

# STATE OF RHODE ISLAND

**2014**

Annual Report to the Governor  
on the Activities of the

## **DAM SAFETY PROGRAM**



*Spillway & low level outlet at Georgiaville Dam (No. 126) in Smithfield,  
repaired in 2014*

Department of Environmental Management

Prepared by the Office of Compliance and Inspection

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## **STATUTORY AND REGULATORY AUTHORITY OF RHODE ISLAND'S DAM SAFETY PROGRAM**

The Rhode Island dam inspection and inventory program had its inception in 1883, and was under the authority and responsibility of the Commissioner of Dams and Reservoirs. At that time, there were 86 dams included in the records; today, there are 668 inventoried dams.

A complete list of the inventoried dams, sorted by town and river, is attached.

### **STATUTES**

As set forth in Rhode Island General Laws, Chapters 46-18 and 46-19, a dam owner has the responsibility for the safe operation of his/her dam, and is liable for the consequences of accidents or failures of the dam. In general, a dam owner is required to use "*reasonable care*" in the operation and maintenance of a dam. This responsibility includes the proper operation, maintenance, repair and rehabilitation of a dam, which are essential elements in preventing a dam failure.

The criteria governing the administration and enforcement of Rhode Island's Dam Safety Program are contained in the General Laws of Rhode Island, Chapter 46-19. The Department of Environmental Management (DEM) has the responsibility to cause to be inspected dams to determine their condition, to review and approve plans for construction or substantial alteration of a dam, to order the owner to make repairs or to take other necessary action to make a dam safe.

In 2001, Section 46-12.2-2 was amended, authorizing the Clean Water Finance Agency to issue loans for projects associated with dam safety.

In 2005, Chapter 45-62 (Dam Management Districts) was added, authorizing municipalities to create dam management districts for dam repairs, maintenance, management and/or removal.

In 2006 two amendments to Chapter 46-19 were enacted. Section 4 was amended to authorize DEM, in an emergency, to take necessary actions to mitigate an unsafe condition at a dam and to assess the costs of those actions against the dam owner. Section 9 was amended to require a city or town where a high or significant hazard dam is located, and to require a state agency that owns a high or significant hazard dam, to complete by July 1, 2008, an Emergency Action Plan (EAP) for the dam. Rhode Island's Emergency Management Agency is responsible for coordinating development of the EAPs and must give final approval for the EAP to be considered complete.

In 2012, Section 46-19-4 was amended by adding subsection (c). This change authorizes DEM to record an enforcement action for an unsafe dam in the land evidence records of the city or town in which the dam is located. Upon satisfactory completion of the requirements of the enforcement action, DEM is also authorized to record such written notice in the land evidence records.

Federal Energy Regulatory Commission Authority

In 2011, DEM became aware that for any dam in the state that has a Federal Energy Regulatory Commission (FERC) Permit or Exemption, DEM does not have any dam safety regulatory authority. In 2014, the following 9 dams were under FERC Authority:

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>
Central Falls / Cumberland	063	Valley Falls Pond	Low
Central Falls / Pawtucket	064	Central Falls	Low
North Smithfield	043	Slatersville Reservoir Upper	High
North Smithfield	045	Slatersville Upper Intermediate	Low
North Smithfield	393	Blackstone	Low
Pawtucket	066	Pawtucket Lower	Low
West Warwick	147	Riverpoint Pond Upper	High
West Warwick	148	Arctic	High
Woonsocket	056	Woonsocket Falls	Significant

DEM REGULATIONS

On December 20, 2007 DEM's *Rules and Regulations for Dam Safety* (Dam Safety Regulations) went into effect. The regulations, which are available on DEM's website at

<http://www.dem.ri.gov/pubs/regs/regs/compinsp/dams07.pdf>, include the following:

- Definitions of important terms including dam, hazard classifications, maintenance, repair and unsafe dam;
- Assignment of a hazard classification to each dam in the state inventory;
- Requirement that owners register their dams and notify DEM when ownership is transferred (no associated fee);
- A schedule for visual inspections of high and significant hazard dams;
- Procedure to streamline repair of high and significant hazard dams (no associated permit fee); and
- A procedure for dam owners to take emergency actions at high and significant hazard dams.

In June 2007, DEM's *Rules and Regulations for Governing the Administration and Enforcement of the Freshwater Wetlands Act* were amended to allow high hazard and significant hazard dam repair requests to be approved under the Dam Safety Regulations. The Dam Safety Program coordinates such requests with the Freshwater Wetlands Program.

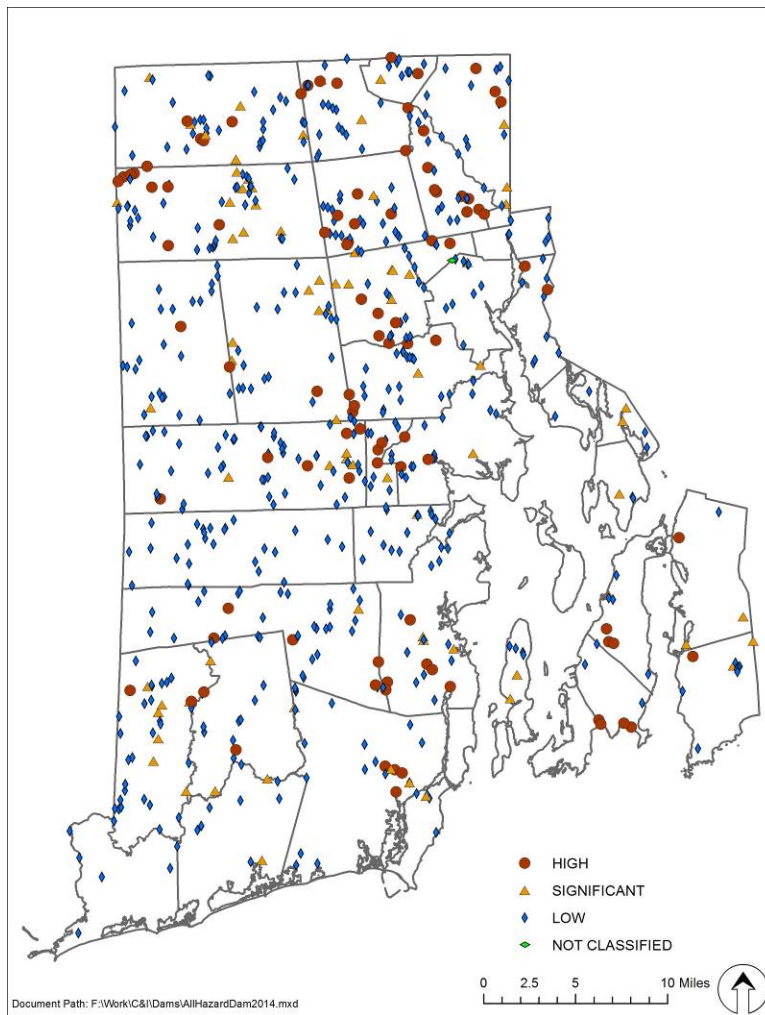
## **HAZARD CLASSIFICATIONS**

Inventoried dams are classified by the hazard, which relates to the probable consequences of failure or misoperation of the dam; it does not relate to the current condition or the likelihood of failure of the dam. The hazard classifications are defined in the Dam Safety Regulations as follows:

*High Hazard* – means a dam where failure or misoperation will result in a probable loss of human life.

