

SUPPORTING STATEMENT
Preliminary Case Study Assessing Economic Benefits of Marine Debris Reduction
OMB CONTROL NO. 0648-xxxx

A. JUSTIFICATION

1. Explain the circumstances that make the collection of information necessary.

The National Oceanic and Atmospheric Administration (NOAA) is requesting approval for a new information collection to conduct a mail survey of households in Orange County, California. The eight locations include the seven coastal communities that are the focus of the study (Table 1) plus Orange County, California, which was the location for the *Preliminary Case Study Assessing Economic Benefits of Marine Debris Reduction* (OMB Control No. 0648-0681 (IEc 2014)). The survey instrument for this study will combine a selection of questions from the Pilot Study of Beach Recreation in Orange County (IEc 2014) with new contingent behavior questions developed specifically for this study. The survey data will be combined with a national model of coastal recreation, which relies on data collected for the *Deepwater Horizon* oil spill assessment, to estimate the economic impacts of marine debris on tourism-dependent communities. The economic impacts to be evaluated include changes in the number of trips, the value of beach recreation to those who visit the beach, and changes in tourism spending (also called regional economic impacts) associated with an increase or decrease in the number of recreational trips.

The [Marine Debris Research, Prevention, and Reduction Act of 2006](#) (hereafter referred to as “the Act”; 33 U.S.C. §§ 1951 et seq.), together with the [Marine Debris Act Amendments of 2012](#), established NOAA’s Marine Debris Program (hereafter referred to as “the Program”) to “identify, determine sources of, assess, prevent, reduce, and remove marine debris and address the adverse impacts of marine debris on the economy of the United States, the marine environment, and navigation safety.” Marine debris is defined as “Any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes.” The Act directs the Program to “undertake outreach and education activities for the public and other stakeholders on sources of marine debris...and its adverse impacts on the United States economy....” The Act also directs the Program to “estimate the potential impacts of a severe marine debris event, including economic impacts on...tourism.”

The Program requires information on the impact of marine debris on beach visitors to adequately address the requirements of the Act that are related to the economy and tourism, and to assess the benefit of restoration projects related to marine debris removal within the context of natural resource damage assessments conducted by NOAA under the [Oil Pollution Act](#) (33 U.S.C. §§ 2701 et seq.).

The proposed information collection will allow NOAA to implement a study focused on the impact of marine debris on tourism-dependent economies in Orange County, CA, building on a prior pilot study (IEc 2014).

2. Explain how, by whom, how frequently, and for what purpose the information will be used. If the information collected will be disseminated to the public or used to support information that will be disseminated to the public, then explain how the collection complies with all applicable Information Quality Guidelines.

Overview

Currently, very little is known about the effects of marine debris on recreational participation and attitudes towards beach recreation in coastal communities that are facing problems of marine debris . This limits the MDP's ability to assess the full economic and social impacts of marine debris on tourism-dependent coastal communities. There is also little known about how people's perceptions of marine debris relate to the frequency and value of recreational trips. The survey instrument will allow to collect data on public attitude toward marine debris and anticipated changes in recreational behavior due to marine debris presence.

The survey data will be used by the Program to estimate the economic impacts of marine debris in Orange County, CA. Data on survey respondents' attitudes toward marine debris and the effect of marine debris on their choice of where and how often they go to the beach will be combined with a national model of recreation choice originally developed for the *Deepwater Horizon* oil spill assessment. Onsite measurements of debris conducted by NOAA at selected beaches will be used to help characterize current debris levels. In addition, the survey data will be used to characterize debris levels as perceived by beach users, and public concern associated with debris presence. The study will estimate the change in the number of visits to the beach and the resulting economic impacts, from a variety of potential changes in marine debris on local beaches.

