NYS DEC Dam Safety Program

June 9, 2023

Presented By:

Jennifer Ross
NYSDEC Dam Safety

My background -

- 2012 - BS University of Vermont Environmental Engineering
- 2013 - DEC Environmental Remediation
- 2014 - DEC Floodplain Management
- 2016 - Dam Safety

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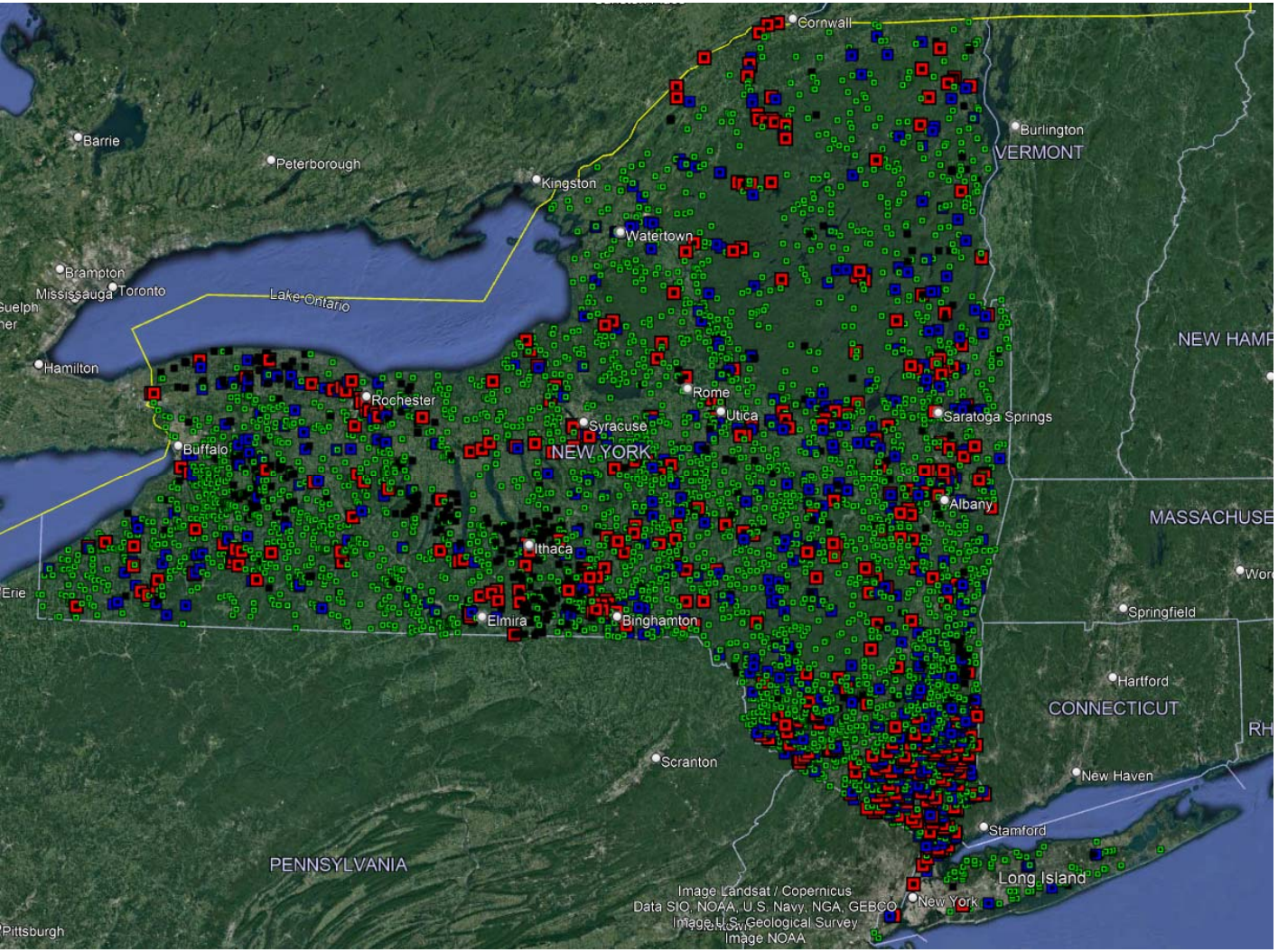

