and Load Allocations are used as the basis for the progressive reduction of trash in the creeks and lakes for both point and nonpoint sources and represent the maximum amount of trash that can be discharged in conjunction with partial capture systems or any other BMPs for point sources and the programs for minimum frequency of assessment and collection for nonpoint sources.

Implementation of Load and Waste Load Allocations

TMDL implementation may require BMPs to meet the progressive trash schedule. BMPs may be implemented through stormwater permits or a conditional waiver from waste discharge requirements for nonpoint source dischargers. Point source dischargers will implement BMPs in accordance with Waste Load Allocations incorporated into MS4 permits. Point sources may alternatively implement full capture systems or any other structural or non-structural BMPs to be deemed in compliance with Waste Load Allocations.

A. Implementation and Compliance for Point Sources

Discharge of trash from stormdrains and conveyances to waterbodies in the Malibu Creek Watershed will be regulated through the Municipal NPDES Storm Water Permits for Los Angeles County and for Ventura County, and the Caltrans stormwater Permit.

There are alternatives for responsible jurisdictions to achieve compliance with waste load allocations. As established in the Los Angeles River Trash TMDL, point source dischargers can implement full capture systems to comply with the TMDL. Point source dischargers may also implement other structural and/or non-structural BMPs.

1. Full Capture Treatment Systems

The amount of trash discharged to the creeks and lakes by an area serviced by a full-capture system will be considered to be in compliance with the final Waste Load Allocation for the drainage area, provided that the Full Capture Systems are adequately sized, maintained and maintenance records are available for inspection by the Regional Board.

A full capture system is any single device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate Q resulting from a one-year, one-hour storm in the subdrainage area. Rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour) Compliance with the TMDL schedule for full capture systems will be based on a percentage of the Malibu Creek subwatersheds that are drained by storm drain systems (i.e., point source area). The TMDL Implementation Plan provides a total of eight years to install full capture systems. Compliance with the final Waste Load Allocation will be assumed wherever Full Capture Systems are installed in the storm drains discharging to the creeks and lakes. The installation of a Full Capture System by a discharger does not establish any presumption that the system is adequately sized, and the Regional Board will review sizing and other data in the future to validate that a system satisfies the criteria established in this TMDL for a Full Capture System.

2. Structural and/or Non-structural Best Management Practices (BMPs)

Compliance with the final waste load allocations may also be attained by implementing other structural and/or non-structural BMPs. Responsible jurisdictions shall propose structural and/or non-structural BMPs incorporated with the TMRP for Regional Board Executive Officer approval. These BMPs should be applied to prevent trash from entering the waterbodies of

concern. (Figure 3) For example, street sweeping or partial capture systems installed in the catch basins or stormdrains or their combination, with the conditions that the trash in the waterbodies does not exceed Baseline Waste Load Allocation. Progressive reductions in trash will be calculated as follows:

At the effective date of the TMDL, the Baseline Waste Load Allocations will apply based on data collected by City of Calabasas, or responsible jurisdiction may propose a TMRP for Regional Board Executive Officer approval, which will collect site specific trash generation data to establish Baseline Waste Load Allocations. The first compliance point will be at the end of the forth year with Waste Load Allocations equal to a 20% reduction of the amount of trash in the Baseline Waste Load Allocation. Compliance thereafter will be evaluated at the end of each successive storm season with Waste Load allocations equal to successive 20% reductions of the Baseline Waste Load Allocation (Table 7).

Dischargers will be deemed in compliance with the final Waste Load Allocation upon results of the trash monitoring and reporting plan demonstrating that no trash greater than 5 mm in size is discharged to listed waterbodies in the Malibu Creek Watershed through point sources. If the amount of trash from point sources does not progressively decrease, then responsible jurisdictions must implement additional structural and/or non-structural BMPs to ensure reductions.

The Regional Board may revise the TMDL schedule and the Executive Officer approved TMRP based on the results of the trash monitoring and reporting program.

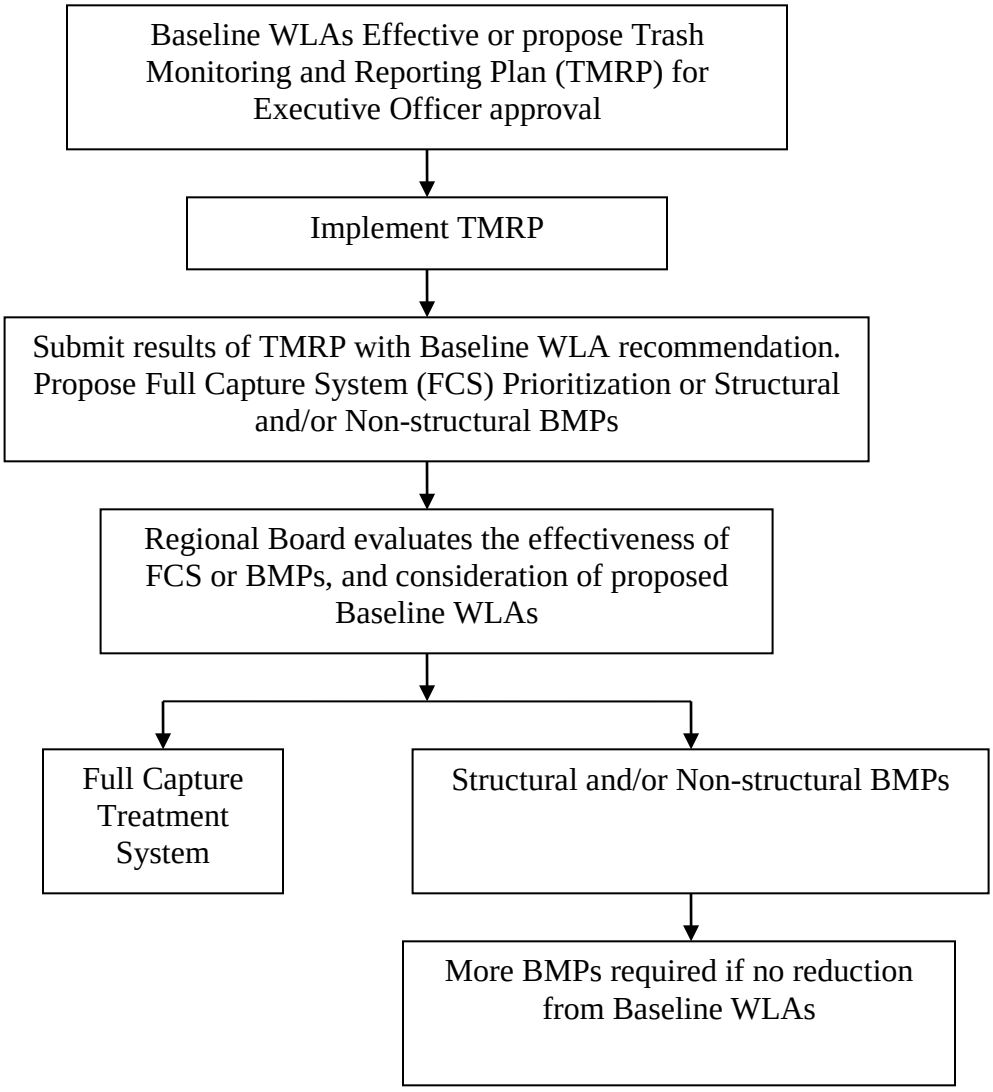

Figure 3. Flowchart for Point Source Implementation

B. Implementation and Compliance for Nonpoint Sources

Two primary federal statutes establish framework in California for addressing nonpoint source (NPS) water pollution: Section 319 of the Clean Water Act (CWA) of 1987 and Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA). In accordance with these statutes, the state assesses water quality associated with nonpoint source pollution (NPS) and develops programs to address NPS. In 2004, The State Water Resource Control Board (SWRCB), in its continuing efforts to control NPS pollution in California, adopted the Plan for California's Nonpoint Source Pollution Control Program (NPS Program Plan). The

NPS Program Plan prescribes implementation and monitoring of Best Management Practices to address nonpoint source pollution.