Background

Marine debris is widely acknowledged to be a persistent problem in many coastal areas of the United States. There are a variety of potential economic losses associated with marine debris, including costs incurred by local governments and volunteer organizations to remove and dispose of marine debris, impacts on the tourism industry due to changes in the number of visitors, effects on waterfront property values due to diminished aesthetic appeal, impacts on the value of recreation to beach visitors, and potential effects on recreational and commercial fisheries.

Existing studies suggest that beach litter detracts from tourists' beach enjoyment and, as a result, reduces the recreational value of coastal beaches. Marine debris potentially also creates significant economic costs by reducing the probability of returning to the same location, particularly among first-time visitors (Ballance et al. 2000; Schuhmann 2012). Beach visitors are likely to be concerned about marine debris both because it poses potential physical harm due to cuts or bacterial infections and because it may detract from the perceived natural beauty of an

area. In contrast to debris or litter along the roadside or in parks, there is a high potential for dermal contact with marine debris on beaches as visitors frequently go barefoot, lie directly on the sand, and dig in the sand. The existence of numerous volunteer efforts to remove debris from beaches and the fact that many municipalities regularly rake beaches to remove debris are probable indications that beach visitors prefer cleaner beaches.

Details and purpose of information collection

The Orange County Pre-test of economic impacts of marine debris on coastal communities will provide an important contribution to the literature on the economic value of changes in marine debris on U.S. beaches. Building on the Pilot Study of Beach Recreation in Orange County (IEC 2014), the Orange County Pre-test (Table 1) will be the first attempt to link beach trip choices with estimates of marine debris at beaches. While Parsons et al. (2009) included indicators of beach cleaning activities in an economic model for Texas Gulf Coast beaches, they did not base their analysis on the amount of debris at beaches. Other recent beach recreation models have addressed a variety of beach attributes but did not include marine debris, such as the Southern California beach model (Hanemann et al. 2004); a model of visits to New Jersey, Delaware, and Maryland beaches (Parsons and Massey 2003); and a model focused on visits to San Diego County beaches (Lew and Larson 2005). Some studies have addressed other timely and important issues for beach communities, such as the development of offshore wind turbines in North Carolina (Landry et al. 2012) or the potential impact of climate change in Southern California (Pendleton et al. 2011). We are aware of one study that investigated the value of debris removal, but it presented only hypothetical debris levels and was not applied to specific beaches and actual debris levels (Smith et al. 1997). Thus, while the literature has demonstrated the importance of beach characteristics and amenities on the economic value of beach recreation, the economic impact of changes in debris at U.S. beaches has not been investigated. The results of this Pre-test will be used to evaluate the significance of economic impacts associated with marine debris, and the need for potential further research in selected communities, regions, or nationwide.

Table 1. Study areas and included counties

Study area	Counties in study area
Orange County	Orange (CA)

The primary research goal of the study is to use contingent behavior questions to estimate the impact of marine debris on the number of trips people take to beaches in Orange County, CA. Contingent behavior questions ask respondents to estimate how changes in marine debris levels would affect the number of trips they take to beaches in a given area, including whether they would switch from one location to another when debris levels change. The impact on trips will be used as an input to a nationwide model of beach visitation developed for the *Deepwater Horizon* oil spill assessment, conducted by NOAA and other state and federal agencies. The model is important because it incorporates data on recreation trips from throughout the United States to derive the value of recreation trips and to estimate the degree to which people substitute one location to another when beach quality in a particular area changes. The results of the Pre-

test will be compared to the Pilot Study of Beach Recreation in Orange County study to evaluate the consistency of the contingent behavior results with results of an important alternative method (the “revealed preference” method) for evaluating impacts to recreation and value from changes in beach quality.

The marine debris study will also expand results from the Pilot Study of Beach Recreation in Orange County study to communities nationwide by addressing a variety of qualitative issues, including:

- What specific types of marine debris have the greatest impact on beach choices (e.g., plastic, metal, glass)?
- What do beachgoers know about the sources of marine debris on beaches?
- Does the impact of marine debris on beach choice vary in a systematic way across respondents (e.g., if visitors with children are more sensitive to marine debris levels)?
- What is the relationship between respondents’ perceptions of marine debris and actual marine debris levels?
- How important is marine debris relative to other beach attributes that people care about?

