



Department of Environmental Conservation  
Division of Environmental Health  
Tsunami Marine Debris Status Report for Calendar Year 2016  
Prepared January 2017

## Background

Following the March 2011 earthquake and tsunami, the Government of Japan donated \$5 million to the United States to be shared by the states that were expected to be impacted by tsunami debris: Alaska, Hawaii, Washington, Oregon, and California. The funds are administered by the National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program and are allocated directly to the states to support the collection, removal, and disposal of marine debris.

Since 2012, Alaska has received \$3.45 million of the \$5 million dollar gift from Japan. These funds have been fully expended or obligated. Other states have received smaller portions of this funding, and currently the NOAA Marine Debris Program has less than \$50.0 remaining from the Japanese gift.

Per Administrative Order No. 263 the Department of Environmental Conservation (DEC) is responsible for coordinating Alaska's response to tsunami related marine debris efforts, including administration of the funding received from the Government of Japan through NOAA.

## Summary of Past Tsunami Marine Debris Projects (CY 2012-CY 2015)

### *2012 Aerial Survey*

Tsunami-generated debris first started appearing in Alaska in late 2011 and early 2012. The scale and size of Alaska's shorelines made a specific appraisal of the quantity of tsunami-generated marine debris or "normal" marine debris impossible, but it was clear that tsunami-generated marine debris had become a significant component of marine debris on beaches in Alaska.

In 2012, DEC was awarded a \$50.0 NOAA grant which was used to fund an aerial survey to collect imagery and data in the Gulf of Alaska and Southeast Alaska. The result of the survey was over 8,000 high resolution, geo-referenced photographs, which were analyzed and tagged with keywords and assigned a rating of 1 to 5 based on debris density.

### *2013 Shoreline Prioritization*

In 2013, DEC and NOAA facilitated a workshop to discuss and prioritize shorelines for future marine debris removal operations in anticipation of the monetary gift from the Government of Japan. Workshop participants included land and wildlife resource managers from Federal, State, and Native organizations, as well as non-governmental organizations active in the marine debris community. At the

workshop, 44 shoreline segments were evaluated based on debris density, potential impacts (biological, habitat, socio-economic, cultural), and logistical feasibility for cleanup and removal. Nine prioritized locations were identified to be the focus of future debris removal efforts.

### *2014 Clean Up Projects and Updated Aerial Survey*

The first \$1 million received from the Government of Japan gift supported debris cleanup projects in the nine priority locations identified in the 2013 workshop, as well as an updated aerial survey of the Gulf of Alaska and Southeast Alaska.

While projects in Southeast Alaska benefitted from the availability of local landfills to accept marine debris for disposal, similar options were not available in the Gulf of Alaska and Prince William Sound regions. By the close of the 2014 debris season, while over 20 tons of debris had been removed and recycled, repurposed, or disposed of in landfills, over 252 tons of debris had to be safely cached on shorelines or in storage yards for later removal and disposal.

Two-thirds of the updated aerial survey was completed in 2014, and 5,000 images were analyzed and rated using the same methods as the 2012 survey. The remaining survey area in Southeast Alaska was completed in May 2015, resulting in an additional 3,200 images. All data from the survey, including georeferenced images, debris ratings, and 1-mile and 5-mile segmented shoreline ratings have been posted on DEC's public GIS map at <http://dec.alaska.gov/das/GIS/apps.htm>.

### *2015 Clean Up Projects*

In 2015, DEC used an additional allocation of \$1.5 million from the Government of Japan to fund marine debris collection, removal, and disposal projects in seven priority locations from Kodiak to south of Sitka, as well as removal and disposal of the 252 tons of debris collected and cached in 2014.

