

PROJECT SUMMARY

Nurture Nature Foundation, Inc.
Flood Safety and Preparedness Education Campaign
September 1, 2009 to August 31, 2010

Contact Information:

Rachel Hogan, Director of Environmental Outreach
Nurture Nature Foundation
518 Northampton Street
Easton, Pa 18042
610-253-4432 (phone)
610-253-1486 (fax)
rhogan@nurturenature.org
www.nurturenature.org and www.nurturenaturecenter.org

In response to priorities established by the Delaware River Basin Interstate Flood Mitigation Task Force in its 2007 report on flooding in the region, Nurture Nature Foundation is developing a flood safety and preparedness education campaign in the four states of the Delaware River Basin (Pennsylvania, New Jersey, New York and Delaware). The campaign, which will highlight the flood warning and forecast resources of the National Oceanic and Atmospheric Administration and National Weather Service and Delaware River Basin Commission, includes education about land use and environmental considerations related to flooding, and uses several approaches tailored to specific audiences, including: property owners in flood-prone communities; elementary, middle and high school educators and students; municipal officials; and the broader public who may encounter flooding at some point in time. The project includes programming for use in elementary, middle and high school classrooms; multi-media public service announcements for radio and television and other venues; a compelling website presentation; a traveling flood safety display for use in science centers; and professional education through training materials for emergency management and municipal officials and presentations at select conferences and meetings.

**PROJECT DESCRIPTION:
NURTURE NATURE FOUNDATION FLOOD SAFETY AND PREPAREDNESS
EDUCATION CAMPAIGN
FFO: NOAA-NWS-NWSPO-2009-2001810**

Description and Background

Nurture Nature Foundation, a non-profit organization committed to environmental sustainability, proposes the development of a flood awareness campaign for the four states of the Delaware River Basin to address a serious knowledge gap between scientists and the broader public about critical safety and preparedness issues related to flooding. The campaign, which is intended to be replicable nationally, draws on flood warning and forecasting resources developed by the Delaware River Basin Commission and the National Oceanic and Atmospheric Agency's National Weather Service, and incorporates education about land use and planning, safety and preparedness and basic environmental information related to flooding.

The need for such a campaign is great, and growing. As the nation's most common – and most preventable - natural disaster, flooding is a matter of increasing importance to communities nationally. In the past three years, flooding in the Delaware River Basin alone has caused 9 deaths, hundreds of millions of dollars of property damage, and untold hardship to residents, businesses and municipalities.

Vast swaths of the nation's coasts, as well as coastal and inland waterways, are subject to flooding, and even larger areas will become flood-prone in the coming years as a result of climate change. Recent predictions by the Intergovernmental Panel on Climate Change suggest flooding will remain a matter of national public concern: predictions include a worldwide increase in heavy precipitation events, resulting in flooding that will disrupt commerce, transport and societies, stress community infrastructures, and destroy property. The areas where flood risk is growing include some of the nation's most densely populated regions. In the wake of Hurricane Katrina and the damage it caused, a major \$50 million dollar study was released addressing the adequacy of the principal federal program that addresses flooding, the National Flood Insurance Program (NFIP). The first page of the final summary report of the multivolume study explains:

*"Floods pose no problem for floodplains that are in their natural, undeveloped, state—in fact, they are beneficial to those areas. However, one result of all the historic settlement in floodplains is that **floods have become the nation's most common natural disaster.** Between 1955 and 1999 floods were estimated to have caused \$270 billion in losses, or an average of about \$6 billion each year (1999 dollars). Since the turn of the millennium the pattern has continued: in 2005 alone, over \$150 billion in flood and hurricane losses were recorded...**Despite the havoc floods cause, they are among the most preventable natural disasters.** The majority of floods occur relatively frequently, and in defined geographic areas. A range of predictive, evaluative, mitigation and management techniques is available to significantly reduce the risk of and damage to property from flooding."*

In later pages, the report indicates that total flood damage is increasing in absolute dollars, and “is likely to increase over time due to factors such as the urbanization of watersheds, coastal erosion, and climate change.”¹

Despite these facts, there is currently little or no federal support for flood education. A pilot flood education program such as the one NNF proposes to develop has the potential for national replication, and could provide the foundation for a national flood education program.