To implement this TMDL for nonpoint source dischargers, the Regional Board, with the adoption of this TMDL, waives waste discharge requirements for nonpoint source dischargers who submit a MFAC/BMP program for approval by the Executive Officer. The MFAC/BMP program includes a trash assessment of trash on the surface or shoreline of the waterbodies of concern in the Malibu Creek Watershed, collection of all visible trash that accumulates on the surface or shoreline of listed waterbodies, implementation of BMPs to attain a progressive reduction of the amount of trash collected at each collection event. Conditional waivers identify areas where BMPs need to be upgraded to attain water quality objectives in receiving waters. The Trash Monitoring and Reporting Plan submitted by responsible jurisdictions (also see Table 6) will provide data that may be used to propose an appropriate Baseline Load Allocation. The compliance of attaining zero trash from nonpoint sources is determined by the trash that does not accumulate in a deleterious amount on the surface and the shorelines to adversely affect the beneficial uses and cause the nuisance of the waterbodies.

LAs shall be implemented through either (1) a conditional waiver from waste discharge requirements, or (2) an alternative program implemented through waste discharge requirements or an individual waiver or another appropriate order of the Regional Board.

Nonpoint source dischargers may achieve compliance with the LAs by implementing a MFAC/BMP program approved by the Executive Officer. The MFAC/BMP Program includes an initial minimum frequency of trash assessment and collection and suite of structural and/or non-structural BMPs. The MFAC/BMP program shall include collection and disposal of all trash found in the water, shoreline, and the channel. Responsible jurisdictions shall implement an initial suite of BMPs based on current trash management practices in land areas that are found to be sources of trash to the listed waterbodies in the Malibu Creek Watershed. For each individual subwatershed, the initial minimum frequency shall be set as follows:

<u>Malibu Creek (from Malibu Lagoon to Malibou Lake)</u>

1. Within City of Malibu premises, the shorelines and areas adjacent to Malibu Creek need to be cleaned once per week and within 72 hours after critical conditions.
2. In the County of Los Angeles areas and in the State Park areas, once per month and within 72 hours after critical conditions.

<u>Malibu Lagoon</u>

1. The waterbody, shorelines, beach and areas adjacent to Malibu Lagoon need to be cleaned twice per week during high visitation seasons from May 15 to October 15.
2. The waterbody, shorelines, beach and areas adjacent to Malibu Lagoon shall be cleaned once per week for the rest of the year, and within 72 hours after critical conditions.

Malibou Lake

Once per month for the waterbody, shorelines and the adjacent lands, and within 72 hours after critical conditions.

Medea Creek Reach 1 (Malibou Lake to confluence with Lindero Creek)

Twice per month for the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions.

Medea Creek Reach 2 (above confluence)

1. Once per week on the waterbody, shorelines and the adjacent areas from the confluence with Lindero Creek to the intersection with Thousand Oaks Blvd., and within 72 hours after critical conditions.
2. Twice per month above the intersection with Thousand Oaks Blvd., and within 72 hours after critical conditions.

Lindero Creek Reach 1 (Confluence with Medea Creek to Lake Lindero)

Twice per month for Lindero Creek Reach 1 including the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions.

Lindero Creek Reach 2 (Above Lake Lindero)

Twice per month for Lindero Creek Reach 2 including the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions.

Lake Lindero

Twice per month for the waterbody, shorelines and the adjacent land, and within 72 hours after critical conditions.

Las Virgenes Creek

1. In the State Park areas northerly to the intersection with Mulholland Highway, once per month, and within 72 hours after critical conditions.
2. Once per week for the waterbody, shorelines and the adjacent areas between Mulholland Highway and Juan Bautista De Anza Park at Los Hills Road in the City of Calabasas, and within 72 hours after critical conditions.
3. Twice per week for the waterbody, shorelines and the adjacent areas for the rest of City of Calabasas.
4. Once per month for the section in Los Angeles County along Ventura Freeway and within 72 hours after critical conditions.
5. In Ventura County once every two months for the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions.

Assessment will be conducted at accessible areas as defined in the Trash Monitoring and Reporting Plan. Collection is defined as picking up 100% of trash and depositing it in a trash receptacle for proper disposal. All trash collected during the implementation of the MFAC, including trash from any channel cleaning and dredging operations, will be disposed of properly according to existing policies and regulations.

At the end of the implementation period, a revised MFAC/BMP program may be required if the Executive Officer determines that the amount of trash accumulating between collections is

causing nuisance or otherwise adversely affecting beneficial uses. Specifically, the Executive Officer may approve or require a revised assessment and collection frequency and definition of the critical conditions under the waiver:

(a) To prevent trash from accumulating in deleterious amounts that cause nuisance or adversely affect beneficial uses between collections;
(b) To reflect the results of trash assessment and collection;
(c) If the amount of trash collected does not show a decreasing trend, where necessary, such that a shorter interval between collections is warranted; or
(d) If the amount of trash collected is decreasing such that a longer interval between collections is warranted.

With regard to (a), (b) or (c), above, the Executive Officer is authorized to allow responsible jurisdictions to implement additional structural and/or non-structural BMPs in lieu of modifying the monitoring frequency.

Alternatively, responsible jurisdictions may propose, or the Regional Board may impose, an alternative program which would be implemented through waste discharge requirements an individual waiver, a cleanup and abatement order, or any other appropriate order or orders, provided the program is consistent with the assumptions and requirements of the reductions described in Table 7, below.

The Regional Board is adopting a Conditional Waiver for trash in the listed waterbodies in the Malibu Creek Watershed at the same time as this TMDL. The Conditional Waiver provides a regulatory structure whereby continued monitoring and iterative BMPs are deployed to attain zero trash within the TMDL Implementation Schedule (Figure 4). Based on the trash generation rate derived from the TMRP after the first year of implementation, the Regional Board will consider the proposal of a site specific Load Allocation for individual waterbody in the Malibu Creek Watershed (Table 8).

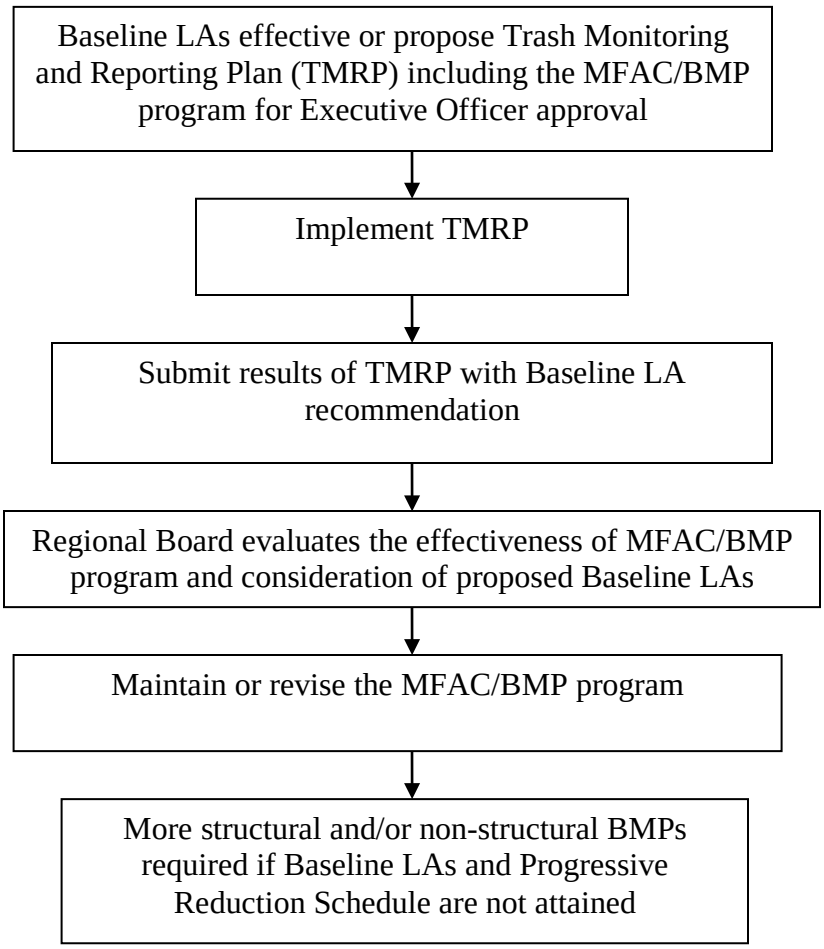

Figure 4. Implementation Schematic for Nonpoint Sources

C. Coordinated Compliance

Responsible jurisdictions for this TMDL include both point source and nonpoint source dischargers. Compliance with the TMDL may be based on a coordinated Monitoring and Reporting work plan that outlines TMDL responsibilities for each responsible jurisdiction. Dischargers interested in coordinated compliance shall submit a Coordinated Monitoring and Reporting Compliance plan that outlines BMPs that will be implemented and the schedule for implementing the BMPs and MFAC program.