NYS Dams

- Class A- Low
- Class B- Intermediate
- Class C- High
- Class 0- Unassigned

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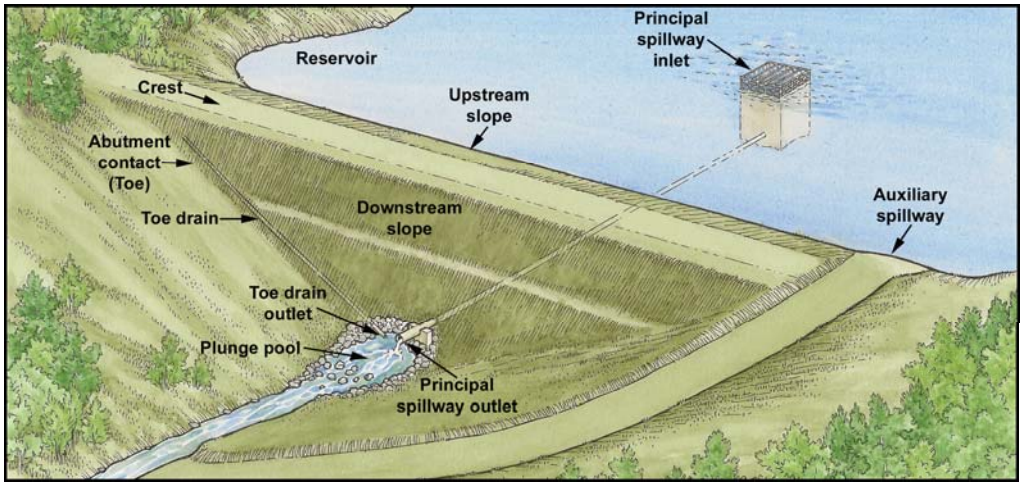
What is a Dam?

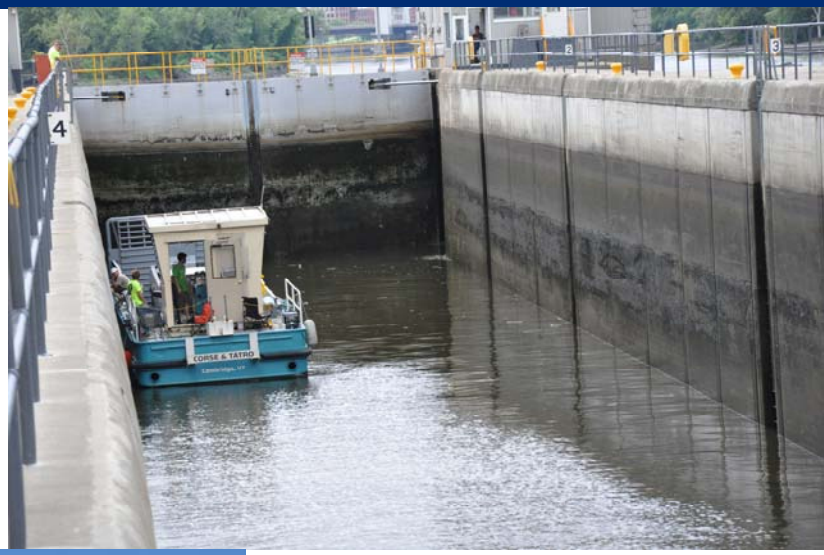
Any artificial barrier, including an earthen barrier or other structure, together with its appurtenant works, which impounds or will impound waters.



Embankment

Purpose of Dams

- Flood Control
- Water Supply
- Hydropower
- Irrigation
- Navigation (Locks)
- Recreation



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Environmental Conservation Law/Regulation

ECL 15-0507 – Dam Owner shall Operate and Maintain their Dam, and all appurtenant structures, in a Safe Condition, at all times

6 NYCRR Part 673 – Dam Safety Regulation (the Tools for Implementation of the Dam Program)

673.5 – Hazard Classification
673.6 – Inspection, Operation and Maintenance
673.7 – Emergency Action Plan (EAP)
673.8 – Annual Certification (Jan. 31st of each year)
673.11 – Notice of Property Transfer
673.12 – Safety Inspections
673.13 – Engineering Assessments
673.14/15 – Field Inspection/Investigation by the Department
673. 16 – Condition Ratings