The data collection consists of two steps: a short onsite intercept survey of beach goers and a primary mail survey.

The onsite intercept survey will ensure that the sample includes only respondents who visit Orange County beaches. Onsite sampling will involve intercepting people at multiple beaches in Orange County, CA. The beaches will be selected to represent the various types of beach experiences available in Orange County, including more- and less-developed beaches. The target responding sample size is 200 completed household surveys. We assume a response rate of 35% to the mail portion of the survey, which is the typical response rate for onsite surveys with mail follow-up (Lynn 2013; Millar and Dillman 2011; Dillman et al. 2014). This means that an initial sample of 572 respondent addresses must be obtained onsite in Orange County to reach the target of 200 completed surveys.

The onsite survey will involve approaching people at each sampled beach and asking them to participate in the survey. Onsite interviewers will be assigned to multiple beaches within Orange County, at least two beaches. Interviewers will administer intercept surveys on two separate days during the high-volume beach season (approximately August-September 2017). The two days will consist of both a weekend day and a weekday to create a sample frame that will consist of a variety of beachgoers (day-trippers and vacationers). Onsite staff will start on one side of the target beach and work their way to the opposite side, approaching every fifth eligible respondent, to request participation in the intercept survey. Interviewers will be provided with informational material to share with respondents to provide background information and credibility for the study. Information will be provided in a format designed to minimize any potential for litter

accumulation on the beach. The goal of the intercept survey is to recruit participants for a follow-up mail survey.

For those willing to take the mail survey, a brief onsite interview will ask the respondent's name and mailing address, as well as several demographic questions such as age and education. Those who do not agree to participate in the mail survey will only be asked their ZIP code, whether they participate in single or multi-day trips, and selected demographic questions. Appendix A provides a copy of the onsite interview form.

Data collected during onsite interviews will be used to evaluate nonresponse bias. A nonresponse study will compare demographic variables for three sampling groups, including those who refuse to participate in the mail survey but are willing to answer the several questions onsite (including demographic questions), those who initially agree to the mail survey but later fail to return it, and those who complete the mail survey.

The primary survey will be implemented by mail (Millar and Dillman 2011; Lynn 2013; Dillman et al. 2014). The target date for mailing surveys is October 2017. The primary mail survey will include questions that focus on the number of day and overnight trips to beaches in each target region, respondents' attitudes toward marine debris, presence of marine debris at beaches, and demographic characteristics (see below for a description of each survey question). The respondent will be asked to indicate the specific beaches that he or she visited in the past 12 months (from October 1, 2016 to September 31, 2017) and the number of day and overnight trips taken. The respondent will also be asked whether changes in marine debris levels would affect her or his visitation of the local beaches.

The implementation sequence for the mail survey will be as follows:

- **Day 1:** The primary mail survey will be mailed to all sampled households via first class mail. The survey instrument will include an introductory letter informing respondents about the survey and encouraging their participation by a specific date. The initial packet will also include a ten-page questionnaire and a postage-paid return envelope.
- **Day 7:** A thank you/reminder postcard will be mailed to all sampled households thanking them for responding and encouraging them to complete the survey if they have not already.
- **Day 14:** A thank you/reminder email will be sent to all sampled households who have not yet responded to encourage their survey completion and provide them with information to request another copy of the survey, if it has been lost or misplaced.
- **Day 21:** A replacement survey instrument will be sent to all sampled households who have not yet responded via first class mail. The replacement survey will include a letter with a final reminder to complete the survey, a second questionnaire, and a postage-paid return envelope.

The content and specific purpose of each question is described below.

Primary mail survey

The survey questions, and the purpose of each question, are described below.