The Counties of Los Angeles and Ventura may help the Regional Board to identify private property dischargers in unincorporated county lands. Private land owners subject to this TMDL may participate with the Counties in implementing an MFAC/BMP program to comply with TMDL load allocations.

D. Non-Structural BMPs

A wide variety of methods possibly alleviating trash impairment to the waterbodies in the Malibu Creek Watershed are listed below. Responsible jurisdictions shall propose the monitoring plan as well as the mitigation measures incorporating an individual method or combinations to progressively reduce nonpoint source trash. Non-structural BMPs may provide advantages over structural full capture systems in areas that are not extensively drained by municipal separate stormwater sewer systems. Foremost, institutional controls offer other societal benefits associated with reducing litter in our city streets, parks and other public areas. The capital investment required to implement non-structural BMPs is generally less than that for structural BMPs.

Litter Control

It is noted that ordinances which prohibit littering are already in place in the areas of the Malibu Creek Watershed and listed below:

- **City of Ventura (i.e., San Buenaventura), Sec. 8.250.030. Littering; fine; picking up litter (Code 1971, § 4362)**

  "It is unlawful to litter or cause to be littered in or upon any public or private property, or in any container, as described in this chapter, of another person without their permission."

- **Ventura County (6923 Litter.)**

  "No Person shall throw, deposit, leave, maintain, keep, or permit to be thrown, deposited, kept, or maintained, in or upon any public or private driveway, parking area, street, alley, sidewalk, or component of the Storm Drain System or any Watercourse, any refuse, rubbish, garbage, litter, or other discarded or abandoned objects, articles, accumulations, and/or Pollutants so that the same may cause or contribute to pollution. Any Owner or Occupant of the property or responsible person who fails to remove pollutants within a reasonable time, as determined by the Director, may be charged with a violation of this Chapter."

- **California Vehicle Code**

  Throwing Substances on Highways or Adjoining Areas
  23111. No person in any vehicle and no pedestrian shall throw or discharge from or upon any road or highway or adjoining area, public or private, any lighted or nonlighted cigarette, cigar, match, or any flaming or glowing substance. This section shall be known as the Paul Buzzo Act. (Amended Ch. 1548, Stats. 1970. Effective November 23, 1970)

  Throwing, Depositing, or Dumping Matter on Highway
  23112. (a) No person shall throw or deposit, nor shall the registered owner or the driver, if such owner is not then present in the vehicle, aid or abet in the throwing or depositing upon any highway any bottle, can, garbage, glass, nail, offal, paper, wire, any substance likely to injure or damage traffic using the highway, or any noisome, nauseous, or offensive matter of any kind.

(b) No person shall place, deposit or dump, or cause to be placed, deposited or dumped, any rocks, refuse, garbage, or dirt in or upon any highway, including any portion of the right-of-way thereof, without the consent of the state or local agency having jurisdiction over the highway. (Amended Ch. 74, Stats. 1980. Effective January 1, 1981)

Trash Receptacles

Most trash disposed of on the ground may result from the lack of trash receptacles. Installing trash receptacles can reduce nonpoint source trash loadings. The receptacles shall be visible and conveniently reachable for all park users. During the picnic seasons, sufficient trash and hot coal receptacles in the picnic area should be provided. Receptacles shall be equipped with lids to prevent wildlife from digging through trash or the wind from re-mobilizing the trash inside. Receptacles may be decorated but shall not cause visual intrusion to the background environment.

Varieties of land uses determine the proper locations and necessary density of the trash receptacles. More receptacles are needed along trails, near park entrances and exits, adjacent to picnic areas or areas with higher activity frequencies. Sanitation should be maintained to avoid nuisances.

Enforcement of Litter Laws

The existing litter laws shall be posted in the prominent location for visitors or resident to understand the regulations. It is to be noted that ordinances that prohibit litter are already in place in most cities because cities recognize that trash has become a pollutant in the storm drain system when exposed to storm water or any runoff, and prohibit the disposal of trash on public land.

Patrolling or designated personnel shall have authorities to illustrate, execute, and enforce the litter laws. The effectiveness of enforcement should be monitored.

Trash Bags

Trash bags may be provided at the park entrance for visitors to keep their trash contained. Trash bags should be available at designated locations for park users to collect after their activities or pets.

The concept of trash bags originates from the trash bags offered in the Ventura County mass transportation system which provides trash bags in the buses for passengers to keep the buses clean. This program may be more effective if it is combined with other efforts. The effectiveness shall be monitored by checking the use of these trash bags in the trash collectors or trash receptacles.

Street Sweeping

Street sweeping is one of most effective methods to keep debris, vegetation wastes, and trash away from catch basins. Although the correlation between street sweeping frequency and amount of trash collected in the waterbody is not confirmed in the Malibu Creek Watershed area, it is convincing that more street sweeping will allow less trash to be flushed by stormwater to the catch basins, and to be discharged to the waterbodies of concern.

Most municipalities have been undergoing or have had contracts with Ventura County for a street sweeping program. In the County's unincorporated areas, street sweeping frequency may be increased to reduce trash loading.

Public Education

Public education refers to posting information, giving a presentation, or conducting direct or indirect communication with individuals. This outreach should be applied to public entities such as city halls, schools, community centers, senior centers, and to private meeting/activity locations.

The educational materials should include the relevant ordinances, the importance of protecting the environment, possible environmental and biological impacts from pollution, and the necessary response if pollution occurs.

Community Involvement

Involving communities may be more effective in promoting the importance of protecting water quality and the environment. The bonding between residents in the community makes the community more influential in educating residents about right concepts. Communities can organize activities to illustrate that environmental protection involves every individual's continuous efforts.

Recycling Program

A recycling program shall be developed to minimize trash sources in the vicinity of the waterbody of concern.

Reporting System

Patrol personnel, park users, or residents should report accumulation of trash or illegal disposal of trash to the waterbodies and their adjacent areas. Information with a toll-free number and communication devise shall be conveniently available near the waterbodies for

timely reporting. Responsible jurisdictions, after receiving reports, should conduct inspections to formulate proper cleanup actions.

Stencil

Stencils are to remind the residents and park users of the importance of maintaining water quality and of the existing ordinances. Signs should be placed in prominent locations where most people will view them, and should contain appropriate symbols as well as clear written messages, and cite the appropriate federal, state and county codes including the largest possible penalty amount for violation of codes.

Consideration of Picnic Area Relocation

Trash found in the waterbodies may be the results of stormwater flushing or wind re-mobilizing trash originally disposed of around picnic areas. If stormwater or wind is the dominant factor causing trash impairment, and trash is constantly found near picnic areas, it may be a solution to reconsider the proper location of picnic area.

The further the picnic area away from waterbodies, the longer time or more mobilization energy it needs from stormwater or wind to carry trash to waterbodies of concerns. Trash may be cleaned before reaching waterbodies. A proper monitoring period to analyze the cause of trash is necessary prior to considering this option.