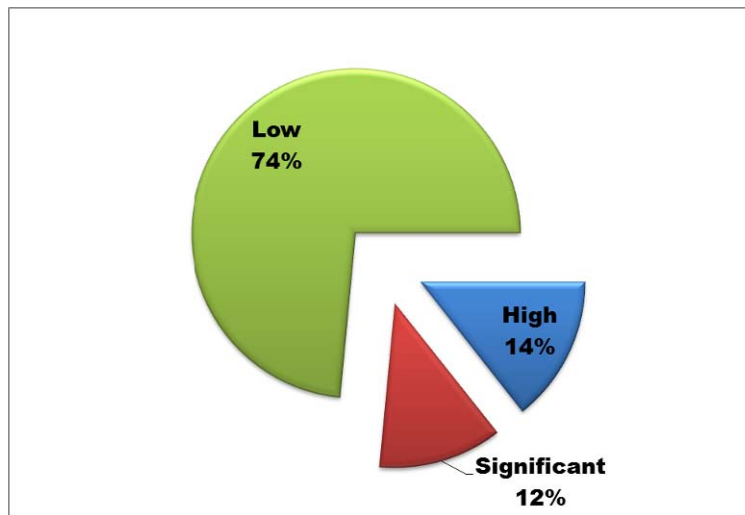
*Significant Hazard* – means a dam where failure or misoperation results in no probable loss of human life but can cause major economic loss, disruption of lifeline facilities or impact other concerns detrimental to the public's health, safety or welfare. Examples of major economic loss include washout of a state or federal highway, washout of two or more municipal roads, loss of vehicular access to residences, (e.g. a dead end road whereby emergency personnel could no longer access residences beyond the washout area) or damage to a few structures.

*Low Hazard* – means a dam where failure or misoperation results in no probable loss of human life and low economic losses.



Dams / Hazard Classifications

In 2014, there were 96 high hazard dams, 81 significant hazard dams and 491 low hazard dams, for a total inventory of 668 dams. The following chart illustrates the percentage of dams in each hazard classification:



### **INSPECTION PROGRAM**

In accordance with the Dam Safety Regulations, a dam's hazard classification determines the inspection frequency. Visual inspections of high hazard dams are required every 2 years (48 each year) and visual inspections of significant hazard dams are required every 5 years (16 each year). Low hazard dams are inspected every five years to determine whether downstream conditions have changed over time that warrant raising the hazard classification to significant or high. A high or significant hazard dam is also visually inspected upon request by any person who has cause to believe that an unsafe dam exists. In addition, a visual inspection will be performed whenever DEM has cause to believe that an unsafe dam exists, to determine if the dam is unsafe.

The visual inspections performed are conducted under a general inspection format based on guidelines established in 1976 by the United States Army Corps of Engineers for the National Program for the Inspection of (Non-Federal) Dams. A visual inspection may be performed by DEM or by an engineer hired by the dam owner.

As part of each visual inspection, the condition of the major components of the dam are subjectively rated as *good*, *fair*, *poor* or *unsafe*. The major components of a dam are the embankment, the spillway and the low level outlet. *Good* is defined as meeting minimum guidelines, where no irregularities are observed and the component appears to be maintained properly. *Fair* is defined as a component that requires maintenance. *Poor* is defined as a component that has deteriorated beyond a maintenance issue and requires repair; the component no longer functions as it was originally intended. *Unsafe* means the condition of a regulated dam, as determined by the DEM, is such that an unreasonable risk of failure exists that will result in a probable loss of human life or major economic loss. Among the conditions that would result in this determination are:

excessive vegetation that does not allow the DEM to perform a complete visual inspection of a dam, excessive seepage or piping, significant erosion problems, inadequate spillway capacity, inadequate capacity and/or condition of control structure(s) or serious structural deficiencies, including movement of the structure or major cracking.

A detailed investigation may be required if a visual inspection leads to a determination that a dam is or may be unsafe. A detailed investigation may include studies, investigations and analyses appropriate to evaluate the structural safety and hydraulic capacity of a dam or reservoir and appurtenant works, such as soil analysis, concrete or earth stability analysis, materials testing, foundation explorations, hydraulic and hydrologic analysis, including basin studies, flood potential, and an analysis of the dam's ability to pass flood waters.

Following a visual inspection performed by DEM, a dam inspection report is prepared, identifying specific deficiencies and, when warranted, recommending corrective measures. A copy of the report is forwarded to the owner, with the expectation that the deficiencies will be corrected. If a dam is determined to be unsafe, then DEM will order corrective action.

**ACTIVITIES IN 2014**

**UNSAFE DAMS**

One of DEM's primary responsibilities in the Dam Safety Program is to identify unsafe dams and take appropriate action to return the dams to a safe condition. An unsafe dam is a high or significant hazard dam whose condition is such that an unreasonable risk of failure exists.

Following a visual or detailed inspection of a dam, the owner is notified of any condition that DEM considers to be unsafe. Notification is in the form of a Notice of Violation and Order (NOV), which sets forth the unsafe condition/s and requires the owner to make the dam safe.

During 2014, DEM addressed 48 unsafe dams, as indicated in the table below. At the end of 2014, 8 of these dams were returned to a safe condition (shaded in grey below).