- **Familiarity with local beaches.** Question 1 will ask respondents to review a list of local beaches and indicate beaches with which they are familiar. This will remind respondents of local area beaches and make respondents aware of the beaches we will be asking about in subsequent questions about trips and debris levels.
- **Number of trips.** Questions 2 and 3 will ask respondents about the total number of their single- and multiple-day trips during the previous year to all beaches in the study area. Respondents' total number of trips throughout the year will be used as the baseline to which changes in trips, estimated in later questions, are compared. Single- and multiple-day trips involve different expenditures, and the breakout into these two categories will be used in the analysis that estimates benefits to the regional economy.
- **Importance of beach attributes.** Question 4 will ask respondents about the importance of 13 attributes when choosing which beaches to visit. This will support the interpretation of contingent behavior results by allowing a comparison of the importance respondents place on marine debris to their reported behavioral responses to changes in marine debris. The question may also encourage respondents to think carefully about how they respond to marine debris relative to other beach characteristics when answering the contingent behavior questions.
- **Marine debris levels.** Question 5 will ask respondents to report which beaches they visited over the last beach season and to rate the level of marine debris they encountered at each beach. The debris ratings will be used to supplement onsite marine debris measurements and develop a more complete evaluation of the level of debris at beaches throughout each coastal community.
- **Probing questions.** Questions 6 through 8 will ask respondents whether the debris scale and photos used to answer Question 5 are representative of conditions observed while they were at the beach.
- **Contingent behavior questions.** Contingent behavior is a “stated preference” method in which respondents indicate how their recreation choices would change given hypothetical changes in recreation options. Questions 9 through 12 will ask whether respondents would change the destination of their trips or change the number of trips they would take to the study area under two hypothetical scenarios: (1) “If there had been almost no manmade debris at beaches” and (2) “If there had been twice as much manmade debris at beaches.” These questions will allow us to estimate changes in the number of beach trips associated with increases or decreases in marine debris in different target communities.
- **Probing Questions:** Questions 13 through 15 will ask respondents how confident they are in answering Questions 11 and 12.

- **Public attitude toward marine debris.** Questions 16 through 20 will ask whether respondents are concerned about the presence of various types of garbage or manmade debris on the sand or in the surf while visiting a beach, the types of debris they've actually seen on beaches, their understanding of the sources of debris found on beaches, and whether they have participated in beach cleanup efforts.
- **Demographic characteristics.** Questions 20 through 24 will ask respondents to report the number of adults and children in their household; and their gender, age, ethnicity, race, education level, and income. These questions will be used in the nonresponse analysis and may also be used to investigate the relationship between the response to changes in marine debris levels and demographic characteristics.

The Program will retain control over the information and safeguard it from improper access, modification, and destruction, consistent with NOAA standards for confidentiality, privacy, and electronic information. See the response to Question 10 of this Supporting Statement for more information on confidentiality and privacy. The information collection is designed to yield data that meet all applicable information quality guidelines. Although the information collected is not expected to be disseminated directly to the public, results may be used in scientific, management, technical or general informational publications. Should the Program decide to disseminate the information, it will be subject to quality control measures and a pre-dissemination review pursuant to [Section 515 of Public Law 106-554](#).

3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological techniques or other forms of information technology.

Data for the onsite intercept survey will be collected via secured computerized tablets. The tablets will electronically collect the participant contact data and transmit information to our study contact database. Interviewers will administer the survey questions to respondents and enter data directly into the tablet interface. Data entered into the tablet will be securely stored in our contact database. Only authorized study personnel will have access to the secure tablets and information will not be shared or disclosed for any reason.

Data will be collected via a mail survey using mailing addresses collected via an onsite intercept survey. The data collection will not use automated, electronic, mechanical, or other technological techniques or other forms of information technology.