Imposition of Trash Tax

The trash often discovered on or adjacent to the waterbodies is convenient paper or plastic food or beverage containers, plastic bottles, paper plates, aluminum cans, or plastic bags. This trash shares the same characteristics as packaging utilized in the fast food stores. The evidence of trash causing the waterbody impairment may be used to justify an increase in the retail price of disposable food or beverage packaging to compensate for the potential environmental impacts. The additional tax income can contribute to preventive or cleanup actions for the designated waterbody of concern.

Cooperation of Potential Sources of Trash

Stores carrying goods considered potential sources of trash to the waterbody or its adjacent areas can advise their patrons to handle the packaging, residuals or any trash parts in an environmentally friendly manner. Similar to the stencils, signs with clear language containing ordinances, and a penalty of violation should be posted near the cashier, exit and parking lot.

Surveillance Camera

Surveillance cameras can be installed to monitor the water quality and any illegal disposal which may require immediate cleanup. They can also be used to enforce the littering laws if necessary.

Programs of Adopting Waterbodies, Parks, etc.

This concept is adapted from the “adopt a highway” program. The participation from industries in the vicinity of lakes, rivers, or creeks, will help the responsible jurisdictions to maintain the cleanliness of the environment, and increase the cleaning frequency. Industries or any entities that contribute resources, time, or efforts to keep the environment clean may be encouraged by being acknowledged publicly or financially.

E. Implementation Schedule

The TMDL Implementation Schedule is designed to provide responsible jurisdictions flexibility to implement structural and non-structural BMPs to address trash impairments in the listed waterbodies in the Malibu Creek Watershed. Implementation consists of development of monitoring plans by responsible jurisdictions and implementation of the Executive Officer approved Trash Monitoring and Reporting Plan.

Table 7. Implementation Schedule for Point Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Submit Trash Monitoring and Reporting Plan, including a plan for defining the trash baseline WLA and a proposed definition of "major rain event".	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	6 months from effective date of TMDL. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
2	Implement Trash Monitoring and Reporting Plan.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
3	Submit results of Trash Monitoring and Reporting Plan, recommend trash baseline WLA, and propose prioritization of Full Capture System installation or implementation of other measures to attain the required trash reduction.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	One year from receipt of letter of approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer, and annually thereafter.
4	Installation of Full Capture Systems	California Department of Transportation, County of Los	Four years from effective date of

	or other measures to achieve 20% reduction of trash from Baseline WLA*.	Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	TMDL.
5	Installation of Full Capture Systems or other measures to achieve 40% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Five years from effective date of TMDL.
6	Evaluate the effectiveness of Full Capture Systems or other measures, and reconsider the WLA*.	Regional Board.	Five years from effective date of TMDL.
7	Installation of Full Capture Systems or other measures to achieve 60% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Six years from effective date of TMDL.
8	Installation of Full Capture Systems or other measures to achieve 80% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Seven years from effective date of TMDL.
9	Installation of Full Capture Systems or other measures to achieve 100% reduction of trash from Baseline WLA*.	California Department of Transportation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village and Thousand Oaks.	Eight years from effective date of TMDL.

*Compliance with percent reductions from the Baseline WLA will be assumed wherever full capture systems are installed in corresponding percentages of the conveyance discharging to the listed waterbodies. Installation will be prioritized based on the greatest point source loadings.

Table 8. Minimum Frequency Assessment and Collection Implementation Schedule for Nonpoint Sources

Task No.	Task	Responsible Jurisdiction	Date
1	Conditional Waiver in effect.	National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and Thousand Oaks, and land owners in the vicinity of the waterbodies addressed in the Nonpoint Source Implementation Section of this Basin Plan Amendment.	Regional Board adoption of TMDL.
2	Submit Notice of Intent to Comply with Conditional Waiver of Discharge Requirements, including MFAC/BMP Program and Trash Monitoring and Reporting Plan.	National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and Thousand Oaks, and land owners in the vicinity of the waterbodies addressed in the Nonpoint Source Implementation Section of this Basin Plan Amendment.	Six months from TMDL effective date. If a plan is not approved by the Executive Officer within 9 months, the Executive Officer will establish an appropriate monitoring plan.
3	Implement MFAC/BMP Program.	National Park Service, California Department of Parks and Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and Thousand Oaks, and land owners in the vicinity of the waterbodies addressed in the Nonpoint Source Implementation Section of this Basin Plan Amendment.	6 months from receipt of letter of approval from Regional Board Executive Officer, or the date a plan is established by the Executive Officer.
4	Submit annual TMRP reports including	National Park Service, California Department of Parks and	One year from receipt of letter of

	proposal for revising MFAC/BMP for Executive Officer approval.	Recreation, County of Los Angeles, County of Ventura, Ventura County Watershed Protection District, Santa Monica Mountains Conservancy, Cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, Westlake Village, and Thousand Oaks, and land owners in the vicinity of the waterbodies addressed in the Nonpoint Source Implementation Section of this Basin Plan Amendment.	approval for the Trash Monitoring and Reporting Plan from Regional Board Executive Officer, and annually thereafter.
5	Reconsideration of Trash TMDL based on evaluation of effectiveness of MFAC/BMP program.	Regional Board.	Five years from effective date of TMDL.

* At Task 3, all Responsible Jurisdictions must be attaining the zero trash target after each required trash assessment and collection event. At Task 4, all Responsible Jurisdictions must demonstrate full compliance and attainment of the zero trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. Based on Responsible Jurisdiction monitoring reports, the Executive Officer may adjust the minimum frequency of assessment and collection as necessary to ensure compliance between the required trash assessment and collection events.

F. Reasonably Foreseeable Environmental Impacts from TMDL Implementation

An accompanying CEQA Substitute Environmental Document (SED) analyzes the potential negative environmental impacts of compliance with the trash TMDL based on the implementation strategies discussed above. According to municipalities implementing previous Trash TMDL requirements by installing catch basin inserts and vortex separation devices, it was found the most significant environmental impacts result from construction activities associated with installation and maintenance activities. The primary construction impacts are caused by concrete and electrical work, and in some areas, earth work associated with structural improvements. The environmental impacts are resulting from maintaining, removing and disposing trash from structural treatment systems. Both constructional and environmental impacts may be mitigated by available technologies.

Regarding cumulative impacts, it is noted that both the construction and maintenance activities are in small, discrete, discontinuous areas over a short duration. Consequently, cumulative impacts are not significantly exacerbated from the sum of individual project impacts. Project level environmental analysis for implementation of structural methods will likely be conducted by municipalities and responsible jurisdictions under notices of exemption. Categorical exemptions will be based on the nature of the projects including:

-Minor alteration of existing public structures involving negligible expansion of an existing facility.
-Modifications of existing storm drain system and addition of environmental protection devices in existing structures with negligible or no expansion of use.
-Modifications to sewers constructed to alleviate a high potential or existing public health hazard.

The analysis concludes that the implementation of this TMDL will result in water quality improvement in the creeks and lakes in the Malibu Creek Watershed, but may be associated with temporary or permanent localized adverse impacts to the environment. While specific projects employed to implement the TMDL may have significant impacts, these impacts may be limited, short-term or mitigated through effective design and scheduling. Under circumstances that none of alternatives or mitigation measures is available to mitigate the environmental impact caused by implementation of this Trash TMDL, implementing this Trash TMDL would outweigh the unavoidable adverse environmental effects because the minimum foreseeable environmental impacts shall be addressed by project level planning, construction, and operation methods as described in the CEQA SED.

X. Monitoring

Assessment and monitoring of trash are key components of the TMDL. The goal of trash monitoring is to collect representative data across the watershed that can be used to refine Baseline Load and Waste Load Allocations, effectively site and design BMPs, including full capture systems, and determine compliance with Waste Load and Load Allocations. Monitoring activities and results, including implementation and effectiveness of BMP implementation, will be reported and submitted to the Regional Board on an annual basis, as described in the Implementation schedule. Responsible jurisdictions will be required to propose and implement a Trash Monitoring and Reporting Plan approved by the Executive Officer.

