

THE RAINY SEASON'S “FIRST FLUSH” HITS THE HARBORS OF ORANGE COUNTY

SUMMARY

The harbors of the County of Orange are among the top economic and tourist-attracting areas of the County. During the dry season, the waters are generally free of trash and debris. October 15 traditionally begins the wet part of the year. Whenever the first significant rainstorm occurs, a phenomenon called “the first flush” takes place when all of the accumulated debris in the creeks, flood control channels, and the storm drains of the County rushes to the sea. The harbors of Newport Beach and Huntington Beach, and to a lesser extent Dana Point, become choked with tons of unsightly, unhealthy, and hazardous debris. Islands of trash may float for weeks until they wash out to sea, may accumulate on the city, County, or State beaches, or become waterlogged and sink.

The 1999–2000 Grand Jury found that the efforts of the County Public Facilities and Resources Department (PFRD) in the maintenance and cleaning of the flood control channels for which they are responsible, is admirable. However, the physical devices employed by the cities and the County are often not effective in keeping the debris from entering the harbors during the rainy season. In addition, the methods used to remove the debris that reaches the harbors need to be improved.

The Grand Jury recommends that the efforts of the cities and County be enhanced by use of more efficient methods to curtail the debris before it gets to the harbors. It also recommends that the trash entering the harbors be more efficiently and rapidly removed. Continued education efforts must be part of the program.

INTRODUCTION AND PURPOSE

Huntington Harbour and Newport Harbor, and to a lesser extent Dana Point Harbor, become choked with varying amounts of debris every year following the first significant rain of the season. Debris consisting of plant trimmings, tree limbs, lawn cuttings, furniture, dead animals, animal waste, plastics of all kinds, food containers and wrappers, toys, construction

materials, lumber, pallets, cardboard boxes, and even live rattlesnakes comprise the bulk of what the 1999–2000 Grand Jury terms “macro-pollution.” Significant amounts of this macro-pollution continue to degrade our harbors through April, when Southern California normally enters the dry season. Eventually some of this trash is swept into the ocean where much of it washes up on Orange County beaches. Most of this unsightly, unhealthy, and hazardous mess has entered the harbors of Orange County through flood control channels maintained by the County and by city- and County-maintained storm drains.

The Orange County Grand Jury, ever vigilant of the environment and the consequences of a degraded environment, studied the condition of harbors and beaches following the first winter rainstorms. This report will explain what is being done to reduce the levels of macro-pollution and the current efforts directed toward cleaning up the debris from the harbors. It will conclude with several recommendations designed to further reduce the amount of macro-polluting.

METHOD OF STUDY

In order to get an objective grasp of this form of environmental degradation, the 1999–2000 Orange County Grand Jury interviewed employees of the County, affected cities, and private companies. Federal, State, County, and city laws and ordinances were researched. Guided tours were taken of the three watersheds that impact the three harbors, and aerial overviews and photographs of the areas of study were taken. Printed matter from private companies as well as governmental entities was evaluated. Previous Grand Jury Reports and responses to them were scrutinized. The Internet also proved a valuable tool.

BACKGROUND

EFFORTS AT PREVENTION

The dry season in Southern California is generally considered to be from mid-April to mid-October. The mean precipitation during this period of drought is only about $\frac{3}{4}$ inch. During the rainy season, however, the mean amount of rainfall is slightly more than 11 inches. For purposes of comparison, according to the National Weather Service, the driest year recorded was 1947, with only slightly more than 3 inches of rain, and the wettest year on record was 1983, with 29 inches. Historically, in Southern California, heavy rains have resulted in heavy flooding, so the various agencies of the federal, state, County, and city governments responsible for protecting our County from devastating floods, have built an extensive and efficient system of dams, flood control channels, catch basins, and street drains over the last half century. These flood control channels drain the watersheds that impact County harbors. This report will concentrate on the trash that enters the harbors by way of creeks, flood control channels, and street drains.

In order to comply with the *Clean Water Act of 1972*, 33 U.S.C. §1342, Section 402(p), as amended by the *Water Quality Act of 1997*, the County of Orange and the cities applied for a National Pollutant Discharge Elimination System (NPDES) permit. In July 1990, the Santa

Ana and San Diego Regional Water Quality Boards issued permits to the County and the cities. In order to comply, a Drainage Area Management Plan (DAMP) had to be developed. The DAMP, among other requirements strongly recommends that the cities have cautionary messages permanently affixed on the street drains. Cities report that they keep accurate records of their storm drain cleaning and maintenance, and that the storm drains are cleaned on an as-needed basis.