An unprecedented, large-scale effort involving state and federal agencies, private industry, and local and international non-profit organizations commenced in July. Super sacks and consolidated marine debris bundles were airlifted by helicopter from shorelines in Kodiak, the Gulf of Alaska, Prince William Sound, and British Columbia. The operation, which lasted approximately three weeks, required 1,176 helicopter trips to sling 3,397 super sacks and 717 consolidated bundles of marine debris from 11 locations onto a barge. The debris included items collected and cached in 2014, debris collected in 2015 cleanup projects, and debris from projects funded by the State of Alaska, the Exxon Valdez Oil Spill Trustee Council, NOAA, the National Park Service, the Government of British Columbia, and non-profit organizations.

The 300-foot barge *Dioskouroi*, assisted by the tug *M/V Billie H*, arrived in Seattle in early August with over 411 tons of marine debris, where it was then transported to Oregon by train for final disposal.

Projects in Southeast Alaska resulted in the collection and disposal of an additional 32 tons of debris, all of which was successfully disposed of in local landfills.

## Recently Completed Tsunami Marine Debris Projects (CY 2016)

In November 2015 DEC requested and received an additional \$950.0 from NOAA for tsunami marine debris collection, removal, and disposal projects for the 2016 field season. Specifically, this request was intended to support a single project covering Kayak and Montague Islands, which were ranked #1 and #2 in during the 2013 shoreline prioritization project.

The decision to focus on these areas was made after a really hard look at the overall goal of removing the most debris from Alaska as possible, with this being the last opportunity to use the remaining funds from the Government of Japan gift. DEC did consider the option to separate the funds into smaller projects, but that was not preferred because while it would support some small projects in communities where there are local landfills willing to take marine debris, it would make a barge/airlift project economically unfeasible resulting in less debris cleaned up overall.

The contract for debris collection, removal, and disposal was signed by Gulf of Alaska Keeper and DEC in late April 2016, and became effective upon the submission of proof of insurance. The contract terms required that clearance from NOAA be received prior to the commencement of any field activities.

On May 8, we were informed by NOAA that their NEPA analysis and permitting reviews of Gulf of Alaska Keeper's proposal were complete. This included concurrence (with mitigation measures) from the NOAA Protected Resources Division, a special use permit from the US Forest Service, and a concurrence with the State Historic Preservation Office (Alaska DNR). Mitigation measures included operational buffers and specific best management practices for shoreline, vessel, and aerial operations.

Field operations began on May 12 on Montague Island. The weather in May and early June was cooperative, and steady progress was made. Super sacks and consolidated debris bundles were cached above the tide line, to await the barge that would retrieve them later in the summer. The crew took a weeklong break in mid-June, returning to the field to clean Kayak Island starting on June 27.

Weather on Kayak Island was less than ideal, with dense fog and rain storms hindering progress. Brown bears in the cleanup area on Kayak Island also slowed progress, as the crew had to wait for bears with cubs to leave the area before resuming cleanup operations. However, when safe enough to get on shore, the crew was able to pick up 50-60 super sacks per day. The cleaning on Kayak Island is generally easier than on Montague due to fewer logs jams and rocky shores to contend with.

Due to the large amounts of debris cached on Montague Island and collected on Kayak Island, Gulf of Alaska Keeper worked with the barge owner to construct extended side walls, which would allow higher stacks of super sacks than otherwise would have fit safely. After this modification to the barge, it traveled first to Kayak Island where helicopters slung loaded super sacks and consolidated debris bundles onto the deck. The crew, tug, barge, and helicopters then traveled back to Montague Island to collect the cached debris and load it onto the barge. Barge loading operations were completed on July 11, which traveled to Anchorage and arrived at the North Star Terminal and Stevedore dock at 5am on July 14. Crews immediately began working with staff at the dock to unload the debris by crane loads onto the shipyard.

On July 16, an unprecedented, massive sorting event commenced, led by Gulf of Alaska Keeper and their partner, Parley for the Oceans. Dozens of volunteers showed up each day for the next five days, working alongside Gulf of Alaska Keeper crew members to sort buoys, extract/cut lines and nets, empty and sort super sacks, consolidate like materials, and load sorted materials into various shipping containers, pallets, and dumpsters. Used super sacks were recovered, folded, and saved for future cleanup operations when possible.