The Trash Monitoring and Reporting Plan will describe the methodologies that will be used to assess and monitor trash in the listed waterbodies in the Malibu Creek Watershed, and if applicable land areas in the vicinity of the Malibu Creek Watershed. Regional Board staff finds that monitoring protocols prescribed by the Rapid Trash Assessment are appropriate for this TMDL. Elements of the trash Monitoring and Reporting Plan are described below.

- Monitoring Plan. Responsible jurisdictions will submit a Trash Monitoring and Reporting Plan with the proposed monitoring sites and at least two additional alternate monitoring locations. The Work Plan must include maps of the drainage and storm drain data, and locations where most trash accumulated on the waterbodies and on the vicinities for nonpoint sources for each proposed and alternate monitoring location. The monitoring plan(s) will be submitted to the Regional Board according the TMDL Implementation Schedule. The Regional Board's Executive Officer will have full authority to review the monitoring plan(s), to revise the plan, to select among the alternate monitoring sites, and to approve or disapprove the plan(s).

- Jurisdiction. Allocations will be permitted through stormwater permits or by a Conditional Waiver. For this reason, each responsible jurisdiction must provide the Regional Board list of entities located within their municipal boundaries that are outside of their jurisdiction including state or federal lands and facilities.

- Data Collection. Baseline data may be collected over a period of two years. Although the amount of trash deposited into the waterbodies through storm drains or from nonpoint sources may depend on rainfall patterns and winds, monitoring will include dates in both the rainy season and the dry season. The rainy season is defined as a period from October 15 to April 15.

- Unit of Measure. Data will be reported in a single unit of measure that is reproducible and measures the amount of trash, irrespective of water content (e.g., compacted volume based on a standardized compaction rate, dry weight, etc.). The responsible jurisdictions may select the unit. The unit of measure used during baseline monitoring also will be used during implementation for determining compliance with Waste Load Allocations and Load Allocations.

- Vegetation. The responsible jurisdictions may exclude vegetation from their reported discharge except where there is evidence that the vegetation is the result of the illegal discharge of yard waste. However, all monitoring data must be reported uniformly (either with or without vegetation). If the responsible jurisdictions include vegetation in the discharges reported during baseline monitoring, they will be obligated to include natural vegetation in their reports of discharge during implementation.

- Disposal of Collected Trash. Trash captured during the monitoring plan must be disposed of in accordance with all applicable laws and regulations.

- Location. Trash monitoring on the surface and shores of the waterbodies of concern in the Malibu Creek Watershed shall be focused on visible trash at representative and critical locations determined by the responsible jurisdictions and approved by the Executive Officer in the Trash Monitoring and Reporting Plan. Locations for trash assessment shall include, but not be limited to locations where trash enters and exits the waterbodies, accumulates on the water and shorelines, and areas of recreational access and wildlife habitat. Trash assessment on the water and shorelines shall include the type of trash, amount of trash according to a metric proposed and approved in the Monitoring and Reporting Work plan.

- Representative Data. In an effort to provide representative data in deriving Baseline Waste Load Allocation and Baseline Load Allocation, the minimum requirements to establish the Trash Monitoring and Reporting Plan include:

    - The plan would provide representative data across the subwatershed.

- The plan would provide data in units that were easily reproducible and would be comparable with data to be collected during the Implementation Phase.
- The Baseline Waste Load Allocation and Baseline Load Allocation may be revised from data generated from the plan.

- Land Use Areas. Dischargers may propose trash monitoring according to Land Use Areas in the vicinity of the Malibu Creek Watershed. Monitoring data can be used to establish specific trash generation rates per land use for siting and design of BMPs.

In addition to the general monitoring requirements, two TMDL monitoring strategies are outlined below for the proposed compliance options.

1. Monitoring of Point Source Trash Discharges.

Monitoring of full capture devices, other structural and/or non-structural BMPs for point source focuses on description and quantification of trash collected by the proposed devices and BMPs, and assessment of effectiveness in reducing trash prior to discharge to the waterbodies in the Malibu Creek Watershed. The Monitoring and Reporting Plan will describe how trash collected from full capture devices and other structural and/or non-structural BMPs will be quantified and how trash reductions in the creeks, lakes, and on the shoreline will be assessed.

2. Monitoring of Nonpoint Source Trash Discharge

Responsible jurisdictions must identify at least 5 monitoring locations within the perimeter of the listed waterbodies, including two (2) locations where trash was always present according to the records. The TMRP should describe how proposed monitoring locations will demonstrate how all visible trash in the creeks, lakes, and on the shoreline can be assessed and collected. The minimum frequency of assessment and collection (MFAC) depends on the composition of land uses along the waterbodies. The detail MFAC for each specific listed waterbody is provided in Section IX, B.

An additional 5 locations in the vicinity along the creeks and lakes that are assessed to have the most trash deposited on the ground shall also be inspected and cleaned at a frequency that no trash will accumulate in these areas and deposit in the water. Responsible jurisdictions must collect 100% of the trash accumulated between MFAC events.

The report submitted for Regional Board's review must contain information, including but not limited to dates of inspection, descriptions of trash types, estimate of trash quantity if weighting is not available, and immediate action of trash removal. At least one photo at each designated observation location per assessment and collection event, and as needed must be taken and attached in the report to support the observation.

XI. Cost Considerations

Porter-Cologne Section 13241(d) requires staff to consider costs associated with the establishment of water quality objectives. The TMDL does not establish water quality objectives, but is merely a plan for achieving existing water quality objectives. Therefore cost considerations required in Section 13241 are not required for this TMDL.

The purpose of this cost analysis is to provide the Regional Board with information concerning the potential cost of implementing this TMDL and to addresses concerns about costs that have been raised by responsible jurisdictions. This section takes into account a reasonable range of economic factors in fulfillment of the applicable provisions of the California Environmental Quality Act (Public Resources Code Section 21159.)

An evaluation of the costs of implementing this Trash TMDL amounts to evaluating the costs of preventing trash from being deposited to and accumulating in the waterbodies of concerns in the Malibu Creek Watershed. This brief report gives a summary overview of the costs associated with the most likely ways the responsible jurisdictions will achieve the required reduction in discharges via the storm drain system and in accumulation resulting from the potential nonpoint source areas. Such an analysis would be incomplete if it failed to consider the existing cost that presently is transferred to "innocent" downstream communities. There is an unquantified cost to aquatic life within the creeks and lakes in the Malibu Creek Watershed and Ocean.

Cost of Implementing Trash TMDL

The reference provided by Los Angeles County indicated that it cost more than 4 million dollars to clean trash from 31-mile beaches annually. City of Long Beach, at the mouth of the Los Angeles River, also spent almost 1 million dollars annually for storm debris accumulated in the Long Beach Harbor. These expenses should be taken into consideration while calculating the potential cost of implementing Trash TMDL.

The cost of implementing this TMDL will range widely, depending on the method that the responsible jurisdictions select to meet the Waste Load and Load Allocations. Arguably, enforcement of existing litter ordinances could be used to achieve the final Waste Load and Load Allocations at minimal or no additional cost. The most costly approach in the short-term is the installation of full capture systems on all discharges to the waterbodies in the Malibu Creek Watershed.

Most of the information presented herein consists of catch basin inserts, structural vortex separation devices, end of pipe nets and a MFAC/BMP program. The associated cost of preventing trash from being disposed of into waterbodies is included.

Regardless of the method(s) used, costs associated with the gradual decrease of the amount of trash in the waterbodies, and the maintenance of all waterbodies of concerns in the Malibu Creek Watershed and its tributaries free of trash include monitoring and implementation costs. Any practice chosen for monitoring trash or removing trash from waterbody, shorelines or source areas, regardless of its installation costs, will also be associated with labor costs.

The followings are general cost analysis separately for retrofitting all the catch basins in the urbanized portion of the watershed, using solely structural full capture methods, and implementing a MFAC/BMP program.

