



American Recovery and Reinvestment Act (ARRA) Emergency Watershed Protection Program – Floodplain Easements Rhode Island Natural Resources Conservation Service

Rhode Island NRCS received approximately \$2.4 million in ARRA funds to implement four floodplain easement projects.

City of Cranston – Pocasset River – Riverview Terrace & Blackamore Pond

City of Cranston – Pocasset River and Pawtuxet River Confluence

City of Cranston & Rhodes –on-the-Pawtuxet – Pawtuxet River Oxbow

Town of West Warwick – Meshanticut River Headwater

Floodplain easements restore, protect, maintain, and enhance the functions of the floodplain; conserve natural values including fish and wildlife habitat, water quality, flood water retention, ground water recharge, and open space; reduce long-term federal disaster assistance; and safeguard lives and property from floods, drought, and the products of erosion.

NRCS purchases a permanent conservation easement on floodplain lands that meet program criteria and have a history of repeated flooding. All legal and administrative costs are paid 100% by NRCS.

The easement provides NRCS with the authority to restore and enhance the floodplain's natural functions to the greatest extent possible. NRCS is paying 100% of the restoration costs. NRCS actively restores the natural features and characteristics of the floodplain through re-creating the topographic diversity, increasing the duration of inundation and saturation, and providing for the re-establishment of native vegetation.

Landowners retain several rights to the property including quiet enjoyment, control of public access, and undeveloped recreational use such as hunting and fishing.

All restoration construction was substantially complete by December 30, 2010 with the remaining landscape seeding tasks completed by June 15, 2011

The following is a summary of each of the four projects.

Meshanticut River Headwater (Janet Drive) Floodplain Restoration – West Warwick

Description: An existing stream channel that was routed under a road into a poorly functioning culvert often flooded during storm events. The culvert outlet was often submerged, restricting the capacity of the culvert and causing repeated upstream flooding to eight local homeowners along Janet Drive in West Warwick, Rhode Island.

Floodplain Easement: Permanent conservation easement has been acquired by NRCS in the amount of \$9,000.00 for 2.0 acres with the Town of West Warwick.

Works of Improvement: Restoration activities included removal of approximately 400 feet of buried 48-inch concrete pipe that was used to reroute the original stream; creation of new open stream channel using bioengineering techniques to improve habitat and mitigate local flooding; construction of an earthen berm along the eastern and southern perimeter of project area to prevent floodwaters from storms up to a 10 year frequency from entering adjacent properties; and restoration of two acres of floodplain to increase storage.

Project Cost:

Conservation Easement: \$9,000.00
Construction: \$238,300.00

Benefits:

Economy –The project will increase residential property values by flood reduction; reduction in insurance premiums for residential properties; alleviation of repetitive flood damage claims to residential properties (damages as of June 2009 totaled \$217,000).

Safety, protecting lives, and property –The project, as proposed, will result in the abatement of these damages and a decrease in the emergency services provided by the town.

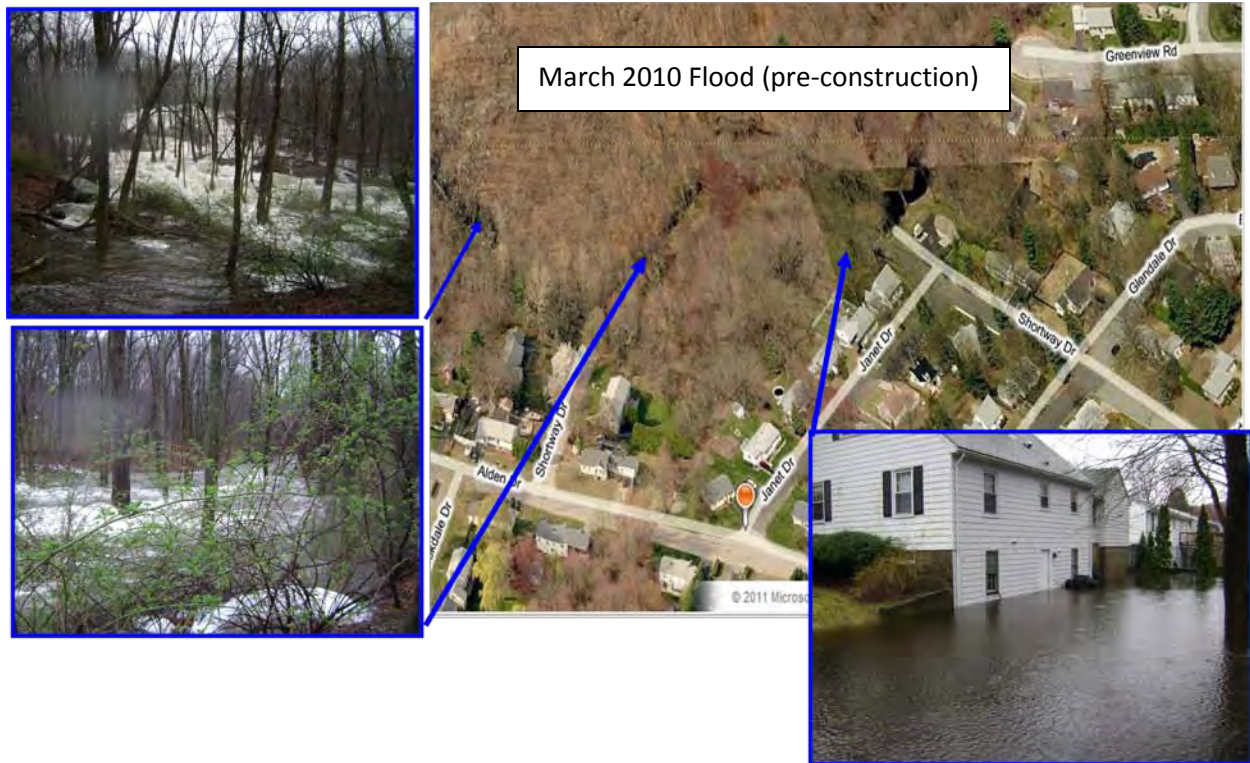
Conservation – The project restored an impaired floodplain and a buried stream to a geomorphic state consistent with upstream and downstream conditions. This will benefit native wildlife and provide significant aesthetic value to the local community.