Also required by the DAMP is an extensive education plan, which includes lesson plans, pamphlets, booklets, and videos about the harm done to the environment when trash is disposed of improperly. The County has recently embarked on a new educational effort to further increase the population's awareness of this problem. There is a County-wide system of laws directed at polluters, but, according to responses to a previous Grand Jury report, the thrust has been to educate the polluters rather than punish the first-time offenders.

The PFRD is charged with maintaining and cleaning most of the flood control channels in the County. Crews of County jail inmates are often used to assist in this task.

Dana Point is unique among the County harbors, as there are no flood control channels that enter directly. Dana Point Harbor is primarily impacted by macro-pollution that enters the ocean at San Juan Creek and flows northwest into the harbor and the storm water runoff that enters the harbor directly.

From data received by the Grand Jury from PFRD, the amount of debris removed from the flood control channels in the Newport watershed in 1997 was slightly more than 182 tons, which required 533 crew hours. In 1998, 158 tons were removed, with 272 crew hours expended.

For the watershed that empties into Huntington Harbour, available data indicates that in 1996 it took 96 crew hours to remove 22 tons of debris, it took 176 crew hours to remove 62 tons of debris in 1997, and in 1998 it took 350 crew hours to remove 143 tons of debris. The three booms that attempt to impede some of the debris from entering the harbor were each cleaned once during the spring of 1999, yielding a total of 26 tons of debris and with an expenditure of 57 crew hours.

An aerial survey provided by the sheriff's department in December, as well as terrestrial tours conducted by the PFRD in August for the Grand Jury, emphasized the generally clean condition of the County's flood control channels and storm drains in the County.

In addition to the use of work crews, there are other low-tech devices used by the County and cities to reduce the amount of debris the harbors receive during the rainy season. The most commonly used device in the flood control channels is a floating debris boom that is secured at strategic locations. These devices are buoyant and are secured to both sides of the channel. They have a weighted net attached at the bottom designed to catch the debris that is floating just under the water's surface. The nets are designed in such a way that if the channel gets too full or the current becomes too strong, one end is released so as to not damage the boom.

Of course, the downside of this scenario is that all of the trapped debris is soon swept into the receiving harbor. In the City of Huntington Beach, the County has a doubled-paneled steel grate to filter debris from one of the flood control channels that enters the harbor.

The City of Newport Beach uses a similar device. There is a logboom in the upper reaches of the Back Bay that catches debris. City crews employ a small boat to push the debris to one side where work crews manually load and truck the solids for eventual transport to a landfill. Newport Beach records indicate that the amount of debris collected and hauled away from the logboom during the wet season average 15 tons, whereas the debris boat collects 12 tons. During the dry season, the logboom collects four tons, and the average for the debris boat is approximately three tons.

The City of Dana Point is experimenting with street-drain filtering devices. The Grand Jury inspected two of these devices installed in a residential neighborhood. These easily installed drain filters consist of a frame with a filter fabric. Different types and meshes of fabric are available for various uses. These storm drain filters are constructed in such a way that when they are either full or the influent is excessive, storm water bypasses the filtering process completely, to prevent back-up and resulting flooding.

The City of Dana Point reported to the Grand Jury that each filter costs \$265, including installation. Annual service is expected to be \$50 per filter. Literature provided by the manufacturer indicates these filtering systems have been monitored by the Regional Water Quality Board for NPDES compliance. The literature, as well as independent testing, indicates a high removal rate of pollutants.

The City of Dana Point also states that fifteen additional filters with a medium specifically designed to remove hydrocarbons will be installed as part of a continuing project. They hope to have filters in all 300 city storm drain inserts. Each of these filters will cost less than \$1,400. The City expects that a combined testing and maintenance cost will be around \$250 annually. They concluded by stating that a monitoring system is in place to evaluate the filters, and a maintenance schedule will insure that they function up to their expectations. City officials also report that new developments will be required to install storm drain filters as part of their permit.

The City of Huntington Beach is requiring all new construction to install grates over the storm drains, but there are no plans for retrofitting existing storm drains. The Grand Jury has observed new construction in Newport Beach that incorporates grates on the storm drains that lead directly to the harbor.

Yet, in spite of all of these well-meaning attempts to keep the trash and debris out of the harbors, each year, following the first significant rain, and to a somewhat lesser degree after each significant subsequent rain, Huntington Harbour, Newport Harbor, and Dana Point (to a lesser degree), are choked with unsightly, dangerous, floating rafts of debris.