1. Catch Basin Inserts

Catch basin insert is to install a screen at catch basin inlet facing streets, and a finer mesh with opening less than 5 mm for being eligible to be certified by the Executive Officer of Regional Board to be full capture system, inside catch basins. The screen at the inlet can be metal screens open as stormwater flow pressures them, or brushes. The purpose of the inlet screen is to exclude trash with larger size to stay on street for sweeping and to avoid causing clogging inside catch basins.

At a cost of around $800 per insert, catch basin inserts are the least expensive structural treatment device in the short term. However, because they may be considered as a full capture method or not depending on the design and obtaining a certification from the Executive Officer of Regional Board, they shall be monitored frequently and used in conjunction with street sweeping.

There are approximately 1572 catch basins in the listed subwatersheds within Los Angeles County, estimated by Los Angeles County Department of Public Works, and about *** catch basins in Ventura County provided by Ventura County Watershed Protection District. Assuming all catch basin insert will be installed in five years after the effective date of this TMDL, and the operation and maintenance expense is 50% of the installation cost.

Table 9.. Costs of retrofitting the catch basin inserts. (Dollars in thousands)

Number of years in the program	1	2	3	4	5	6	7	8
Operations and Maintenance (yearly, cumulative)	$157.1	$314.2	$471.4	$628.5	$785.6	$785.6	$785.6	$785.6
Capital Cost (yearly)	$314.2	$314.2	$314.2	$314.2	$314.2			
Annual Costs per year (Capital + Operation and Maintenance)	$471.4	$628.5	$785.6	$942.7	$1,099.8	$785.6	$785.6	$785.6

2. Full Capture Vortex Separation Systems (VSS)

Permanent structural devices can be used to trap gross pollutants for monitoring purposes as well as implementation. Among those “litter control devices” are structural vortex separation systems (VSS), floating debris traps, end-of-pipe nets and trash racks. VSS units appear to be among the best alternatives to evaluate or remove the amount of trash generated throughout a particular drainage area.

An ideal way to capture trash deposited into a storm drain system would be to install a VSS unit. This device diverts the incoming flow of storm water and pollutants into a pollutant separation and containment chamber. Solids within the separation chamber are kept in

continuous motion, and are prevented from blocking the screen so that water can pass through the screen and flow downstream. This is a permanent device that can be retrofitted for oil separation as well. Studies have shown that VSS systems remove virtually all of the trash contained in the treated water. The cost of installing a VSS is assumed to be high, so limited funds will place a cap on the number of units which can be installed during any single fiscal year.

The point sources area is approximately 6,100 acres. The following table provides capacities and the associated costs of various sizes of VSS. Staff assumes the cost of yearly servicing of a VSS unit to be $2000.

Table 10. Costs Associated with VSS.

Capacity	Acres (average)	Unit Capital Cost	Number of devices needed on urban portion of watershed	Capital costs	Yearly costs for servicing all devices
1 to 2 cfs	5	$12,800	1225	$15,680,000	$2,450,000
6 to 8 cfs	30	$45,000	204	$9,180,000	$408,000
19 to 24 cfs	100	$90,000	60	$720,000	$120,000

Table 13 and 14 compare the estimated costs of retrofitting the point source areas with low capacity VSS (1 to 2 cfs) and large capacity VSS (19 to24 cfs), given that VSS will be installed within the first five years after the effective date of this TMDL.

Table 11. Costs Associated with Low Capacity Vortex Gross Pollutant Separation Systems. (Dollars in thousands)

Number of years in the program	1	2	3	4	5	6	7	8
Units Installed	245	245	245	245	245			
Operations and Maintenance (yearly, cumulative)	$490	$980	$1,470	$1,960	$2,450	$2,450	$2,450	$2,450
Capital Cost (yearly)	$3,136	$3,136	$3,136	$3,136	$3,136			
Annual Costs per year (Capital + Operation and Maintenance)	$3,626	$4,116	$4,606	$5,096	$5,586	$2,450	$2,450	$2,450

Table 12. Costs Associated with Large Capacity Vortex Gross Pollutant Separation Systems. (Dollars in thousand)

Number of years in the program	1	2	3	4	5	6	7	8
Units Installed	12	12	12	12	12			
Operations and Maintenance (yearly, cumulative)	$24	$48	$72	$96	$120	$120	$120	$120
Capital Cost (yearly)	$1,080	$1,080	$1,080	$1,080	$1,080			
Annual Costs per year (Capital + Operation and Maintenance)	$1,104	$1,128	$1,152	$1,176	$1,200	$120	$120	$120

Outfitting a large drainage with a number of large VSS systems may be less costly than using a larger number of small VSS systems. Maintenance costs decrease dramatically as the size of the system increases. Topographical and geotechnical considerations also should come into play when choosing VSS systems or other structural systems or devices.

3. End of Pipe Nets

"Release nets" are a relatively economical way to monitor trash loads from municipal drainage systems. However, in general, they can only be used to monitor or intercept trash at the end of a pipe and are considered to be partial capture systems, as the nets are usually sized at a 1/2" to 1" mesh. These nets are attached to the end of pipe systems. The nets remain in place on the end of the drain until water levels upstream of the net rise sufficiently to release a catch that holds the net in place. The water level may rise from either the bag being too full to allow sufficient water to pass, or from a disturbance during very high flows. When the nets release they are attached to the side of the pipe by a steel cable and as they are washed downstream (a yard or so) are tethered off so that no pollutants from within the bags are washed out.

Preliminary observations suggest that the nets rarely fill sufficiently to cause the bags to release. And therefore, if they are cleaned after a storm event, the entire quantity of material is captured and can be measured for monitoring purposes using two bags per trap. This makes it easy to replace the full or partially full bag with an empty one, so that the first bag can be taken to a laboratory for analysis without manual handling of the material it contains.

The nets are valid devices because of the ease of maintenance and also because the devices can be relocated after a set period at one location (provided the pipe diameters are the same). With limited funding, installation could be spread over several land uses and lead to valuable monitoring results.

Because the devices require attachment to the end of a pipe, this can severely reduce the number of locations within a drainage system that can be monitored. In addition, these nets

cannot be installed on very large channels (7 feet in diameter is the maximum). Thus costs shown in Table 15 are given per pipe, and no drainage coverage is given.

Table 13. Sample Costs for End of Pipe Nets.

Pipe Size	Release nets (cost estimates)
End of 3 ft pipe	$10,000
End of 4 ft pipe	$15,000
End of 5 ft pipe	$20,000
In 3 ft pipe network	$40,000
In 4 ft pipe network	$60,000
In 5 ft pipe network	$80,000

4. Gross Solids Removal Devices

The Gross Solids Removal Devices Pilot Program includes designs of Linear Radial, Inclined Screen, and Baffle Box. The cost of the construction largely depends on the cleanup frequency of the system, and the size of the drainage areas. Information provided by Caltrans indicates that a unit of GSRD would cost $150,000 for construction, and would be more significant with greater treatment areas, or with influences from other factors such as traffic conditions.

5. Cost Consideration – Minimum Frequency Trash Assessment and Collection

This section provides a brief estimate of costs to comply with the Minimum Frequency of Assessment and Collection for nonpoint source responsible jurisdictions. The cost estimate is based on the minimum frequencies of assessment and collection prescribed in the section of Implementation for separate reaches and locations, and additional assessment and collection events after major storms. The occurrence of critical conditions varies at different locations. Given the fact that most storm and high wind events occur in the winter season and some in the summer, the number of critical conditions is assessed from four times per year to twenty times per year, in conjunction with the existing MFAC schedule.

It is also assumed that the personnel for trash assessment and collection will be employed by one of the agencies that provide services to the area of the Malibu Creek Watershed. As such, equipment and vehicles are available and costs for these items are assumed to be included in the estimate below. It is also assumed that a single person can conduct the complete trash assessment and collection in four hours at each. Consequently, the total time per year to conduct the minimum frequency of assessment and collection ranges from 4,000 hours to 5,184 hours.