4. Describe efforts to identify duplication.

A review of the literature did not identify any existing research on the economic impact of marine debris on beach visitors and local economies in the United States. While Parsons et al. (2009) included “manual cleaning” and “machine cleaning” variables in an economic model focused on Texas Gulf Coast beaches, they did not evaluate the amount of debris at beaches. The study also focused on day trips by Texas residents only, which limits its application to the estimation of economic impacts on other tourism-dependent communities. Other beach recreation models include no measure of marine debris at all, including the Southern California

beach model (Hanemann et al. 2004), a model focused on visits to New Jersey, Delaware, and Maryland beaches (Parsons and Massey 2003); and a model focused on visits to San Diego County beaches (Lew and Larson 2005). Although the Pilot Study of Beach Recreation in Orange County (IEc 2014) allows the estimation of welfare effects to beachgoers from changes in marine debris levels, the study focused on single-day trips only.

5. If the collection of information involves small businesses or other small entities, describe the methods used to minimize burden.

The proposed information collection will focus on households and will not impact small businesses or other small entities.

6. Describe the consequences to the Federal program or policy activities if the collection is not conducted or is conducted less frequently.

If the information collection is not conducted, the Program will have difficulty moving forward with a research program aimed at advancing our knowledge concerning the economic impacts of marine debris on the U.S. economy. The study is a necessary step toward this goal as it allows the Program to extend the results of the prior Pilot Study of Beach Recreation in Orange County (IEc 2014).

7. Explain any special circumstances that require the collection to be conducted in a manner inconsistent with OMB guidelines.

The proposed information collection will be conducted in a manner that is consistent with the Office of Management and Budget (OMB) guidelines.

8. Provide information on the PRA Federal Register Notice that solicited public comments on the information collection prior to this submission. Summarize the public comments received in response to that notice and describe the actions taken by the agency in response to those comments. Describe the efforts to consult with persons outside the agency to obtain their views on the availability of data, frequency of collection, the clarity of instructions and recordkeeping, disclosure, or reporting format (if any), and on the data elements to be recorded, disclosed, or reported.

A Federal Register Notice published on February 22, 2017 (FR Doc. 2017-03433) solicited public comment. Only two comments have been received by MDP. Because these were outside the scope of study for this work, no response is required.

9. Explain any decisions to provide payments or gifts to respondents, other than remuneration of contractors or grantees.

No monetary incentives will be offered to survey respondents.

10. Describe any assurance of confidentiality provided to respondents and the basis for assurance in statute, regulation, or agency policy.

NOAA will not collect any identifying information about survey respondents other than name and household address. Only ZIP code and state will be included in the data; names and street addresses will be used only during mail administration of the survey and will not be included in the survey data.

The survey materials will include a statement that the respondent's name and street address will be removed from NOAA's database after NOAA receives the completed questionnaire, or after two months. In addition, the survey materials will state that all information provided "will remain confidential to the extent permitted by law." No other confidentiality assurances will be provided to the respondent.

11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private.

No questions of a sensitive nature will be asked.

12. Provide an estimate in hours of the burden of the collection of information.

The proposed collection involves two one-time surveys: an on-site intercept survey and the primary mail survey.

- *Onsite intercept survey:* We will intercept potential respondents at beaches in Orange County, CA and ask them to complete a short onsite survey. The onsite intercept survey includes demographic questions and questions about participation in single or multi-day trips. The last question asks respondents if they would be willing to participate in a future mail survey. For those who agree to participate in the mail survey, we will ask for their mailing and email addresses. For those who do not agree to participate in the mail survey, we will record their zip code instead of their mailing address. To achieve a target sample of 200 completed mail surveys, we will need to approach 1733 potential respondents to obtain 572 addresses for the mail survey. This estimate is based on a 33% participation rate among those approached for the onsite survey and a 35% response rate for the mail survey.
- *Primary mail survey:* We will mail the primary survey to the 572 onsite intercept survey respondents who agree to participate in the mail survey. Assuming a 35% response rate to the mail survey, we expect to receive 200 completed surveys. For the remaining 372 nonrespondents, we will have limited demographic and beach visitation data from the onsite survey.
- *Non-respondent follow-up survey:* We will use information collected during onsite interviews (including people who did not wish to participate in the survey and those who agreed initially but did not return the mail survey) to conduct a nonresponse study.

