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Media Release

Pleasant Bay Alliance Presents Report on Water Quality Trends

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For Immediate Release - The Pleasant Bay Alliance is presenting the findings of a statistical trend analysis of water quality data collected by the Pleasant Bay Citizen Water Quality Monitoring Program from 2000-2009. The public informational meeting is to be held in the Chatham Community Center at 7 pm on Thursday, October 28th.

The objective of the statistical analysis was to evaluate recent historical trends in water quality parameters associated with nutrient loading and eutrophication in the Pleasant Bay system. These parameters include: dissolved inorganic nitrogen, bioactive nitrogen, total nitrogen, total algal pigments, phosphate and dissolved oxygen. The analysis, conducted by The Cadmus Group, Inc., evaluates these parameters bay-wide, and for individual monitoring locations, and accounts for other environmental factors (i.e., temperature, rainfall) that could have influenced water quality.

Highlights of the report include:

- Results of the station-by-station site-specific analysis show that water quality is improving at some sites, but declining in others. However, most sites do not demonstrate any statistically significant trends over the period evaluated.
- In general, the station-by-station analysis shows that improvements tend to be in open water areas of the system, while those sites showing declining water quality tend to be located in sub-embayments where flushing is relatively more restricted.
- Combined results of all stations in the bay-wide analysis show that water quality was declining for some parameters prior to the 2007 break, but since that time it has been improving for the same parameters.

“The trend analysis reflects what we have anticipated: that increased flushing from the new inlet has improved water quality in a limited way in some open water areas, but not

in the ponds and sub-embayments," said Carole Ridley, Alliance Coordinator. "Even with the limited improvements, the analysis shows that bioactive nitrogen concentrations continue to exceed the restoration levels needed for a healthy eco-system," Ms. Ridley said.

"The trend analysis should not be looked at in isolation of other factors," said Dr. Robert Duncanson, Chairman of the Alliance's Technical Resource Committee and Technical Director of the Citizen Water Quality Monitoring program. "Nitrogen loading from watershed and other sources has not abated, and over time we anticipate the inlet will migrate southward, and so the limited improvements due to flushing will not be with us forever," Dr. Duncanson said.

The Cadmus report cautioned against extending the trends into the future. "The trends provide insight into water quality conditions during the period of data collection," said Corey Godfrey, an Associate with The Cadmus Group. "These are not predictive models and should not be extrapolated into the future," Mr. Godfrey said.

The Cadmus Group used a class of statistical methods called mixed –effects models, to evaluate the bay-wide historical trends. Multiple linear regression analyses were used to evaluate site-specific trends. Both methods allow for the inclusion of multiple explanatory variables, such as weather conditions, which help to isolate trends over time from other influences on water quality.

"We have our many dedicated water quality monitoring volunteers to thank for collecting this impressive amount of high quality data," Carole Ridley said. "The Cadmus team told us that this was an exemplary data set from a scientific perspective," Ms. Ridley said.

The full report is available on the Alliance's website, www.pleasantbay.org. Comments or questions about the report can be sent to the Alliance at P.O. Box 1584 Harwich MA 02645 or info@pleasantbay.org.

The Pleasant Bay Alliance is the organization of Chatham, Brewster, Orleans and Harwich formed to implement the resource management plan for the Pleasant Bay Area of Critical Environmental Concern and watershed.

The Cadmus Group, Inc. is a Massachusetts-based, employee-owned environmental consulting firm that provides support to state, federal, and local governments in the areas of water resources, energy efficiency, and environmental policy.