Parley for the Oceans ended up with 14 shipping containers of recyclable material. Gulf of Alaska Keeper retained three shipping containers of good condition buoys, plastic crates, pallets, and totes for eventual sale or re-use. Approximately 25-30 dumpster loads of non-recyclable material was taken to the Anchorage Municipal Landfill by truck.

*2016 Clean Up Project Metrics*

Weight	Unlike the barge project in 2015, there was not a reliable way to measure the weight of the debris loaded onto the barge. However, based on an average weight of 200 pounds per super sack and consolidated debris bundle, we can estimate a total weight of 468,000 pounds, or 234 tons.
Volume	1,200 super sacks x 1.3 yd <sup>2</sup> = 1,560 yd <sup>2</sup> 600 “super sack equivalent” bundles of debris x 1.3 yd <sup>2</sup> = 780 yd <sup>2</sup> Total = 2,340 yd <sup>2</sup>
Disposition	RECYCLED = 60% - 14 shipping containers, approx. 1,400 yd <sup>2</sup> <ul style="list-style-type: none"> <li>• 4 containers of hard plastic buoys</li> <li>• 5 containers of mixed hard plastics</li> <li>• 3 containers of PET (#1 plastic)</li> <li>• 2 containers of ropes and nets</li> </ul> REUSED/REPURPOSED = 13% - 3 shipping containers, approx. 300 yd <sup>2</sup> DISPOSED = 27% - 25-30 dumpster loads, approx. 640 yd <sup>2</sup>

## DEC Japanese Tsunami Marine Debris Program Updates

Per Administrative Order No. 263, DEC is responsible for coordinating the activities of state agencies relating to tsunami marine debris and is the primary point of contact for NOAA and other federal agencies. All Government of Japan funding that Alaska has received (\$3.45 million) has been fully committed to contracts for tsunami marine debris survey, collection, removal, and disposal. From 2013 to 2015, DEC used state general funds for a professional level 1.0 FTE non-permanent position to develop and manage the tsunami debris program; however, that position was eliminated in September 2015 and the work to manage the 2016 funding request to NOAA and the contract administration was absorbed by an existing permanent position.

The subject of marine debris, originating from the Japanese Tsunami or elsewhere, continues to be a topic of interest in Alaska and was again a featured topic at the Alaska Forum on the Environment (AFE)

in 2016. DEC and NOAA staff presented updates, and educational presentations were made by local marine debris organizations including contractors who will worked on projects funded through DEC over the past several years. DEC continues to participate in AFE as a presenter and participant in discussions relating to marine debris in Alaska.

## Future Tsunami Marine Debris Efforts

Despite the huge quantities of debris that have been removed from Alaska shorelines in recent years, industrial quantities are still accumulating. Foam and plastic, clearly identifiable as tsunami debris, continues to be a substantial percentage of the debris, and it is critical to remove it quickly before it becomes impossible to collect as it breaks down into small pieces and falls between cracks in nearly impenetrable log piles.

Based on the data DEC has collected through contractor reports over the years, the airlift and barge method used in 2015 and 2016, while expensive, is not only more efficient in terms of how long it takes to remove large quantities of debris (and in some cases, the only option), but it is also the most cost effective way to remove these large quantities of debris from Alaska. Using helicopters to airlift super sacks onto a waiting barge also eliminates the numerous skiff to landing craft trips along exposed and rocky shorelines, making this method safer than others.

With the Government of Japan gift funds all but expended, it is unlikely that Alaska would be successful in requesting an additional allocation from NOAA. It is even less likely that the State of Alaska will be in a position in the near future to self-fund cleanup operations, with even the most modest and focused projects nearing \$1 million per season in expenses.

DEC will continue to work with NOAA and other state and local partners when opportunities arise to coordinate effective cleanup, outreach, education, and policy development related to marine debris in Alaska.

## For Further Information

DEC Japan Tsunami Debris Survey GIS Map: <http://dec.alaska.gov/das/gis/apps.htm>

DEC Marine Debris Website: <http://dec.alaska.gov/eh/marine-debris/>

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