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>	<b>UNSAFE CONDITION(S)</b>	<b>OWNER</b>
Burrillville	027	Sucker	Significant	Vegetation prohibited inspection, plywood blocked spillway, low level outlet inoperable, auxiliary spillway modified	Bliss Golf Investors LLC
Burrillville	565	Ross	Significant	Vegetation prohibited inspection, low level outlet inoperable	George E. Binns Living Trust & Nancy F. Binns, Trustee

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>	<b>UNSAFE CONDITION(S)</b>	<b>OWNER</b>
Coventry	175	Quidnick	Significant	Vegetation prohibited inspection, low section of embankment, debris blocked low level outlet channel	YMCA Of Pawtucket Inc.
Coventry	186	Upper	Significant	Seepage & sediment transport, embankment section low, spillway discharge flowed along base of dam	Town of Coventry
Coventry	187	Middle	Significant	Vegetation prohibited inspection, embankment section failed, primary & auxiliary spillways improperly maintained	Michael E. & Roberta Soucy
Coventry	371	Pearce	High	Vegetation prohibited inspection, vegetation blocked spillway, low level outlet inoperable	Nine Howard Development, LLC
Coventry	498	Hopkins Farm	Significant	Raised spillway crest, auxiliary spillway partially filled	Jeremy Votolato, D/B/A Island Green Golf, LLC
Cranston	166	Curran Upper	High	Vegetation prohibited inspection, low level outlet inoperable	DEM
Cranston	198	Curran Lower	High	Vegetation prohibited inspection, vegetation in spillway inhibited flow, low level outlet inoperable	DEM
Cumberland	077	Diamond Hill	High	Vegetation prohibited inspection	Pawtucket Water Supply Board
Cumberland	078	Pawtucket	High	Vegetation prohibited inspection	Pawtucket Water Supply Board
Exeter	219	Boone	High	Vegetation prohibited inspection, debris in spillway affected flow, leakage with sediment transport through spillway	Boone Lake Dam Management District
Exeter	239	Slocum	High	Low level outlet inoperable	American Baptist Churches Of R.I.
Glocester	023	Smith & Sayles	Significant	Vegetation prohibited inspection	Sand Dam Reservoir Association
Glocester	514	Lake Aldersgate	Significant	Vegetation prohibited inspection, evidence of excavation into dam without a permit	New England Conference Of The United Methodist Church d/b/a Camp Aldersgate
Glocester	727	Bowdish Lower	High	Vegetation prohibited inspection, debris obstructing spillway, low level outlet operability unknown	Lynda Jean Marshall, a/k/a Lynda J. Schmidt
Glocester / Smithfield	111	Waterman	High	Vegetation/debris prohibited inspection, drainage trench clogged	Citizens For The Preservation Of Waterman Lake, Inc.



<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>	<b>UNSAFE CONDITION(S)</b>	<b>OWNER</b>
Hopkinton	226	Yawgoog	High	Vegetation prohibited inspection, low level outlet inoperable	Rhode Island Boy Scouts
Hopkinton	440	Hoxie Farm	Significant	Vegetation prohibited inspection	RI Department of Transportation
Hopkinton / Richmond	216	Wyoming Upper	High	Embankment soil missing & displaced, sinkholes, sediment at the downstream toe, possible spillway leakage, low level outlet inoperable	DEM
Jamestown	575	Jamestown Lower	Significant	Vegetation prohibited inspection, low level outlet could not be located	Town of Jamestown
Johnston	168	Oak Swamp	High	Severe embankment erosion, low level outlet inoperable	Town of Johnston
Johnston	169	Almy	High	Vegetation prohibited inspection, spillway not functioning properly, low level outlet inoperable	Town of Johnston
Johnston	170	Simmons Upper	High	Vegetation prohibited inspection, low level outlet inoperable	Town of Johnston
Johnston	171	Simmons Lower	High	Vegetation prohibited inspection, severe embankment erosion, spillway not functioning properly, low level outlet inoperable	Town of Johnston
Johnston	313	Hughesdale Upper	High	Low section of embankment, low level outlet inoperable	Jeannette Y. Fontaine Of The Fontaine Living Trust
Lincoln / North Smithfield	070	Woonsocket #1	High	Vegetation prohibited inspection	Woonsocket Water Division
Lincoln	097	Butterfly	High	Low level outlet inoperable	Town Of Lincoln
Lincoln	104	Bleachery	High	Low level outlet inoperable	Providence Casket Co.
Lincoln	649	Bridlewood Upper End	High	Vegetation prohibited inspection	Syed K. & Sehar K. Raza
New Shoreham	424	Rod & Gun Club	Significant	Vegetation prohibited inspection, auxiliary spillway not present	Estate Of George Russell James
North Kingstown	553	Belleville	Significant	Vegetation prohibited inspection, low section & large area of erosion on embankment, sediment transport thru spillway	Town Of North Kingstown
North Kingstown	710	Slocum Road Upper	High	Vegetation prohibited inspection, spillway stop log operability unknown	Maurice N. Klein & Kimberly Perry
North Providence	084	Wenscott	High	Low level outlet inoperable	Town Of North Providence
North Smithfield	067	Todd's	Significant	Vegetation prohibited inspection, low level outlet inoperable	Paul R & Karen A Hazard

TOWN	DAM NO.	DAM NAME	HAZARD CLASS	UNSAFE CONDITION(S)	OWNER
North Smithfield / Smithfield	068	Woonsocket #3	High	Auxiliary spillway blocked	Woonsocket Water Division
Portsmouth	761	Melville #1	Significant	Vegetation prohibited inspection, low level outlet inoperable	Town Of Portsmouth
Providence	093	Canada Upper	Significant	Low level outlet inoperable	City Of Providence
Smithfield	109	Stillwater	Significant	Vegetation prohibited inspection, vegetation inhibited spillway flow, low level outlet inoperable	Breakwater Preservation Conservancy
Smithfield	120	Sprague Upper	High	Vegetation prohibited inspection, low level outlet inoperable	YMCA Of Greater Providence
Smithfield	123	Hawkins	Significant	Vegetation prohibited inspection, low level outlet inoperable	Louis Lafazia
South Kingstown	549	Asa	High	Vegetation prohibited inspection, vegetation blocked spillway & low level outlet flow	Town Of South Kingstown
South Kingstown	425	Wakefield	High	Vegetation prohibited inspection, low level outlet inoperable	Town Of South Kingstown
Tiverton	742	Creamer	High	Vegetation prohibited inspection	Manuel Laureanno, Laureanno Development Corporation, Daniel T. Church Estate Homeowners' Association
Warren	479	Warren Lower	Significant	Vegetation prohibited inspection, low level outlet operability unknown	Bristol County Water Authority
Warren	480	Warren Upper	Significant	Vegetation prohibited inspection, spillway location unknown, low level outlet operability unknown	Bristol County Water Authority
West Warwick	455	Bouchar Farm	Significant	Vegetation prohibited inspection	Gary M. Appolonia/P&D Realty
Woonsocket	073	Harris	High	Vegetation prohibited inspection, low level outlet operability unknown	Woonsocket Water Division

A summary of each dam follows:

*Dam number 027 (Sucker) in Burrillville*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2011 for the unsafe conditions. In 2012 the owner cleared the vegetation, removed the plywood and hired an engineer to inspect the dam and complete a report, which was submitted to DEM. The low level outlet and auxiliary spillway issues have not been addressed. Since the owner did not request a hearing on the NOV, the case has been forwarded to the DEM's Office of Legal Services for action in Superior Court.