Part of the Grand Jury's investigation focused on the responsibility that the commercial and recreational boaters have for the harbor pollution upon which this report is focused. It is acknowledged by the cities and agencies that are responsible for the cleanliness of the harbors that the boaters do not purposefully contribute to the debris in the harbor, and therefore they play only a minor role in this pollution issue.

As this report is singly focused on macro-pollution, it will not specifically address non-point source pollution, oil and sewage spills, and urban runoff. These troublesome topics were one of the foci of the 1998–99 Grand Jury report, *Coastal Water Quality and Urban Runoff in Orange County*.

Despite the good intentions and efforts of the County, the majority of the debris arrives in the harbors through the County-maintained flood control channels. A lesser amount of the trash arrives through storm drains that drain directly into the harbors. These storm drains empty commercial areas, parking lots, landscape areas, parks, shopping areas, amusement parks, private property, and nearby streets. Additionally, the wind blows trash from nearby garbage cans and dumpsters and into the flood control channels and harbors.

On January 11, 2000, the County Board of Supervisors approved more than \$250,000 in grants for the coastal cities to divert urban runoff into upstream sewage treatment plants. Included in this sum are monies to close off some storm drains and divert others that currently empty directly into the harbors. This is a laudable effort and one that no doubt will diminish this macro-pollution to some degree.

Once the trash enters the harbors, wind blows the accumulated trash into aggregated islands, which are then moved by tidal currents to every area of the harbor. Some of the floating debris will absorb enough water so that it floats just under the surface. Some will eventually sink to the bottom. Some of the debris will arrive unseen, as it was floating deeper than the reaches of the debris boom. Some debris floats or sinks depending on its changes of density. Because of its different buoyancy characteristics, the total amount of this macro-pollution cannot be accurately measured.

Without immediate human intervention, this accumulated debris may become so waterlogged it will sink, or it may lodge under and around docks and boats, or it will become jammed against sea walls. Some will accumulate on beaches maintained by the County or cities within the harbors, or, given enough time, it will wash out to sea or accumulate onto the beaches.

The trash that escapes to the open ocean is beyond the purview of this report. However, it should be noted that the State of California, the County of Orange, and the cities that line the ocean are responsible for the cleanliness of the beaches. The cost of this clean-up is staggering. The California Coastal Commission reported that during a recent summer, Orange County filled ten garbage trucks full of trash from six miles of County beaches at a cost of \$350,000. The plastics and other floating trash that do not wash up on the beaches can

continue their polluting effects for thousands of years. In the table that follows, summarizing debris removed by a private contractor in Huntington Harbour, plastics, including Styrofoam, paper, and cans comprise the bulk of the debris. According to information obtained from the Center for Marine Conservation, 61 percent of the debris from the 1996 National Coastal Clean-Up were plastics of all types. This was an increase of 61 percent from the previous year! In a 1988 survey, 89 percent of the trash observed floating in the North Pacific was plastic. It is well known that fish, marine reptiles, and marine mammals frequently ingest plastics, as this material is mistaken for food.

For those recreational and commercial boaters that choose (and the Harbor Patrol boats that are required) to use the County harbors during these episodes of increased debris, the potential for expensive damage to their vessels is high. A recent survey in Newport, Oregon, surmised that 58 percent of the fisherman indicated they had received vessel damage due to plastic debris and had incurred an average of \$2,725 repair costs to their vessels. The cost to commercial boating must also include unrealized revenue resulting from the inability to operate the boats in these polluting conditions. Property owners, both residential and commercial, and businesses that lease property from the County suffer as well.

Tourists and other coastal city non-residents visiting Orange County harbors while these floating islands of unsightly trash are visible, can't help but leave with a less-than-positive impression of our harbors and of the County's and cities' ability to keep them clean. The potential for the ultimate diminishment of the lucrative tourist and visitor dollar cannot be calculated.

PROCEDURES CURRENTLY IN PLACE

The Harbor Patrol, a division of the Orange County Sheriff-Coroner's office, polices all three of the County's harbors. Its duties include public safety, fire protection, rescue, and the enforcement of boating laws and regulations. It also enforces pollution laws when infractions are observed.

In the three harbors of the County, the Harbor Patrol officers, among their other duties, remove large pieces of floating debris that have the potential to pose threats to safe navigation. They cite transgressors of pollution laws where there is adequate evidence. The officers frequently report to responsible parties potential problems with docks that are in disrepair and in danger of floating away. If large pieces of plant material are blown into the water, the officers report this to appropriate agencies for removal. Citizens often telephone the local Harbor Patrol office and apprise the officers of polluting behaviors to which the officers respond.