Greening the environment: This project resulted in the ‘day-lighting’ of 400 feet of buried stream. Additionally, one acre of filled flood plain will be restored.

Janet Drive Photos



Project Site Overview



Janet Drive Photos



New Stream Channel



New Earthen Berm



Pocasset River – Riverview Terrace and Blackamore Pond Floodplain Restoration – Cranston

Description: This project was identified as part of the Pocasset River Watershed PL 566 Study. An existing stream alignment exiting out of Blackamore Pond was routed into an undersized culvert passing through a residential neighborhood. During larger storm events, this culvert overflowed and caused flooding to 67 residential properties located within the vicinity of the culvert.

Floodplain Easement: Permanent conservation easement has been acquired by NRCS in the amount of \$109,000.00 for 25.40 acres with the City of Cranston.

Works of Improvement: Restoration activities included removing floodplain fill to provide additional flood storage during flood events; relocating/recreating the stream channel from the culvert using bioengineering techniques with direct connection to Pocasset River in order to convey necessary flows without flooding residential properties.

Project Cost:

Conservation Easement: \$109,000.00
Construction: \$531,363.00

Benefits:

Economy – Alleviation of repetitive flood damage claims to 67 residential properties. Average annual damages based on economic analyses conducted as part of the PL566 project are \$484,000 to the Riverview Terrace neighborhood.

Safety, protecting lives, and property – Demand for city emergency services will be reduced during flood events. Homes that now regularly flood will benefit by reducing public health issues associated with mold growth, sewage backups, and power outages.

Conservation – Aquatic habitat and associated floodplain wildlife habitat will be restored by restoring the historic stream channel.

Greening the environment: Structural and bio-engineered stream channel techniques will replace the existing ditched and piped stream system.

Blackamore Pond Photos



Blackamore Pond Photos



Brush mattresses/Root wads along new stream bank



New Stream Channel

Pawtuxet and Pocasset River Confluence Floodplain Restoration – Cranston

Description:

A section of floodplain located at the confluence of two rivers was historically a wetland but had been used as a place to deposit excess fill.

Floodplain Easement: Permanent conservation easement has been acquired by NRCS in the amount of \$95,000.00 for 25.80 acres with the City of Cranston.

Works of Improvement: Restoration activities included removal of dikes and associated floodplain fill to provide additional flood storage during flood events and restore floodplain connectivity to the Pawtuxet and Pocasset Rivers. Other activities included clearing, grubbing, and reestablishment of floodplain vegetation.

Project Cost:

Conservation Easement: \$95,000.00

Construction: \$452,253.00

Benefits:

Economy – Reducing severity and duration of flooding will increase adjacent residential/commercial property values through flood reduction. The project will help reduce sediment delivery to an adjacent navigation channel that was recently dredged.

Fishery benefits – Restored floodplain connectivity will directly improve spawning/nursery habitat for resident freshwater fisheries and diadromous fisheries including: Federal Listed Fish Species of Concern (Alewife and Blueback Herring), American Shad, and American Eel.

Safety, protecting lives, and property - Addressing the downstream Pawtuxet River dam removal and floodplain easement and restoration at Pawtuxet River Oxbows in conjunction with this proposed project will help to reduce duration and severity of upstream flood damages.