The Delaware River Basin is an important place to start. The basin has been especially hard hit by flooding, historically and recently. The legendary regional flood of 1955 lost its mythical status when Hurricane Floyd hit in 1999, taking several lives and destroying bridges and roads in the lower portion of the basin. Flooding in Bucks and Montgomery County in 2001 as a result of Hurricane Allison also damaged infrastructure, and also, took seven lives. Recurring major flooding in 2004, 2005, and 2006 caused devastation along the main stem of the Delaware River, damaging property, disrupting tens of thousands of lives, and causing severe environmental damage still to be repaired.²

Pennsylvania, one of the four sites in the Delaware River Basin and the primary site of the project, is particularly vulnerable to flooding. Home of the infamous Johnstown Flood, Pennsylvania is the most flood prone non-coastal state in the country, judged from an almost thirty year perspective, from 1978 to the present. According to figures from Bureau Net of the National Flood Insurance Program (<http://bsa.nfipstat.com/reports/1040.htm>) the total Pennsylvania losses paid over that period exceeded \$730 million. Despite the enormity of the problem in the state, Pennsylvania’s floodplain management staff consists of a single official, although places like California, for example, have ten and a recent federally funded report recommends at least one state coordinator per 300 NFIP-participating communities - which would mandate at least 8 for Pennsylvania. The job of communicating critical floodplain information in Pennsylvania is made even more difficult by the fact that the state has more than 2500 different municipalities and no formal association of state floodplain managers.

After the major flooding events of 2004, 2005, 2006, communities in the basin were left with little information about how to rebuild and mitigate future losses. Resources for flood education and planning locally are few. None of the communities along the Delaware in Pennsylvania are taking advantage of the Community Rating System program, and in the Lehigh Valley, no components of the Flood Mitigation Plan developed by the Lehigh Valley Planning Commission in 2006 have been implemented. Residents and governments alike can expect more flooding, but without further education, will be no better equipped to handle it the next time around.

In states such as Pennsylvania, where floodplain education is most critical, it is essential that the public – including municipalities, residents and businesses – know how to protect themselves against flood loss.

¹ The Evaluation of the National Flood Insurance Program, Final Report (Oct. 2006) (“Final Report”), available at <http://www.fema.gov/library/viewRecord.do?id=2573>, Executive Summary.

² Recent Flooding Events in the Delaware River Basin, Delaware River Basin Commission, available at http://www.state.nj.us/drbc/Flood_Website/events.htm.

Limited resources exist to inform communities about flooding issues, and those that have been developed have not fully reached their intended audiences.

There are programs of note, such as the Federal Emergency Management Agency's FloodSmart Program, which does a good job promoting the need for flood insurance, one important part of the equation. The National Weather Service's "Turn Around Don't Drown" effort on motorist safety has raised awareness and developed some fruitful partnerships on a very important element of flood preparedness. Also, the non-profit Flood Safety Project has done some innovative work with PBS videos and interactive maps in Texas and Colorado, which highlight important flood safety issues. The Association of State Floodplain Managers produces excellent flood research, but most of this education is of professional staff, and not of broader publics.

NNF's flood awareness campaign will owe a great deal to the research and work of these programs, and will promote existing efforts wherever appropriate. Most importantly to this project, the Delaware River Basin Commission, the National Oceanic and Atmospheric Agency and the National Weather Service have diligently established a series of flood forecasting and warning tools of great benefit to broad communities. Particularly, the installation of river gages along the Delaware, and the creation of the Advanced Hydrologic Prediction Services (AHPS) website are valuable tools that can alert communities – residents and emergency management officers alike - to impending flooding. The campaign proposed will highlight especially these resources, which are critical for alerting people to impending severe weather events.

Relative to the extent of the flood problem, there is little compelling content to help educate the general public, K-12 educators and students, or municipal decision makers about the overall flood challenge in a unified manner. This flood education campaign will create a series of visually appealing, concise and scientifically sound education pieces of various media, including website presentations, educational curricula, exhibits and broadcast pieces, to turn this tide.