Dana Point Harbor does not have any flood control channels emptying directly into its waters, although San Juan Creek does enter the ocean a short distance south of the harbor entrance. The City of Dana Point will use a portion of its funds received from the Board of Supervisors' grant approval of January 11, 2000, to substantially reduce its residential storm

drain problem. Additionally, the City of Dana Point's expanding experiment with storm drain filters will also reduce the amount of debris in the harbor.

However, there are multiple harbor storm drains that originate in commercial areas, parking lots, streets, and day-use areas that drain directly into harbor waters. Additionally, there are storm drains that deposit runoff and debris from streets, commercial areas, and residential areas adjacent to the harbor.

The majority of trash that does enter the harbor following these periods of rain emanates from San Juan Creek and from the non-filtered city and County storm drains. The amount of trash from recreational and commercial boating and wind is negligible.

It was reported to the Grand Jury that workers can easily remove the trash that does enter the harbor. Long-handled dip-nets enable the workers, because of the design of the harbor, to reach most of the trash from sidewalks and docks. If necessary, there is a small boat available for their use. Lessees are responsible for keeping their leased areas (including harbor waters) clean.

Newport Harbor receives the bulk of its macro-pollution from the San Diego Creek, that is considered by PFRD to be a flood control channel, and the Santa Ana-Delphi Channel. Additionally, there are several large storm drains that enter the harbor. There are a number of local street, parking lot, pedestrian, and commercial storm drains that directly enter the harbor. Through Grand Jury investigations it has been learned that a more beneficial placement of the logboom in the Newport Back Bay would be possible, but the State Department of Fish and Game, which has jurisdiction over the Newport Back Bay, will not allow a change of location.

Once the trash enters Newport Harbor, city officials indicated to the Grand Jury that the best remedy for this macro-pollution is to allow it to eventually wash up on the beaches, either within the harbor or on the ocean beaches to be disposed of by land clean-up crews. However, there is a small boat that is utilized 32 hours a week to pick up trash that is floating in the harbor. The City of Newport Beach budgets about \$1 million annually for harbor water, bay, and ocean beach clean-up. The City of Newport Beach receives \$25,000 annually from the County for harbor debris clean-up. Newport Beach also makes use of the so-called water-rakes that are small self-propelled vessels with modifications to allow them to pick up small pieces of debris in an automated fashion. It is reported that they do not work well for large pieces of debris. These two self-propelled boats are currently moored at the Boy Scout facility and are manned by volunteers on an as-needed basis. There is no County involvement, other than the presence of the Harbor Patrol, to assist in the cleaning of the harbor.

Huntington Harbour is at the terminus of another large and highly urbanized watershed. The three large flood control outflows that empty into the harbor funnel a huge accumulation of

trash following significant rains. In addition, there are many ungrated street, parking lot, and pedestrian area storm drains that directly enter the harbor.

The City of Huntington Beach is unique among the harbor cities in that it has a contract with a private company to clean and remove debris in the "...Huntington Harbour waterways within the City's city limits and private property mooring docks adjacent to said waterways. Also included in the area to be cleaned is the area of water in front of the Edinger Flood Control Channel." The areas specifically not cleaned are marinas where slips are rented, where there is County responsibility, or that part of the harbor that lies within the jurisdiction of the City of Seal Beach. Data obtained from the private company contracted by Huntington Beach to clean the harbor waters is summarized in the following table.

DATE	CREW HOURS	CUBIC YARDS	% ANIMAL	% PAPER PLASTICS & CANS	% PLANT
11/97-4/98	892	107	4.3	54.8	40.8
5/98-10/98*	858	48	5	52	43
11/98-4/99**	1010	49	5	55	40
5/99-10/99	982	5.5	5.8	56.6	37.5

* No data was available for July 1998

**Two debris booms installed in November

It is interesting to note the following about this contract:

- That it was signed in 1982, amended in 1983, and that it will continue from year to year as long as the contractor does not raise his rate.
- That the County is to provide matching funds up to \$ 30,000 for this service. The County is currently providing \$25,000.
- That there are specific areas in the harbor that are excluded from cleaning.

FINDINGS

In accordance with *California Penal Code* Sections 933 and 933.05, responses are required to all findings.