*Dam number 565 (Ross) in Coventry*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV and met with DEM in 2013 to discuss settlement. In 2014, DEM agreed to complete additional research to determine if the significant hazard classification is appropriate.

*Dam number 175 (Quidnick) in Coventry*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV and also worked toward compliance. In 2014, the owner resolved the vegetation and debris issues and was working toward resolution of the low embankment section.

*Dam number 186 (Upper) in Coventry*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV and also negotiated with DEM, entering a Consent Agreement in 2013 to resolve the NOV. The Consent Agreement includes a plan and schedule to return the dam to a safe condition. In 2014, compliance date in the Consent Agreement was extended to June 2014 at the owner's request, which included the addition of an analysis to determine the capacity of the spillway and to appropriately resize it if needed. The compliance date was not met and a stipulated penalty is accruing.

*Dam number 187 (Middle) in Coventry*

The dam was inspected in 2010 and DEM issued an NOV to the owners in 2012 for the unsafe conditions. The owners requested a hearing on the NOV and met with DEM in 2012 to discuss settlement. In 2013, the vegetation was removed and the owner's engineer inspected the dam. A proposal to repair the primary spillway was approved by DEM in 2013 and the repair was completed in 2014, returning the dam to a safe condition.

*Dam number 371 (Pearce) in Coventry*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2012 for the unsafe conditions. A hearing request was not entered and the owner did not contact DEM. In 2013, DEM became aware that ownership of the dam was not clear and, upon further research, determined that the owner's LLC had been revoked and the company did not legally exist. DEM closed the NOV in 2013 and will reissue it when an owner can be identified.

*Dam number 498 (Hopkins Farm) in Coventry*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner has not contacted DEM and a hearing was not requested on the NOV. The case has been forwarded to the DEM's Office of Legal Services for action in Superior Court.

*Dam number 166 (Curran Upper) in Cranston*

In 2006, DEM, as the owner of the dam, hired an engineering consultant to perform a complete evaluation of the dam as an initial step to a complete rehabilitation. The evaluation was completed in 2007. In 2008, an engineering consultant was hired to complete the final design for the project. In 2010, DEM's Dam Safety Program performed a routine inspection of the dam and determined it was unsafe. The final design was completed in 2012, which included a major reconfiguration of the spillway discharge channel and required DEM to acquire additional property adjacent to the dam. In 2012, a repair application was submitted to the Dam Safety Program, which was approved in 2013. The project went out to bid in 2013 and construction began in early 2014. Final completion is expected in mid-2015.

*Dam number 198 (Curran Lower) in Cranston*

The dam was inspected in 2010. DEM owns the dam and in 2012, DEM (Planning & Development) was notified of the unsafe conditions, which will be addressed following completion of the rehabilitation of the Curran Upper Dam discussed above.

*Dam number 077 (Diamond Hill) in Cumberland*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2013 for the unsafe condition. The owner requested a hearing on the NOV and also met with DEM in 2013 to discuss settlement. The owner subsequently removed the vegetation and DEM inspected the areas in 2013. Review of the inspection report in 2014 indicated that compliance was attained.

*Dam number 078 (Pawtucket) in Cumberland*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2013 for the unsafe condition. The owner requested a hearing on the NOV and also met with DEM in September 2013 to discuss settlement. The owner subsequently removed the vegetation and DEM inspected the areas in December 2013. Review of the inspection report in 2014 indicated that compliance was attained.

*Dam number 219 (Boone) in Exeter*

The dam was inspected in 2013 and DEM issued an NOV to the owner in 2014 for the unsafe conditions. The owner requested a hearing on the NOV and also worked toward compliance. In 2014, the owner's engineer submitted a report to address the unsafe conditions and also noted additional leakage through the embankment. DEM required that the engineer develop a monitoring plan for the leakage.

*Dam number 239 (Slocum) in Exeter*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2011 for the unsafe conditions. The owner did not request a hearing on the NOV. A Consent Agreement was entered between DEM and the owner in 2011, which resolved the NOV and provided a schedule by which the dam would be returned to a safe condition. In 2012, DEM approved the owner's proposed engineering plan to place the low level outlet into proper operation. Through 2014, the owner continued to have problems lowering the pond to complete the work.

*Dam number 023 (Smith & Sayles) in Gloucester*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 for the unsafe condition. The owner requested a hearing on the NOV and also worked toward compliance. The owner's engineer submitted a report later in 2014 that satisfied the requirements in the NOV.

*Dam number 514 (Lake Aldersgate) in Gloucester*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV. In 2014, the owner submitted an engineering report which indicated that the vegetation had been cleared and the areas inspected, revealing no further unsafe conditions. The report also satisfactorily addressed the excavated area.

*Dam number 727 (Bowdish Lower) in Gloucester*

The dam was inspected in 2009 and DEM issued an NOV to the owner in 2012 for the unsafe conditions. The owner requested a hearing on the NOV, which was held in 2014. No progress has been made toward resolving the NOV.

*Dam number 111 (Waterman) in Gloucester/Smithfield*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 for the unsafe conditions. The owner did not request a hearing on the NOV and appears to be working toward resolution of the unsafe conditions.

*Dam number 226 (Yawgoog) in Hopkinton*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV and also worked toward resolving the unsafe conditions. In 2014 the vegetation was removed, the area was inspected and an application to repair the low level outlet was submitted and approved by DEM. Full resolution is expected in 2015.



Yawgoog Dam (No. 226) in Hopkinton

*Dam number 440 (Hoxie Farm) in Hopkinton*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2013 for the unsafe condition. The owner did not request a hearing on the NOV and removed some of the vegetation in 2014.

*Dam number 216 (Wyoming Upper) in Hopkinton/Richmond*

The dam was inspected in 2011. DEM owns the dam and the DEM (Planning & Development) was notified of the unsafe conditions in 2013.

*Dam number 575 (Jamestown Lower) in Jamestown*

The dam was inspected 2012 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner did not request a hearing on the NOV and has hired an engineer to develop plans to rehabilitate the dam.

*Dam number 168 (Oak Swamp) in Johnston*

The dam was inspected in 2008 and DEM issued an NOV to the owner in 2010 for the unsafe conditions. The owner requested a hearing on the NOV. In 2013, DEM and the owner entered a Consent Agreement to resolve the NOV. The Consent Agreement provides a schedule to return the dam to a safe condition. In 2014, the owner continued to work toward compliance.

*Dam number 169 (Almy) in Johnston*

The dam was inspected and DEM issued an NOV to the owner in 2010 for the unsafe conditions. The owner requested a hearing on the NOV. In 2013, DEM and the owner entered a Consent Agreement to resolve the NOV. The Consent Agreement provides a schedule to return the dam to a safe condition.