Based on pre-tests, we assume that each respondent will spend 4 minutes completing the onsite survey if they provide their full address and email address and 2 minutes completing the onsite

intercept survey if they decline participating in the mail survey. The primary mail survey requires approximately 10 minutes to complete. Thus, we estimate the total burden of this collection to be 881.33 hours (Table 2). This is a one-time data collection, so there will be no additional costs expected for respondents.

Table 2. Total estimated burden

Survey	Responses	Completion time	Burden hours
Onsite intercept survey (decline mail survey)	1,161	2 minutes	38.7
Onsite intercept survey (agree to mail survey)	572	4 minutes	38.1
Primary mail survey	200	10 minutes	33.3
Total			110.1

Table 3 reports mean hourly wages for each of the eight study areas (BLS 2015). Multiplying the burden hours for each region by the mean hourly wage yields a total labor cost of \$20,299.49.

Table 3. Total estimated labor cost for completing the on-site intercept survey and the primary mail survey

Study area	Expected number of onsite intercept surveys	Expected number of respondents who decline mail survey	Expected number of addresses collected and survey mailings*	Expected number of completions	Total annual burden hours**	Dollar value per burden hour	Total labor cost***
Orange County	1,733	1,161	572	200	110.1	\$32.20	\$3,548
Total	1,733	1,161	572	200	110.17		\$3,548

* Surveys will be mailed to those who completed the onsite intercept survey and agreed to participate in the mail survey (provided mailing addresses).

** Based on 2 minutes per quick onsite interview, 4 minutes per onsite intercept survey, and 10 minutes per completed mail survey.

*** Totals may not sum due to rounding.

13. Provide an estimate of the total annual cost burden to the respondents or record-keepers resulting from the collection (excluding the value of the burden hours in Question 12 above).

There will be no recordkeeping or reporting costs resulting from the data collection. The mail survey packages will include postage-paid envelopes.

14. Provide estimates of annualized cost to the Federal government.

The total annualized cost to the Federal Government is \$342,087.40. This total cost is comprised of two components:

(1) *Operational expenses*: All operational costs will be incurred by the contractor, Abt Associates Inc. (Abt). The contract with Abt is for \$335,105, which includes the survey design and testing, survey implementation, data analysis (including estimating of economic impacts on local communities), and reporting.

(2) *Labor costs for staff*: The estimated time required for the Program staff to oversee the information collection is 80 hours at a Series and Grade of Environmental Scientist, ZP-0401-04 and an hourly rate of \$87.28 (including benefits), resulting in total labor costs for staff of \$6,982.40.

15. Explain the reasons for any program changes or adjustments.

This is a new program.

16. For collections whose results will be published, outline the plans for tabulation and publication.

Statistical summaries of responses to all survey questions will be developed, including the mean, minimum, maximum, and standard deviation for questions with numerical responses; and response frequencies for questions with categorical response options. In addition, responses related to changes in beach visits will be analyzed within the context of an economic model. This will include an estimate of changes in the value of recreation and impacts to the regional economies for the eight communities, as described in detail in Part B of this supporting statement.

The overall schedule for the study is as follows:

- Conduct intercept surveys August-September 2017
- Print and coordinate survey materials September 2017
- Implement mail survey September - October 2017
- Analyze results and develop report October 2017

The project report will be posted online on the Program website (<http://marinedebris/noaa.gov>) in pdf format.

17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons why display would be inappropriate.

The expiration date for OMB approval will be displayed on all surveys associated with this information collection.

18. Explain each exception to the certification statement.

There are no exceptions to the certification statement.