With respect to the annual high level of macro-pollution of the harbors of Dana Point, Newport Beach, and Huntington Beach that follow the first significant rainfall, and to a lesser degree, each subsequent significant rainstorm of the rainy season, the 1999-2000 Orange County Grand Jury has made the following findings:

1. Although the County does an admirable job of keeping the flood control channels clean throughout the year, there is still a substantial amount of macro-pollution that enters the

three harbors of the County from the County-maintained flood control channels and County-maintained storm drains, especially following the first rain storm of the year.

A response to Finding 1 is required from the **Board of Supervisors**, and requested from the **Public Facilities and Resources Department**.

2. In spite of the County's strong emphasis on public education as required by the Drainage Area Management Plan (DAMP) of the California Regional Water Quality Control Board, Order #96-31 WPDES #CAS618030, a significant amount of trash finds its way into the County-maintained flood control channels and County-maintained storm drains, rather than being disposed of properly.

A response to Finding 2 is required from the **Board of Supervisors** and requested from the **Public Facilities and Resources Department**.

3. There are many inadequately grated, screened, or filtered storm drains in the coastal cities or on County coastal property, other than new construction, that conduct storm water and its accompanying debris directly into the harbors of the County.

A response to Finding 3 is required from the **Board of Supervisors**, and the **City Councils of Dana Point, Newport Beach, Huntington Beach**, and requested from the **Public Facilities and Resources Department**.

4. There is no apparent goal-driven program by the cities, except for Dana Point, to retrofit older storm drains and catch basins with grates or similar straining or filtering devices.

A response to Finding 4 is required from the **City Councils of Anaheim, Brea, Buena Park, Costa Mesa, Cypress, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, Irvine, La Habra, La Palma, Laguna Beach, Laguna Hills, Laguna Niguel, Laguna Woods, Lake Forest, Los Alamitos, Newport Beach, Orange, Placentia, Rancho Santa Margarita, San Clemente, San Juan Capistrano, Santa Ana, Seal Beach, Stanton, Tustin, Villa Park, Westminster, and Yorba Linda**.

5. The amount of money the County provides the harbor cities for floating debris removal is insufficient.

A response to Finding 5 is required from the **Board of Supervisors** and the **City Councils of Newport Beach, Huntington Beach, and Seal Beach**.

6. The contract that Huntington Beach has with a private company for harbor debris removal does not include debris removal for the entire harbor.

A response to Finding 6 is required from the **City Council of Huntington Beach**.

7. Trash, consisting of a significant amount of plastic and Styrofoam, makes up most of the macro-pollution in the County's harbors.

A response to Finding 7 is required from the **Board of Supervisors** and the **City Councils of Dana Point, Newport Beach, Huntington Beach, and Seal Beach.**

RECOMMENDATIONS

In accordance with *California Penal Code* Sections 933 and 933.05, each recommendation must be responded to by the government entity to which it is addressed. These responses are submitted to the Presiding Judge of the Superior Court. Based on the findings, the 1999–2000 Orange County Grand Jury recommends that:

1. The Public Facilities and Resources Department create an action plan that will be in place during the year 2000 that will include the following to reduce the macro-pollution that fouls the County's harbors by 50 percent in 2004.
 - Additional debris-screening and collecting devices (such as the “trash rakes” at the Orange County Water District's facility in Anaheim), be installed at locations in flood control channels as they enter the harbors in Newport Beach and Huntington Beach, and
 - The debris booms, the logboom of Newport Beach, and steel grates currently employed in the County receive a very thorough cleaning just prior to the anticipated first significant rain of the rainy season, rather than by the arbitrary date of October 15.

A response to Recommendation 1 is required from the **Board of Supervisors** and is requested from the **Public Facilities and Resources Department** and the **City of Huntington Beach** and the **City of Newport Beach.**

2. A more extensive County public education campaign, including print and electronic media, signs, postings, and warnings in appropriate languages along flood control channels and County-maintained storm drains that would inform the public about the illegality as well as the negative environmental impact of disposing of debris in the flood control channels and County storm drains.

A response from Recommendation 2 is required from the **Board of Supervisors** and the **City Councils of Anaheim, Brea, Buena Park, Costa Mesa, Cypress, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, Irvine, La Habra, La Palma, Laguna Beach, Laguna Hills, Laguna Niguel, Laguna Woods, Lake Forest, Los Alamitos, Mission Viejo, Newport Beach, Orange, Placentia, Rancho Santa Margarita, San Clemente, San Juan Capistrano, Santa Ana, Seal Beach, Stanton, Tustin, Villa Park, Westminster, Yorba Linda** and requested from the **Public Facilities and Resources Department.**

3. An action plan that specifically details a retrofitting campaign to be completed by 2004 of placing grates, filters, or other small aperture devices over or within storm drains that empty directly to County harbor waters.