*Dam number 170 (Simmons Upper) in Johnston*

The dam was inspected and DEM issued an NOV to the owner in 2010 for the unsafe conditions. The owner requested a hearing on the NOV. In 2013, DEM and the owner entered a Consent Agreement to resolve the NOV. The Consent Agreement provides a schedule to return the dam to a safe condition.

*Dam number 171 (Simmons Lower) in Johnston*

The dam was inspected and DEM issued an NOV to the owner in 2010 for the unsafe conditions. The owner requested a hearing on the NOV. In 2013, DEM and the owner entered a Consent Agreement to resolve the NOV. The Consent Agreement provides a schedule to return the dam to a safe condition.

*Dam number 313 (Hughesdale Upper) in Johnston*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV.

*Dam number 070 (Woonsocket #1) in Lincoln/North Smithfield*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 for the unsafe condition. The owner requested a hearing on the NOV and appears to be working toward resolution.

*Dam number 097 (Butterfly) in Lincoln*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2011 for the unsafe condition. The owner requested a hearing on the NOV. In 2012, DEM and the owner entered a Consent Agreement to resolve the NOV. The Consent Agreement provides a schedule to return the dam to a safe condition.

*Dam number 104 (Bleachery) in Lincoln*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2011 for the unsafe condition. The owner requested a hearing on the NOV and later entered a Consent Agreement with DEM in 2013, which resolved the NOV. The Consent Agreement provides a schedule by which the dam will be returned to a safe condition.

*Dam number 649 (Bridlewood Upper End) in Lincoln*

The dam was inspected 2010 and DEM issued an NOV to the owner in 2013 for the unsafe condition. The owner did not request a hearing on the NOV, but removed vegetation from their section of the dam in 2014. DEM re-inspected the area in 2014 and no unsafe conditions were observed.

*Dam number 424 (Rod & Gun Club) in New Shoreham*

In 2012 the dam was inspected and DEM issued an NOV to the owner in 2014 for the unsafe conditions. The owner requested a hearing on the NOV and appears to be working toward resolution.

*Dam number 553 (Belleville) in North Kingstown*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner did not request a hearing on the NOV.

*Dam number 710 (Slocum Upper) in North Kingstown*

The dam was inspected 2010 and DEM issued and NOV to the owners in 2012 for the unsafe conditions. The owners did not request a hearing on the NOV and cut some of the vegetation in 2013.

*Dam number 084 (Wenscott) in North Providence*

The dam was inspected in 2009 and DEM issued an NOV to the owner in 2010 for the unsafe condition. The owner requested a hearing on the NOV and in 2012, DEM and the owner entered a Consent Agreement to resolve the NOV. The Consent Agreement provides a schedule to return the dam to a safe condition.

*Dam number 067 (Todd's) in North Smithfield*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2012 for the unsafe conditions. The owner requested a hearing on the NOV and also submitted documents attempting to show that the dam is incorrectly classified as a significant hazard and should be downgraded to a low hazard. Through 2014, DEM, the dam owner and the owner of the downstream property that would be affected by failure of the dam were reviewing the documents.

*Dam number 068 (Woonsocket #3) in North Smithfield/Smithfield*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 for the unsafe condition. The owner requested a hearing on the NOV and appears to be working to resolve the unsafe condition.

*Dam number 761 (Melville #1) in Portsmouth*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2013 for the unsafe conditions. The owner requested a hearing on the NOV. In 2014, the owner submitted documents to DEM to prove that a low level outlet was not present at the dam. DEM subsequently agreed and removed the requirement that a low level outlet be placed into proper operation. The owner is working to address the remaining unsafe conditions.

*Dam number 093 (Canada Upper) in Providence*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2012 for the unsafe condition. The owner requested a hearing on the NOV and entered a Consent Agreement with DEM in 2014. The Consent Agreement provides a schedule by which the dam will be returned to a safe condition.

*Dam number 109 (Stillwater) in Smithfield*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2011 for the unsafe conditions. The owner did not request a hearing on the NOV and the case was forwarded to DEM's Office of Legal Services for action in Superior Court.

*Dam number 120 (Sprague Upper) in Smithfield*

The dam was inspected in 2009 and DEM issued an NOV to the owner in 2010 for the unsafe conditions. The owner requested a hearing on the NOV. In 2010, DEM determined that it previously authorized the owner to abandon the low level outlet, resolving that issue. In 2013, the owner submitted an inspection report that showed that the vegetation was removed and no unsafe conditions were observed.

*Dam number 123 (Hawkins) in Smithfield*

The dam was inspected in 2011 and DEM issued an NOV to the owner in 2013 to address the unsafe conditions. The owner requested a hearing on the NOV.



*Dam number 549 (Asa) in South Kingstown*

The dam was inspected in 2013 and DEM issued an NOV to the owner in 2014 for the unsafe conditions. In 2014, the owner's engineer submitted a report that satisfied the requirements in the NOV.

*Dam number 425 (Wakefield) in South Kingstown*

The dam was inspected in 2010 and DEM issued an NOV to the owner in 2011 for the unsafe conditions. The owner requested a hearing on the NOV and has been working to resolve the unsafe conditions. The vegetation issue was resolved when the owner submitted an inspection report to DEM in 2012. The owner worked with federal and state agencies, which were designing a replacement fish ladder for the dam, to incorporate a low level outlet into the design. Installation of the low level outlet was ongoing in 2014.

*Dam number 742 (Creamer) in Tiverton*

The dam was inspected in 2010 and DEM issued an NOV to the owners in 2011 for the unsafe condition. The owner did not request a hearing on the NOV. In 2013, DEM filed a lawsuit against the owners. Concurrently, DEM's Office of Legal Services completed additional research that identified 27 property owners whose recorded deeds include language that required them to form the Daniel T. Church Estate Homeowners' Association and maintain the dam. These property owners were formally informed of their responsibilities by DEM in 2013. In 2014, the homeowners' association was formed and much of the vegetation was removed.

*Dam number 479 (Warren Lower) in Warren*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 for the unsafe conditions. The owner requested a hearing on the NOV and is working toward compliance. In 2014, the owner's engineer submitted a report to satisfactorily address the vegetation issue.

*Dam number 480 (Warren Upper) in Warren*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 to address the unsafe conditions. The owner requested a hearing on the NOV and appears to be working to resolve the violations.

*Dam number 455 (Bouchar Farm) in West Warwick*

The dam was inspected in 2011 and DEM issued an NOV to the owners in 2014. Both owners requested a hearing on the NOV.