Conservation – Increased floodplain area will result in increased flood storage, sediment trapping, enhanced water quality benefits by increasing dissolved oxygen and nutrient cycling, and enhanced fish and wildlife habitat.

Confluence Photos



Floodplain fill area

Pawtuxet River Oxbows Floodplain Restoration – Cranston

Description: The Lower Pawtuxet River Oxbows (LPRO) have been subject to extensive physical modification by means of filling and earth moving to accommodate development, and agricultural and recreational uses, thereby altering the natural floodplain storage capacity and impacted the native ecology of the LPRO. Based on historic mapping information, these anthropogenic fill activities have also contributed to decline in flow between the LPRO and the Lower Pawtuxet River (LPR).

NRCS proposed to improve the connection between the LPRO and the river and reconnect the westernmost oxbow, which has been isolated from the river.

Floodplain Easement: Permanent conservation easement has been acquired by NRCS in the amount of \$138,000.00 for 55.30 acres with the City of Cranston. An adjacent permanent conservation easement has been acquired by NRCS in the amount of \$9,000.00 for 2.0 acres with Rhodes-on-the-Pawtuxet.

Works of Improvement: Restoration activities included the removal of selected dikes and associated fill, restoration of channel geometry using bioengineering techniques, and restoration of floodplain connectivity to the main stem of the Pawtuxet River.

Project Cost:

Conservation Easement Total: \$147,000.00

Construction: \$308,225.00

Benefits:

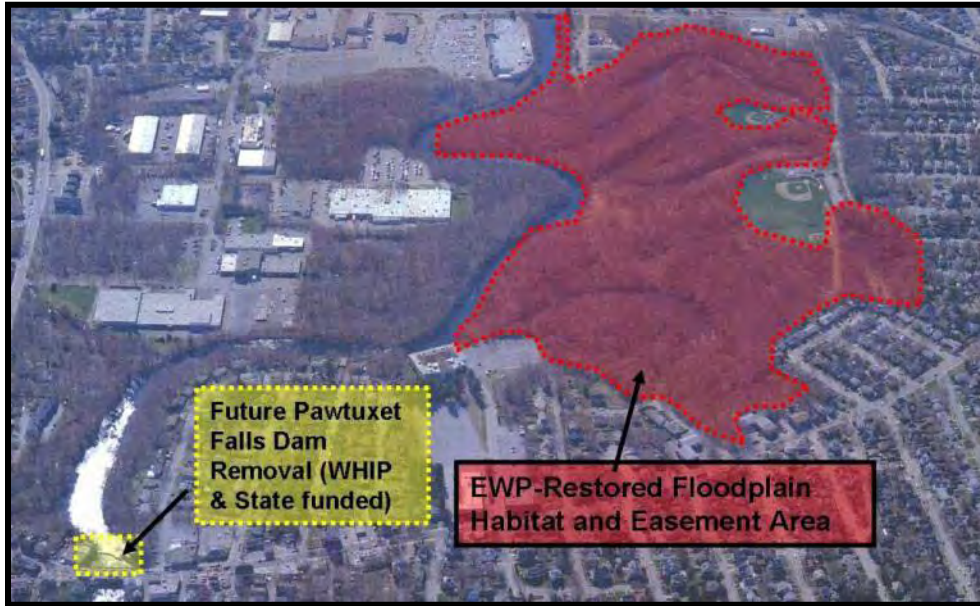
Economy – Reducing severity and duration of flooding will increase adjacent residential/commercial property values; reduce insurance premiums; and alleviate repetitive flood damage claims to 16 industrial/residential properties. Project will help reduce sediment delivery to an adjacent navigation channel that was recently dredged.

Fishery benefits – Restored floodplain connectivity will directly improve spawning/nursery habitat for resident freshwater fisheries and diadromous fisheries including: Federal Listed Fish Species of Concern (Alewife and Blueback Herring), American Shad, and American Eel.

Safety, protecting lives, and property - Addressing the downstream Pawtuxet River dam removal and floodplain easement and restoration at Pawtuxet and Pocasset River Confluence in conjunction with this proposed project will help to reduce duration and severity of upstream flood damages.

Conservation – Increased floodplain area will result in increased flood storage, sediment trapping, enhanced water quality benefits by increasing dissolved oxygen and nutrient cycling, and enhanced fish and wildlife habitat.

Oxbows Photos



Channel at Oxbow #1 pre-construction



Bridge and channel at Oxbow #1 post-construction

Oxbows Photos



Log cribbing at Oxbow #2



Channel at Oxbow #2 with erosion control matting and plantings



Re-establishing connection to Pawtuxet River at Oxbow #3



Channel at Oxbow #3 with erosion control matting on banks