A response to Recommendation 3 is required from the **Board of Supervisors** the **City Councils of Dana Point, Newport Beach, Huntington Beach** and requested from the **Public Facilities and Resources Department**.

4. All cities in the County, except for the City of Dana Point, create an action plan to be completed by 2004, to begin the installation of high-tech storm drains and catch-basin filtering devices.

A response to Recommendation 4 is required from the **City Councils of Anaheim, Brea, Buena Park, Costa Mesa, Cypress, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, Irvine, La Habra, La Palma, Laguna Beach, Laguna Hills, Laguna Niguel, Laguna Woods, Lake Forest, Los Alamitos, Mission Viejo, Newport Beach, Orange, Placentia, Rancho Santa Margarita, San Clemente, San Juan Capistrano, Santa Ana, Seal Beach, Stanton, Tustin, Villa Park, Westminster, and Yorba Linda**.

5. The County increase the amount of dollars by \$25,000 each to Dana Point, Newport Beach, and Huntington Beach each year for three years, beginning in 2000, for harbor debris clean-up.

A response to Recommendation 5 is required from the **Board of Supervisors**.

6. Huntington Beach, Seal Beach, and the County contract jointly for the debris removal in all waterways of Huntington Harbour.

A response to Recommendation 6 is required from the **Board of Supervisors** and from the **City Councils of Huntington Beach and Seal Beach**.

7. The County initiate a procedure that will, by 2004, prohibit the use of disposable plastics and Styrofoam in eating establishments operated by and for the County.

A response to Recommendation 7 is required from the **Board of Supervisors**.

8. The cities institute a procedure that strongly encourages businesses within its city limits to substantially reduce the use and sale of disposable plastics and Styrofoam, and increasingly participate in the growing plastic- and Styrofoam-recycling industry.

A response to Recommendation 8 is required from the **City Councils of Anaheim, Brea, Buena Park, Costa Mesa, Cypress, Dana Point, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, Irvine, La Habra, La Palma, Laguna Beach, Laguna Hills, Laguna Niguel, Laguna Woods, Lake Forest, Los Alamitos, Mission Viejo, Newport Beach, Orange, Placentia, Rancho Santa Margarita, San Clemente, San Juan Capistrano, Santa Ana, Seal Beach, Stanton, Tustin, Villa Park, Westminster, and Yorba Linda**.

COMMENDATIONS

The Grand Jury commends the following for their invaluable help and advice in providing information and direction for the background of this report. Recognition is also due them for their constant dedication to enhancing all water quality of the County.

The Grand Jury commends the **City Manager** and **Directors** of the **City of Dana Point** for providing leadership in implementing the first citywide storm drain retrofitting program.

The Grand Jury commends the **Harbor Patrol Officers** of the **Orange County Sheriff-Coroner Department** for their cooperation and generosity in sharing invaluable materials and information.

The Grand Jury commends officials of the **City of Huntington Beach** for their cooperation and generosity in sharing invaluable materials.

The Grand Jury commends the managers and directors of the **Public Facilities and Resources Department** for the proactive efforts at water quality management, their guidance and support of the 1999-2000 Grand Jury's efforts, and the generous supply of invaluable materials.

The Grand Jury commends the managers and directors of the **City of Newport Beach** for their efforts at determining exactly which specific organisms are contributing to fecal pollution in their harbor waters.

The Grand Jury commends the **Board of Supervisors** for demonstrating proactive leadership to improve water quality as evidenced by their grant approval action of January 11, 2000.



An example of a floating debris island days after the “first flush.”



**ACCUMULATED TRASH PRIOR TO THE “FIRST FLUSH” AT A DEBRIS BOOM NEAR A JUNCTION
OF A FLOOD CONTROL CHANNEL AND A HARBOR IN ORANGE COUNTY**



ACCUMULATED TRASH PRIOR TO THE “FIRST FLUSH” AT A NON-COUNTY OWNED AND MAINTAINED debris boom near a junction of a flood control channel and a harbor in Orange County.



Debris wedged between a boat and a dock several days after the “first flush” in one of Orange County’s harbors.



Debris washed up on one of the County's beaches after the "first flush."



One of the County's harbors after the "first flush."