*Dam number 073 (Harris) in Woonsocket*

The dam was inspected in 2012 and DEM issued an NOV to the owner in 2014 to address the unsafe conditions. The owner requested a hearing on the NOV.

COMPLIANCE INSPECTIONS

The Dam Safety Regulations (see page 4) require visual inspection of high hazard dams every 2 years and significant hazard dams every 5 years.

### High Hazard Dam Inspections

44 high hazard dams were inspected in 2014, as indicated in the table below. The inspections were completed by DEM or by engineering consultants hired by DEM using a Federal Emergency Management Agency (FEMA) grant (see page 23) or hired by the dam owner.

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>
Burrillville	008	Harrisville Pond
Coventry	167	Flat River Reservoir
Coventry	185	Black Rock Reservoir
Coventry	371	Pearce Pond
Coventry	561	Arnold Pond
Cranston	198	Curran Lower Reservoir
Cumberland	074	Miscoe Lake
Cumberland	077	Diamond Hill Reservoir
Cumberland	078	Pawtucket Reservoir
East Providence	407	James V Turner Reservoir
East Providence	446	Bucklin Point
Exeter	221	Browning Mill Pond
Foster	163	Westconnaug Reservoir
Foster	349	Spear Pond
Glocester	018	Burlingame Reservoir Upper
Glocester	401	Lake Washington
Glocester	555	Hawkins Pond
Glocester	566	Bowdish Reservoir
Glocester	727	Bowdish Lower
Glocester / Smithfield	111	Waterman Lake
Hopkinton / Richmond	216	Wyoming Upper
Johnston	313	Hughesdale Pond Upper
Lincoln	099	Moffett Pond
Lincoln	101	Barney Pond
Lincoln	102	Olney Pond
Lincoln	104	Bleachery Pond
Lincoln	391	Handy Pond Upper
Lincoln	408	Bridlewood Pond
Lincoln	649	Bridlewood Upper End
North Kingstown	513	Carr Pond
North Kingstown	615	Rodman Mill
North Kingstown	693	Slocum Woods
North Kingstown	708	Shady Lea Mill
North Smithfield	046	Slatersville Reservoir Middle

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>
North Smithfield / Smithfield	068	Woonsocket Reservoir # 3
Richmond	261	White's Pond
Scituate	161	Gainer Memorial
Smithfield	108	Stillwater Reservoir
Smithfield	121	Sprague Lower Reservoir
Smithfield	126	Georgiaville Pond
South Kingstown	549	Asa Pond
Warwick	462	Camp Warwick Pond
West Warwick	149	Centerville Pond
Woonsocket	073	Harris Pond

*Significant Hazard Dam Inspections*

27 significant hazard dams were inspected in 2014, as indicated in the table below. The inspections were completed by DEM or by engineering consultants hired by DEM using a FEMA grant (see page 23) or hired by the dam owner.

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>
Burrillville	015	Union Mill Pond
Burrillville	039	Spring Lake
Burrillville	051	Nichols Pond
Coventry	152	Mill Pond
Coventry	175	Quidnick Reservoir
Coventry	187	Middle Pond
East Greenwich	432	Gale Farm Pond Upper
Foster	526	Gorham, N. Farm Pond
Glocester	023	Smith + Sayles Reservoir
Glocester	032	Snakeskin Pond
Glocester	354	Coomer Lake
Glocester	514	Lake Aldersgate
Hopkinton	227	Ashville Pond
Johnston	127	Belknap Pond
Johnston	323	Caesarville Pond
Johnston	346	Kimball Reservoir
Johnston	504	Dexter Farm Pond
Narragansett	733	Sprague Pond
New Shoreham	424	Block Island Rod & Gun Club Pond
North Kingstown	550	Hamilton Reservoir
North Kingstown	553	Belleville Pond
North Kingstown	704	Secret Lake
Richmond	273	Wood River Junction
Scituate	345	Jordan Pond

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>
Scituate	361	Pine Swamp Reservoir #1
Smithfield	109	Stillwater Pond
Warwick	669	Dave's Marketplace

As indicated in *Inspection Program* (see page 6), the Dam Safety Regulations require visual inspection of 48 high hazard dams and 16 significant hazard dams each year. As indicated above, 44 high hazard dams and 27 significant hazard dams were inspected in 2014.

*Requested Inspections*

DEM investigates complaints for any high or significant hazard dam upon request by any person who has cause to believe the dam is unsafe. In 2014, DEM investigated the following dams based on such requests:

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>	<b>REASON FOR INSPECTION</b>	<b>CONCLUSION</b>
Coventry	167	Flat River	High	Water level low	Unfounded – level in compliance
Cranston	166	Curran Upper	High	Erosion controls not in place during repair	Founded/No Action – controls installed.
Cumberland	074	Miscoe	High	Water level low	Founded – owner to follow monitoring plan
East Providence	407	Turner	High	Water being drained	Founded/No Action – in compliance with DEM requirements
Glocester	566	Bowdish	High	Water level low	Founded – forwarded to DEM Forestry, which controls level
Hopkinton	216	Wyoming Upper	High	Leakage thru spillway	Founded – pre-existing condition, not unsafe
Hopkinton	216	Wyoming Upper	High	Water level low	Founded/No Action – pre-existing leakage & low precipitation
Johnston	168	Oak Swamp	High	Leakage thru dam	Unfounded
South Kingstown	426	Peacedale	High	Water level low	Founded/No Action – in compliance with DEM requirements
South Kingstown	426	Peacedale	High	Water level low	Founded – forwarded to DEM Wetlands

### REPAIR APPROVALS

Repairs of the following high and significant hazard dams were approved by DEM in 2014:

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>	<b>REPAIR</b>
Coventry	561	Arnold Pond	High	Stump Removal
Cumberland	074	Miscoe Lake	High	Leakage Monitoring Plan
Exeter	240	Yorker Mill Pond	High	Embankment
Hopkinton	226	Yawgoog Pond	High	Low Level Outlet
Lincoln	097	Butterfly Pond	High	Low Level Outlet



*Right section of embankment at Yorker Mill Dam (No. 240) in Exeter, repaired in 2014*

### OWNER / CONTACT INFORMATION

DEM's records for the owners of dams that were previously classified as high hazard or significant hazard are fairly accurate; however, many dams that were previously classified as low hazard and were reclassified to significant or high hazard have questionable owner information. DEM legal counsel has been researching ownership of these dams as time allows.

### Orphan Dams

DEM has identified 44 dams for which an owner has not been identified (or ownership is questionable). Most dams still require DEM research to identify owners, which is completed by DEM legal counsel, with the priority on unsafe dams as they are discovered. DEM refers to these dams as orphan dams and they are listed in the table below.