Floodplain experts recognize the need for such an effort. In fact, the project proposed by Nurture Nature Foundation was developed in response to 2007 recommendations by the four-state Delaware River Basin Interstate Flood Mitigation Task Force to "*Establish a Coordinated Flood Warning Education and Outreach Program*."³

NNF proposes to bring compelling, visual multi-media resources to bear on an issue that is often the stuff of dry technical reports, or brief, sensationalized media bites. Specifically, among other issues, it will address: causes and effects of flooding, automobile safety; water rescue safety; flood forecasting; and the use of DRBC flood warning system as well as the flood forecast resources of NOAA and NWS. The campaign is also intended to engage communities in discussion about flooding to improve decisions about land-use planning and development. Specific information about using NOAA and NWS resources will be advertised and shared through the campaign, but it is intended that by providing a broader context for the need to be aware of flood risk and impending flood events, these materials and resources will be more likely used and appreciated by at-risk audiences. For example, residents who understand the nature of flash flooding, or flood stages, are more likely to integrate the use of these resources if they can

³ Delaware River Basin Interstate Flood Mitigation Task Force, Action Agenda, July 2007. Available at http://www.state.nj.us/drbc/Flood_Website/taskforce/Action-agenda_0707/Final_ActionAgenda0707.pdf

make meaningful use of the information. Additionally, by sensitizing broad audiences to flooding generally by discussing the risks of driving into floodwaters, or of preparing for evacuation during flooding events, they will better understand the need to be aware of imminent flood events. General flood education and flood forecasting and warning resources serve mutually supportive purposes, and this campaign intends to engage a variety of approaches to encourage the broad public, at-risk of encountering flooding in their homes, businesses or travels, to use all resources available to prevent their own flood loss. These messages are all the more critical in a down economy, as families or businesses have less ability to rebound from interruption of business or the costs of rebuilding.

The audience of the campaign is diverse, and will develop materials and techniques that reach K-12 educators, residents and businesses within flood-prone communities, emergency managers, municipal officials, as well as the broad public who may encounter flooding in their vehicles. Tools will include: video and multimedia presentations designed for viewing on the web and at specific rotating sites; maps; graphics; traditional television broadcasts; classroom and conference presentations. The campaign will develop and distribute a series of public service announcements for radio and television, as well as other educational materials, to students, residents, businesses, media and municipal officials, and will culminate with the creation of a traveling exhibit, initially to be displayed at the Nurture Nature Center and later at other national science centers, focusing on flood safety education.

About Nurture Nature Foundation:

Nurture Nature Foundation, a non-profit corporation devoted to sustainable development, is developing a science center in Easton, Pennsylvania focused on educating the public about flooding, and what people can do to prevent its worst damages to the natural and built environments. This science center, known as the Nurture Nature Center, will combine hands-on tactile exhibits with multi-media experiences, in-house workshops and conferences, and outreach programming, to create a multi-disciplinary focus on flood awareness and education. The Center is located exactly in the center of the Delaware River Basin, as shown in Attachment A, appended hereto, in the City of Easton, recently hard hit by flooding. The Center is also in close proximity to a number of prestigious colleges and universities with hydrology and flooding experts undertaking new research on these areas. As such, the center is particularly well-suited as a location for education about flooding. The education campaign proposed here is the first regional effort to be operated out of the Center, and will form the basis for future programming by the foundation regionally and nationally.

Goal(s) and Objective(s)

Requested funds will be used: to develop the radio and TV public service announcements for the general public; to purchase advertising space in media outlets; to develop educational materials for the general public, and training materials for local emergency management officials regarding flood forecasting and flood warning systems, to engineer a replicable, engaging flood safety display; to present information about the campaign at national and regional events and conferences, and to hold local conferences on the subject; to develop an in-school flood

awareness presentation for elementary, middle and high schools; and to develop a compelling website presentation for the information that will attract internet traffic.

The project has two guiding intentions. The first is to provide practical information that can help save local lives, protect historic and other properties in the heart of the Delaware River Basin's floodplain communities, and protect the local natural environment. Secondly, the program aims to create a replicable, multi-disciplinary template for flood education that can serve diverse audiences in communities across the country, to further the same ends of safety, preservation and conservation nationally.

Specifically, the measurable project goals and objectives are as follows:

Goal #1 (Multi-media outreach): Create a broadly disseminated radio, television, Internet and mass media campaign, designed around key flood preparedness messages, throughout the four states of the Delaware River Basin.