Table 14. Estimation of Hours for Implementing Minimum Frequency of Assessment and Collection Program

Sub-Watersheds	MFAC Descriptions	MFAC (per year)	Critical Conditions (per year)	Hours per Event	Total Hours
Malibu Creek	1. Within City of Malibu premises, the waterbody, shorelines and areas adjacent to Malibu Creek need to be cleaned once per week and within 72 hours after critical conditions.	52	4-20	8	448-576
	2. In the County of Los Angeles areas and in the State Park areas, once per month, and within 72 hours after critical conditions.	12	4-20	8	128-256
Malibu Lagoon	1. The waterbody, shorelines, beach and areas adjacent to Malibu Lagoon need to be cleaned twice per week during high visitation seasons from May 15 through October 15.	44		8	352
	2. The waterbody, shorelines, beach and areas adjacent to Malibu Lagoon shall be cleaned once per week for the rest of the year, and within 72 hours after critical conditions.	30	4-20	8	272-400
Malibou Lake	Once per month for the waterbody, shorelines and the adjacent lands, and within 72 hours after critical conditions.	12	4-20	8	128-256
Medea Creek Reach 1	Twice per month for the on the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions.	24	4-20	8	224-352
Medea Creek Reach 2	1. Once per week on the waterbody, shorelines and the adjacent areas from the confluence with Lindero Creek to the intersection with Thousand Oaks Blvd., and within 72 hours after critical conditions.	52	4-20	4	224-288
	2. Twice per month above the intersection with Thousand Oaks Blvd., and within 72 hours after critical conditions.	24	4-20	8	224-352
Lindero Creek Reach 1	Twice per month on the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions.	24	4-20	4	112-176
Lindero Creek Reach 2	Twice per month on the waterbody, shorelines and the adjacent areas, and within 72 hours after critical conditions.	24	4-20	8	224-352
Lake Lindero	Twice per month on the waterbody, shorelines and the adjacent land, and within 72 hours after critical conditions.	24	4-20	4	112-176
Las Virgenes Creek	1 In the State Park areas northerly to the intersection with Mulholland Highway, once per month, and within 72 hours after critical conditions.	12	4-20	8	128-256
	2. Once per week for the waterbody, the shorelines and the adjacent areas between Mulholland Highway and Juan Bautista De Anza Park at Los Hills Road in the City of Calabasas, and within 72 hours after critical conditions.	52	4-20	8	448-576
	3. Twice per week for the waterbody, the shorelines and the adjacent areas for the rest of City of Calabasas.	104		8	832

	4. Once per month for section in Los Angeles County along Ventura Freeway and within 72 hours after critical conditions.	12	4-20	4	64-128
	5. In Ventura County, once every two months for the waterbody, the shorelines and the adjacent areas, and within 72 hours after critical conditions.	6	4-20	8	80-208
Total					**4000-5184**

Assuming a burdened hourly rate of $37.50 per hour, the estimated annual costs to conduct the Minimum Frequency of Assessment and Collection program can range from approximately $150,000 to $200,000 for the Malibu Creek Watershed.

6. Cost Comparison

A comparison of costs between strategies based on catch basin inserts (CBIs), low capacity VSS, high capacity VSS systems, and enforcement of litter laws is presented in Table 15. This comparison was completed previously for a trash TMDL in the Los Angeles River watershed. Staff assumes the relative magnitude of the costs for the different options is applicable for the Malibu Creek Watershed Trash TMDL, with an addition of the cost resulting from minimum frequency trash assessment and collection.

Table 15. Cost Comparison (amounts in millions)

	CBI only	Low capacity VSS Units	Large capacity VSS Units	Minimum Frequency Trash Assessment and Collection	Enforcement of Litter Laws[1]
Cumulative capital costs over 8 years	$1.57	$15.68	$5.4	$0	$0
Cumulative maintenance and capital costs after 8 years	$4.7	$14.7	$0.72	$1.6	$0
Annual servicing costs after full implementation	$0.79	$2.45	$0.12	$0.2	$0

Trash abatement in the Malibu Creek Watershed will differ depending on the options selected by the responsible jurisdictions.

[1] Revenues from fines assessed to offset increased law enforcement cost. The cost of a database system used to calculate trash discharges estimated to be less than $250,000.

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XIII. Appendix I Land Use Classification

The land use classification was developed by Aerial Information Systems as a modified Anderson Land Use Classification and originally included 104 categories. The land use coverages were donated for GIS library use by Southern California Association of Governments (SCAG), and show land use for 2005. The coverages were map-joined into a single coverage by Teale Data Center. The Regional Board layers were aggregated from the TDC coverage into the land uses shown above.

Critical land uses were mapped regardless of resolution limits. Critical land use units below 1 acre in size were mapped as 1-acre units.

Land Uses	Description and subcategories of Each Land Use
High Density Residential	High density single family residential and all multi family residential, mobile homes, trailer parks and rural residential high density.
Low Density Residential	Under 2 units per acre.
Public Facilities	government centers, police and sheriff stations, fire stations, medical health care facilities, religious facilities large enough to be distinguished on an aerial photograph, libraries, museums, community centers, public auditoriums, observatories, live indoor and outdoor theaters, convention centers which were built prior to 1990, communication facilities, and utility facilities (electrical, solid waste, liquid waste, water storage and water transfer, natural gas and petroleum)
Education	Preschools and daycare centers, elementary schools, high schools, colleges and universities, and trade schools, including police academies and fire fighting training schools.
Transportation	Airports, railroads, freeways and major roads (that meet the minimum mapping resolution of 2.5 acres), park and ride lots, bus terminals and yards, truck terminals, harbor facilities, mixed transportation and mixed transportation and utility.
Mixed Urban	Mixed commercial, industrial and/or residential, and areas under construction or vacant in 1990.
Open Space and Recreation	Golf courses, local and regional parks and recreation, cemeteries, wildlife preserves and sanctuaries, botanical gardens, beach parks.
Agriculture	Orchards and vineyards, nurseries, animal intensive operations, horse ranches.
Water	Open water bodies, open reservoirs larger than 5 acres, golf course ponds, lakes, estuaries, channels, detention ponds, percolation basins, flood control and debris dams.

XIV. Appendix II Surface Areas of Land Uses

This table shows the square mileage for "high density residential", "low density residential", "commercial", "industrial", "public facilities", "education", "transportation", "mixed urban", "open space", "agriculture", "water" and "recreation" land uses for every city and incorporated areas in the watershed. The "water" land use of water is itself a nonpoint source of trash, and will therefore receive a combined Load Allocation. For cities that are only partially located on the watershed, the square mileage indicated is for the portion located in the watershed.

Square mileage estimated for each land use for cities in the watershed, and for unincorporated areas.

Responsible Jurisdictions	High Density Residential	Low Density Residential	Commercial	Industrial	Public Facilities	Education	Transpor-tation	Mixed Urban	Open and Recreation	Agriculture	Water	Total for all classes
Agoura Hills	2.30	0.14	0.27	0.05	0.04	0.13	0.14	0.02	3.25	0.01	0.03	6.39
Calabasas	0.73	0.01	0.18	0.04	0.08	0.04	0.08	0.01	3.00	0.13	0.00	4.30
CA Dept of Parks and Recreation	0.01	0.03	0.00	0.00	0.01	0.00	0.00	0.00	9.79	0.02	0.00	9.86
Hidden Hills	0.00	0.11	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.00	0.00	0.16
Los Angeles County	0.54	0.66	0.04	0.01	0.35	0.01	0.09	0.14	8.68	0.13	0.02	10.68
Malibu	0.02	0.22	0.03	0.05	0.03	0.00	0.00	0.00	0.43	0.05	0.00	0.84
National Park Service	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41	0.00	0.00	1.42
Simi Valley	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.18
Thousand Oaks	0.50	0.31	0.03	0.00	0.02	0.00	0.00	0.00	1.52	0.00	0.00	2.38
Ventura County	1.58	0.06	0.02	0.00	0.02	0.14	0.00	0.00	10.16	0.00	0.01	12.01
Westlake Village	0.15	0.00	0.07	0.00	0.00	0.00	0.01	0.00	0.23	0.00	0.00	0.46

XV. Appendix III Wasteload and Load Allocations for Land Uses

This table shows the Waste Load and Load Allocations for trash per land use in each city base on square mileage. Waste Load Allocations are assigned to point source areas including high and low density residential, commercial, industrial, public Facilities, education, transportation and mixed urban land uses. Others of open space, agriculture, water and recreation land uses are considered as nonpoint sources and assigned with Load Allocation. For cities that are only partially located on the watershed, the square mileage indicated is for the portion located in the watershed.