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>
Burrillville	015	Union Mill Pond	Significant
Burrillville	016	Pascoag Reservoir Upper	High
Burrillville	039	Spring Lake	Significant
Burrillville	051	Nichols Pond	Significant
Burrillville	051	Nichols Pond	Significant
Charlestown	758	Cross Mills	Significant
Coventry	152	Mill Pond	Significant
Coventry	176	Coventry Reservoir	High
Coventry	177	Tiogou Lake	High
Coventry	185	Black Rock Reservoir	High
Coventry	186	Upper Pond	Significant
Coventry	371	Pearce Pond	High
East Greenwich	432	Gale Farm Pond Upper	Significant
Exeter	240	Yorker Mill Pond	High
Foster	349	Spear Pond	High
Foster	526	Gorham, N. Farm Pond	Significant
Glocester	021	Cherry Valley Pond	Significant
Glocester	032	Snakeskin Pond	Significant
Glocester	381	Sucker Brook Bridge Pond	Significant
Glocester	401	Lake Washington	High
Hopkinton	227	Ashville Pond	Significant
Hopkinton / Richmond	247	Alton Pond	Significant
Johnston	323	Caesarville Pond	Significant
Johnston	504	Dexter Farm Pond	Significant
Lincoln	099	Moffett Pond	High
Lincoln	104	Bleachery Pond	High
Lincoln	649	Bridlewood Upper End	High
Little Compton	746	Adamsville Pond	Significant
Narragansett	733	Sprague Pond	Significant
North Kingstown	550	Hamilton Reservoir	Significant
North Kingstown	704	Secret Lake	Significant
North Providence	760	Louisquisset Flood Control	High
North Smithfield	048	Forestdale Pond	High

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>
Richmond	273	Wood River Junction	Significant
Scituate	160	Hope	Significant
Smithfield	116	Hopkins Pond	High
Smithfield	123	Hawkins Pond	Significant
South Kingstown	426	Peace Dale Pond	High
South Kingstown	525	Hefler Farm Pond	High
Tiverton	742	Creamer	High
Warwick	669	Dave's Marketplace	Significant
Warwick	764	Grist Mill Apartments	High
West Warwick	145	Natick Pond	High
West Warwick	149	Centerville Pond	High

### REMOVALS

There were no dam removals in 2014.

### REGISTRATION

In 2008 DEM began registering dams. The process involves mailing a registration form to each owner of a high hazard or significant hazard dam and formally notifying the owner of the dam's hazard classification. The owner then has a specific time period to return a completed registration form or to appeal ownership and/or the hazard classification. There is no fee to register a dam and the main purpose of the registration form is to obtain up-to-date contact information on the dam owner.

Through 2014, DEM has received 106 completed registration forms.

### GRANTS TO DEM

From 2000 through 2014, DEM received grants totaling \$688,257 from the Federal Emergency Management Agency (FEMA), National Dam Safety Program.

The 2014 grant was awarded in July 2013 for \$63,013 to fund the following:

\$27,000	vehicle
\$20,800	high hazard dam hydrologic & stability analyses
\$9,061	high hazard dam visual inspections
\$2,040	ASDSO dues and annual conference
\$1,890	3 file cabinets
\$1,710	cell phone service
\$480	3 GPS auto navigation units

Previous grants were used for engineering services to complete hazard classification of about 200 dams and to visually inspect high and significant hazard dams, and to purchase a vehicle, computers, tablets, cell phones and aerial photos, all of which assisted with the operation of the dam safety program.

INTERAGENCY COORDINATION

Since 2010, DEM and the Rhode Island Emergency Management Agency (RIEMA) have met on an as-needed basis to improve communication and response to dam safety emergencies. Coordination also includes a DEM review of specific sections of emergency action plans for which RIEMA requested assistance, such as a dam-specific condition that describes when the plan should go into effect (see *Emergency Action Plans* on page 25).

MEETING/SEMINAR ATTENDANCE

One dam safety staff person attended the ASDSO Annual Conference & Dam Owner workshop held in San Diego in September 2014.

DEM OWNED DAM REPAIRS

DEM continued to move forward under its Capital Development Projects program, undertaking the rehabilitation at the following DEM owned dam:

TOWN	DAM NO.	DAM NAME	HAZARD CLASS
Cranston	166	Curran Upper	High

In 2008, an engineering consultant was selected to develop the final design for the reconstruction project. Development of the final design plans continued through 2009. In 2010 negotiations proceeded with an adjacent property owner to acquire property to allow reconfiguration of the downstream spillway channel. The current discharge channel places flow along the toe of the earthen embankment; the revised design will move flow away from the dam after it passes the spillway. Efforts to acquire the adjacent property continued through 2011. In October 2012, proposed repair plans were forwarded to the Dam Safety Program for review and an approval was issued in April 2013. The work was well under way in 2014.



Curran Upper Dam (No. 166), Cranston



### EMERGENCY ACTION PLANS

Rhode Island General Laws Section 46-19-9 requires a city or town in which a high hazard or significant hazard dam is located, and a state agency that owns a high hazard or significant hazard dam, to complete by July 1, 2008, an Emergency Action Plan (EAP) for the dam (see *Statutes* on page 3). An EAP is a formal document that identifies potential emergency conditions at a dam and specifies pre-planned actions to be followed to minimize loss of life and property damage. The law mandates that the Rhode Island Emergency Management Agency (RIEMA) coordinate development of the EAPs and give final approval for an EAP to be considered complete. The law also requires DEM and the Rhode Island League of Cities and Towns to cooperate with RIEMA.

Through 2014, RIEMA has received about 47 EAPs which have been signed by the local emergency management official and submitted for review/approval. 24 EAPs have been approved by RIEMA, as indicated below:

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>
Burrillville	001	Wallum Lake	Significant
Burrillville	003	Wilson Reservoir	High
Burrillville	008	Harrisville Pond	High
Burrillville	015	Union Mill Pond	Significant
Burrillville	027	Sucker Pond	Significant
Burrillville	039	Spring Lake	Significant
Burrillville	051	Nichols Pond	Significant
Burrillville	565	Ross Pond	Significant
Burrillville	572	Wilbur Pond	High
Cranston	166	Curran Upper Reservoir	High
Cranston	198	Curran Lower Reservoir	High
Cranston	340	Meshanticut Park Pond	Significant
Exeter	221	Browning Mill Pond	High
Glocester	018	Burlingame Reservoir Upper	High
Glocester	499	Durfee Hill Wildlife Marsh #2	Significant
Glocester	566	Bowdish Reservoir	High
Hopkinton / Richmond	215	Barberville Pond	Significant
Hopkinton / Richmond	216	Wyoming Upper	High
Lincoln	102	Olney Pond	High
Little Compton	474	Simmons Pond	Significant
Narragansett	733	Sprague Pond	Significant
North Kingstown	444	Silver Spring Lake	High
Richmond	261	White's Pond	High
Smithfield	108	Stillwater Reservoir	High

### DAM MANAGEMENT DISTRICTS

Rhode Island General Laws Chapter 45-62 authorizes cities and towns to create dam management districts for the maintenance and repair of dams within their boundaries. The following two districts are currently in operation:

<b>TOWN</b>	<b>DAM NO.</b>	<b>DAM NAME</b>	<b>HAZARD CLASS</b>
Burrillville	016	Pascoag Upper	High
Exeter	219	Boone	High

In 2008 by the Town of Exeter created a district for the *Boone Lake Dam (No. 219)*, which is a privately owned, high hazard dam.