Objective #1: Produce and distribute a series of 3 to 5 30-second radio public service announcements (PSAs) tailored to high-risk property owners and dwellers, municipal and decision-making officials, and the broad population of listeners

Objective #2: Produce and distribute 2 to 3 television PSAs tailored to high-risk property owners and dwellers and the broad population of listeners

Objective #3: Produce and distribute an Internet presentation of flood education that will attract viewers

Goal #2 (Professional and Classroom Education): Create a comprehensive flood safety education program for professional and student audiences, including municipal officials and regional elementary, middle and high schools

Objective #1: Develop in-school presentations for elementary, middle and high school audiences

Objective #2: Develop tangible and multi-media training materials for municipal officials, highlighting the use of the flood forecast and warning resources, including a multi-media presentation and companion handout

Objective #3: Develop and deliver presentation about the campaign and its message at select conferences and meetings

Objective #4: Develop a plan for dissemination of materials throughout the Delaware River Basin and beyond

Goal # 3 (Exhibit Development): Create an exciting traveling flood safety display for use at Nurture Nature Center and other science centers regionally and nationally

Objective #1: Develop key flood safety and preparedness messages to be distributed to informal science education audiences

Objective #2: Establish multi-media content delivery mechanisms including maps, graphics, web-based interactive applications

Objective #3: Fabricate physical display designed for travel and replication

Nurture Nature Foundation will be assisted in meeting these objectives by staff from the National Weather Service; specifically, support is committed from the NOAA/NWS Mount Holly, New Jersey Forecast Office and the NOAA/NWS Middle Atlantic River Forecast Center in State College, PA.

Representatives from those offices, including, Gary S. Szatkowski - Meteorologist-in-Charge at the Mount Holly NJ Forecast Office, and Peter Ahnert and Patricia Wneck of the MARFC, will serve on our advisory team to assist with the design and development of flood outreach, training, and educational materials. Depending on the final project plan and the alignment of specific planned flood training and outreach with NWS goals, their offices may offer assistance with the staffing/teaching at certain outreach and training events.

Approach

The project will be undertaken by a team of Nurture Nature Foundation staff and director, with support from an advisory team including educators, municipal officials, NOAA personnel from the Middle Atlantic River Forecasting Office, Delaware River Basin Commission staff and Flood Advisory Committee representatives, and Marshall Frech, the founder of a non-profit organization devoted to flood safety issues, which has produced extensive educational programs and visual content pieces about flooding, including full-length feature films for PBS. Additionally, the team will develop contractual relationships with agencies for the development and placement of radio and TV PSAs, website content, exhibit development, and the media portions of training materials for professional and classroom audiences.

Principal Investigators on the Project are Rachel Hogan, Director of Environmental Outreach for Nurture Nature Foundation, and Jane Kheel Stanley, Director of NNF.

Ms. Hogan will oversee staff, including Kate Brandes, P.G., CFM, staff scientist. Ms. Hogan will be responsible for reporting, scheduling and overall project coordination. Ms. Stanley is responsible for contracts and financial oversight.

Ms. Brandes will be responsible, in cooperation with other members of the team, for developing content for the educational programming for elementary, middle and high school audiences; NNF also intends to engage the help of regional environmental educators for this portion of the work, building on established relationships with the state park employees of the Department of Conservation and Natural Resources. Ms. Brandes will also oversee the creation of the training materials for emergency management and municipal officials.

Ms. Hogan will oversee the production of the radio and TV PSAs, and the website development. Ms. Stanley will manage the creation of the exhibit. Ms. Brandes and Ms. Hogan will be primarily responsible for the presentation of materials at national and regional conferences.

The Work Plan is organized around a team approach that puts individual members in charge of specific goal areas, and includes a weekly reporting mechanism whereby each team member will report on progress made on their individual goals; this Work Plan will be based on the milestones identified herein, and will be supervised by Ms. Hogan.