Wasteload and Load Allocations for Trash per Land Use in each CITY (Gallons of Uncompressed Volume)

Responsible Jurisdiction	High Density Residential	Low Density Residential	Commer-cial	Industrial	Public Facilities	Education	Transpo rtation	Mixed Urban	Open Space and Parks	Agricul-ture	Water
Agoura Hills	1473.00	89.18	173.57	30.03	27.90	85.15	4803.49	15.86	2080.47	8.32	17.34
Calabasas	468.26	7.59	118.32	24.12	49.70	25.64	2614.34	5.43	1921.15	81.83	1.41
CA Dept of Parks and Recreation	4.02	20.65	0.10	0.00	6.70	0.00	0.00	0.71	6262.90	14.84	0.09
Hidden Hills	0.00	70.90	0.00	0.00	0.00	8.28	0.00	0.00	25.31	0.42	0.00
Los Angeles County	343.77	424.21	28.35	5.45	224.96	5.71	2966.93	90.42	5556.90	84.03	14.30
Malibu	14.84	139.00	21.48	29.61	21.39	0.00	82.63	0.00	277.25	31.29	0.00
National Park Service	0.00	2.34	0.00	0.00	0.07	0.00	0.00	0.00	903.60	0.00	0.00
Simi Valley	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	118.18	0.00	0.00
Thousand Oaks	318.82	200.17	22.25	0.00	13.89	0.00	0.00	0.00	970.66	0.00	0.00
Ventura County	1010.50	39.26	15.72	0.00	15.53	92.68	0.00	0.00	6503.87	0.00	8.68
Westlake Village	96.02	0.00	44.64	0.00	2.32	0.00	345.57	0.00	145.73	0.00	0.01

XVI. Appendix IV Definitions

The definitions of terms as used in this TMDL are provided as follows:

Beneficial Uses. Beneficial Uses form the cornerstone of water quality protection under the Basin Plan. Once beneficial uses are designated, appropriate water quality objectives can be established and programs that maintain or enhance water quality can be implemented to ensure the protection of beneficial uses. The designated beneficial uses, together with water quality objectives (referred to as criteria in federal regulations) form water quality standards. Such standards are mandated for all waterbodies within the state under the California Water Code. In addition, the federal Clean Water Act mandates standards for all surface waters, including wetlands. Beneficial uses for waterbodies in the Malibu Creek Watershed are listed and defined below:

Navigation (NAV)
Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

Water Contact Recreation (REC-1)
Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

Non-contact Water Recreation (REC-2)
Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Commercial and Sport Fishing (COMM)
Uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

Warm Freshwater Habitat (WARM)
Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Estuarine Habitat (EST)

Uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).

Marine Habitat (MAR)
Uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).

Wildlife Habitat (WILD)
Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Rare, Threatened, or Endangered Species (RARE)
Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.

Migration of Aquatic Organisms (MIGR)
Uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.

Spawning, Reproduction, and/or Early Development (SPWN)
Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Shellfish Harvesting (SHELL)
Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sports purposes.

Wetland Habitat (WET)
Uses of water that support wetland ecosystems, including, but not limited to, preservation or enhancement of wetland habitats, vegetation, fish, shellfish, or wildlife, and other unique wetland functions which enhance water quality, such as providing flood and erosion control, stream bank stabilization, and filtration and purification of naturally occurring contaminants.

Best Management Practices (BMPs). BMPs are the practice or combination of practices that are determined to be the most effective, practicable means of preventing or reducing the amount of pollution generated by point and nonpoint sources to a level compatible with water quality goals (including technological, economic, and institutional

considerations). BMPs are defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. In this TMDL, two general categories of structural BMPs and non-structural BMPs are discussed as possible means to reach "zero" trash goal.

Full Capture Device. A full capture system is any single device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate Q resulting from a one-year, one-hour storm in the subdrainage area. Rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour), and A= subdrainage area (acres).

Baseline Load Allocation. The Baseline Load Allocation is analogous to the Baseline Waste Load Allocation for point sources, instead it is for nonpoint sources. Baseline Load Allocation is derived from the existing data, i.e. trash types and quantities, collected by municipalities for various land uses. The progressive reductions in the Load Allocation will be determined based on the Baseline Load Allocation.

Baseline Waste Load Allocation. The Baseline Waste Load Allocation is the Waste Load Allocation assigned to a responsible jurisdiction before reductions are required. The progressive reductions in the Waste Load Allocations could be based on a percentage or variable percentages of the Baseline Waste Load Allocation. The Baseline Waste Load Allocation was calculated based on the annual average amount of trash discharged to the storm drain system from a representative sampling of land use areas, as determined during the Trash Monitoring and Reporting Plan.

Monitoring Entity. The Monitoring Entity is the responsible jurisdiction or one of multiple responsible jurisdictions and/or co-responsible jurisdictions that has been authorized by all the other affected responsible jurisdictions or co-responsible jurisdictions to conduct baseline monitoring on their behalf.

Nonpoint Source. It refers to diffuse, widespread sources of pollution. These sources may be large or small, but are generally numerous throughout a watershed. Nonpoint Sources include but are not limited to urban, agricultural, or industrial areas, roads, highways, construction sites, communities served by septic systems, recreational boating activities, timber harvesting, mining, livestock grazing, as well as physical changes to stream channels, and habitat degradation. NPS pollution can occur year round any time rainfall, snowmelt, irrigation, or any other source of water runs over land or through the ground, picks up pollutants from these numerous, diffuse sources and deposits them into rivers, lakes, and coastal waters or introduces them into ground water.

Responsible jurisdiction. The term "responsible jurisdiction" refers to any responsible jurisdiction or co-responsible jurisdiction of a stormwater permit.

Point Source. The term "point Source" means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture.

Trash. In this document, we are defining "trash" as man-made litter, as defined in California Government Code Section 68055.1(g):

> "Litter means all improperly discarded waste material, including, but not limited to, convenience food, beverage, and other product packages or containers constructed of steel, aluminum, glass, paper, plastic, and other natural and synthetic materials, thrown or deposited on the lands and waters of the state, but not including the properly discarded waste of the primary processing of agriculture, mining, logging, sawmilling or manufacturing."

For purposes of this TMDL, we will consider trash to consist of litter and particles of litter, including cigarette butts. These particles of litter are referred to as "gross pollutants" in European and Australian scientific literature. This definition excludes sediments, and it also excludes oil and grease, and vegetation, except for yard waste that is illegally disposed of in the storm drain system. Additional TMDLs for sediments[2] and oil and grease may be required at a later date.

Urbanized Portion of the Watershed. For the purposes of this TMDL, the urban portion of the watershed includes the sum of total areas of the incorporated cities and the partial unincorporated portion, which comprise of high and low density residential, commercial, industrial, mixed urban areas in Los Angeles County.[3] The estimated areas of the "urbanized" portion of the watershed are summarized in the Appendix II.[4] The remainder of the watershed is made up of the Angeles National Forest, agriculture and other open space.

[2] Sediments which may be addressed in a separate TMDL are natural particulate matters such as silt and sand. Sediments result from erosion and are deposited at the bottom of a stream. Sediments do not refer to the decomposition of settleable litter into small particulate matters, which this TMDL is trying to prevent.
[3] The Regional Board recognizes that some areas within the unincorporated sections of Los Angeles County are actually suburban or rural.
[4] As determined by the Regional Board from GIS mapping. (Other minor differences in figures are due to rounding.)