In 2009 the Towns of Burrillville and Glocester created a district for the *Pascoag Reservoir Upper Dam (No. 16)*. The dam is a privately owned, high hazard dam. The dam is located in Burrillville and the impoundment continues into Glocester.

### PROFESSIONAL ASSOCIATIONS

Rhode Island has been a member of Association of State Dam Safety Officials (ASDSO) since its inception in Denver, Colorado in 1984. ASDSO membership consists of state representatives along with corporate and individual members representing dam owners and professional engineering firms. ASDSO was formed to serve these initial functions:

- Improve efficiency and effectiveness of state dam safety programs;
- Foster public awareness;
- Facilitate inter-organizational, intergovernmental and interstate cooperation;
- Assist the dam safety community and provide a forum for the exchange of information;
- Provide representation of dam safety interests before state legislatures and before Congress; and
- Manage the association effectively through internal policies and procedures.

ASDSO has helped to improve dam safety in Rhode Island mainly through its sponsorship of regional dam safety workshops and its national annual conferences.

## **PROGRAM LIMITATIONS**

### **UNCLEAR OWNERSHIP & ORPHAN DAMS**

While a final number is not yet known, DEM expects that there will be a substantial number of high hazard dams and significant hazard dams with unclear ownership or no legal owner. DEM does not have the staff or the financial resources to conduct timely title searches to determine ownership of these dams, to routinely monitor these dams and to maintain them in a safe condition. Without identifying ownership, DEM has no way of issuing orders to correct unsafe conditions at these dams. If the cities and towns and/or the property owners who benefit from the ponds/lakes that are created by these dams are unable or unwilling to assume responsibility for the upkeep of these dams, these dams will continue to pose an increased risk of failure.

### **CONSTRUCTION OF BUILDINGS WITHIN INUNDATION AREAS BELOW DAMS**

New structures that are built within inundation areas below dams increase the number of high hazard dams and significant hazard dams and increase the risk to life and property. At present there is no statute that allows an evaluation of the risk posed by new structures within these inundation areas.

### **LACK OF FUNDING TO REPAIR OR REMOVE PRIVATELY OWNED DAMS**

About 35% of the high hazard and significant hazard dams in Rhode Island are privately owned. The cost to repair these dams can range from the tens of thousands of dollars to the hundreds of thousands of dollars, which far exceeds the financial ability of most private owners. For high hazard dams and significant hazard dams that are determined to be unsafe, this poses a risk to all residents in the State. DEM currently has the authority to issue orders to owners for unsafe dams and if the owner fails to comply with the order, DEM has the authority to repair the dam and assess the cost of the repairs to the dam owner, including the use of deed restrictions. However, DEM does not have a funding source to implement the authority.

### **INADEQUATE SPILLWAY CAPACITIES AND ENGINEERING ANALYSES**

By law, DEM is required to cause to be inspected all the dams in the state. However, the visual inspections performed by DEM do not involve full engineering analyses of the structural integrity of dams. DEM does not have the staff or the financial resources to ensure that such detailed inspections are completed. Although a visual inspection can provide indicators of underlying problems, an engineering analysis is sometimes needed to more fully assess the condition of the dam.

Climate scientists predict that we will experience more severe storms and heavy rainfall. A report entitled *Climate Change in Rhode Island: What's Happening Now & What You Can Do* states that bridges and roads will be more susceptible to damage because of more severe storms and heavy rainfall. A link to the report can be found at [http://oceanservice.noaa.gov/education/pd/climate/teachingclimate/climate\\_change\\_in\\_rhode\\_island.pdf](http://oceanservice.noaa.gov/education/pd/climate/teachingclimate/climate_change_in_rhode_island.pdf).

The same is true of dams. In the March 2010 floods 5 dams failed in Rhode Island (2 significant hazard dams and 3 low hazard dams). DEM believes that many of the high hazard dams and the significant hazard dams are unable to safely pass the amount of water that will be generated from these storms, causing the dams to overtop. Overtopping is the primary cause of dam failures. Engineering analyses of the spillway capacities of each of the 177 high hazard dams and significant hazard dams is required to determine the amount of water these dams can safely pass without overtopping. DEM does not have the staff or the financial resources to perform these analyses.

#### LACK OF EMERGENCY ACTION PLANS

EAPs identify what actions will be taken in case of an emergency at a dam, including notification and evacuation. DEM and RIEMA have been working to get Emergency Action Plans (EAPs) in place for all high hazard dams and significant hazard dams. Under current law, cities and towns were required to submit EAPs to RIEMA by July 1, 2008. As indicated in *Emergency Action Plans* on page 25, only 24 dams have approved EAPs. Responding to an emergency at a dam without an EAP increases the risk to life and property.

#### INADEQUATE STAFFING

Currently, the Dam Safety Program has 2 full time equivalents (FTEs), consisting of 1.85 FTEs (engineers/inspectors), 0.1 FTE (management) and 0.05 FTE (administrative/clerical). To successfully meet the requirements of the current statute and the Dam Safety Regulations, DEM needs an additional 1 FTE (engineer/inspector) and an additional 0.5 FTE (administrative/clerical).

#### INTENSE RAINSTORMS

On August 14, 2014 a storm hit Islip, Long Island with 13.5 inches of rain in 24 hours. Islip is 86 miles from Rhode Island. The National Oceanic and Atmospheric Administration (NOAA) modeled the impact to RI dams if that storm had struck us and their conclusion was that the storm would have caused record floods on pretty much all of the major rivers in the state. Because this storm developed so quickly, our current response capabilities would be ineffective for this type of storm.

Establishment of a notification system for dams is needed. The system could be along the lines of that used by the National Weather Service for severe weather, including a dam advisory, a dam watch and a dam warning. The intent of the system would be to coordinate the actions of officials at the Federal, State and local levels.

This completes the annual report on dam safety and the activities performed by DEM in 2014. For further information on the Dam Safety Program please contact David Chopy at (401) 222-1360, extension 7400.