Key tasks for the accomplishment of objectives include:

Goal #1: Multi-media outreach:

- Assemble a team of advisors, including NOAA/NWS staff, Mr. Frech and production consultants, to identify the key messages of the outreach campaign
- Identify agency for PSA development and placement (Team bid process)
- Film interviews with content experts for inclusion in visual PSAs and web presentation
- Compile flood film footage and still shots for inclusion in visual PSAs and web presentation
- Develop voice scripts for PSAs
- Identify markets for placement of ads; purchase advertising space on radios, TVs and other appropriate venues
- Launch and advertise website presentation

Goal #2: Professional and classroom education:

Classroom:

- Assemble a team of education advisors representing elementary, middle and high school levels to establish state standard-aligned learning goals for each grade segment
- Establish methods for content delivery for each learning population, including media applications and physical materials
- Develop multi-media content for classroom presentations
- Assemble and package learning toolkits to accompany presentations
- Final review of curriculum by team members and outside volunteer teachers
- Develop plan for dissemination of materials on Internet, through mail and other venues, including presentations at conferences

Professional:

- Assemble a team of advisors, including OEM and municipal officials, to develop professional training materials for OEM and municipal official audiences
- Identify key messages about use of flood warning and forecast resources
- Film content (interviews, flood footage) and design graphics for multi-media presentation and written companion piece
- Identification and booking of conferences and speaking opportunities
- Planning of regional conference for August 2010 for professional municipal audiences

Goal #3: Exhibit Development:

- Identification of exhibit development contractor (Team bid process)

- Development of learning goals for informal science education audiences
- Development of multi-media content, including film, maps and graphics
- Physical fabrication of exhibit
- Identification of traveling destinations for flood safety display

Benefits

Generally conceived, an alert, informed audience that recognizes the serious and unpredictable nature of flooding, as well as the reliable resources for identifying imminent flooding, is more likely to make informed decisions leading to short-term and long-term safety and protection of property and persons. Further, an audience heightened to the inevitability of flooding in floodplains is more likely to make appropriate land use decisions that will benefit the natural environment as well as reduce flood losses.

This campaign has preliminarily identified three particular audiences, and the benefits accrue to each differently. For example, an audience of flood-prone property dwellers that knows its risk, knows how to identify imminent flooding, and knows basic safety and preparedness measures, is much more likely to evacuate when requested, preventing the need for dangerous rescue missions, and ultimately, the needless loss of life. This audience will also be aware of the need to plan in advance for the inevitability of flood events, by developing an evacuation plan that includes the easy identification of important papers, to avoid the inevitable return to flooded properties by homeowners and business owners looking to save their critical information from flooding.

Municipal officials and decision-makers who understand the repetitive nature of flooding are more likely to make land-use regulations that encourage safe building practices. These individuals are also more likely to develop strategic flood response plans if they are aware of the danger to their fire and police personnel engaged in swift water rescue, and are more likely to respond on time to flood events if they regularly access the full range of forecast and warning resources available through NOAA and DRBC.

Individuals who live and work outside of flood-prone regions can be expected not to have thoroughly considered the dangers of flash flooding and general flooding, but these same audiences, when exposed to compelling messages about these issues, will be better able to make quick decisions when faced with an unexpected flood event, such as may happen with travel. The majority of flood deaths occur in intersections, with drivers finding themselves suddenly trapped in water that appeared shallow. An informed audience will understand the importance of not driving into standing water, avoiding further injury, death and rescue efforts.

Collectively, these decisions will benefit communities and individuals economically, as the rising costs of flood losses can be reduced through better decision-making about personal safety and land use.

Because materials are designed to be able to be replicated, communities across the country will be able to reap the benefits of this pilot campaign in the Delaware River Basin.

Milestone Schedule

Assemble Advisory Team(s):	September 2009
Group Visioning Session:	October 2009
Film content for multi-media portion:	Begin Oct. 2009; ongoing
Development of “Brand” Icon for use in all content:	November 2009
Refine and finalize goals, objectives and key messages:	November to December 2009
Development of graphics, maps:	November 2009 to March 2010
Development of content for classroom program:	Begin Nov. 2009; finish April 2010
Scripting of radio PSAs:	Begin Feb. 2010; finish April 2010
Fabricate physical exhibit:	Begin Mar. 2010; finish August 2010
Final production of PSAs	May 2010
Launch media outreach campaign:	June to July 2010
Disseminate classroom and professional materials:	July to August 2010
Launch website presentation:	July to August 2010

Budget Detail. Submitted In Separate Attachment Uploaded

OTHER REQUESTED INFORMATION:

- Copy of most recent Indirect Cost Negotiation Agreement, if available. **N/A.**
- Vitas of principal investigator(s). **See attachments B and C for Vitas of Rachel Hogan and Jane Kheel Stanley.**
- Conflict of Interest Statement. **See attachment D.**

Attachment A
Map of Delaware River Basin