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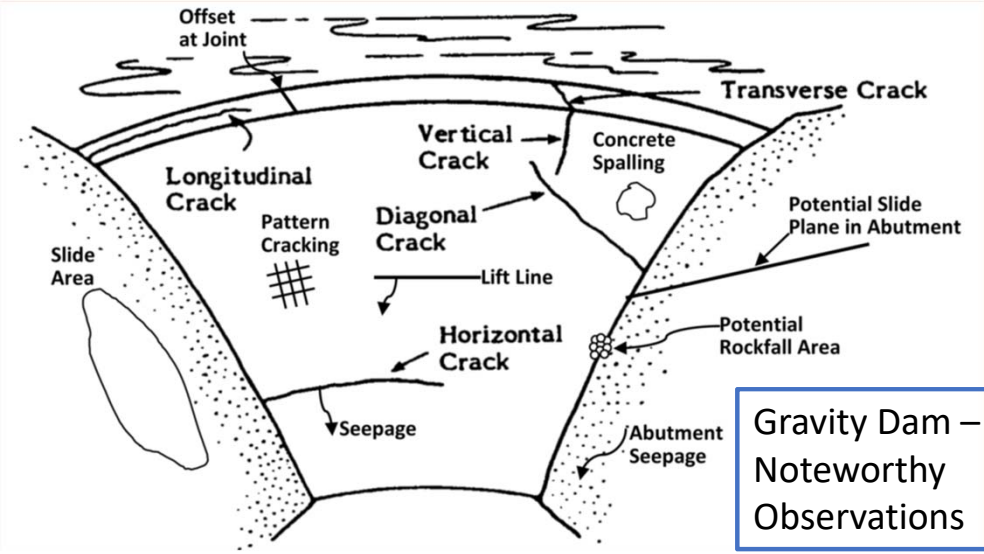
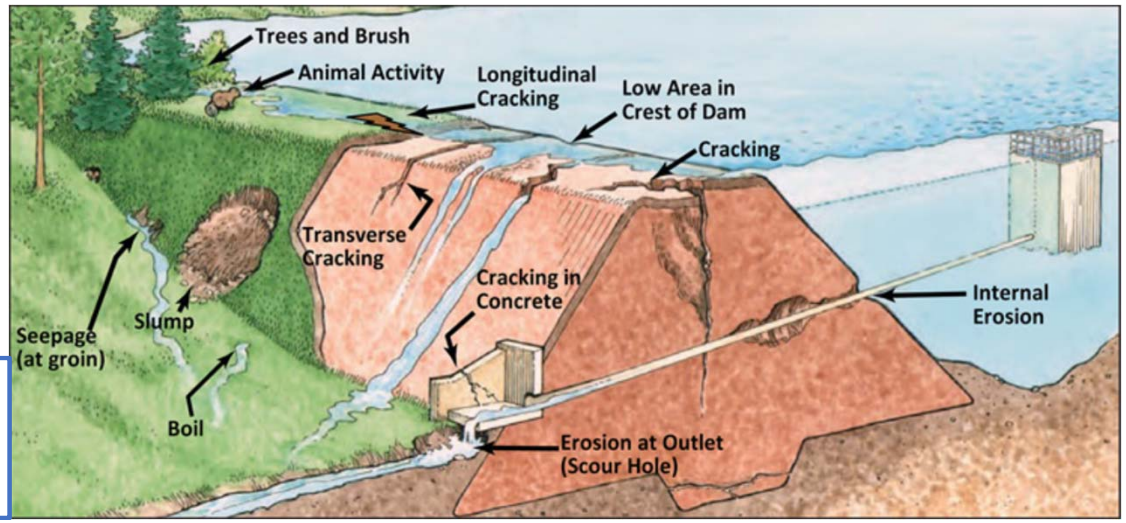
NYS Dam Safety

What we do -

- Regulatory inspections of dams by DEC engineers – Assign condition ratings
- Permit review of construction, repair, and dam removal plans
- Other Engineering and Technical reviews (EA, EAP, Hazard Class)
- Monitoring owner dam safety programs
- Emergency planning assistance
- Enforcement



Gravity Dam – Noteworthy Observations



Embankment Dam – Noteworthy Observations

Typical Inspection Report

New York State Department of Environmental Conserva
Bureau of Flood Protection and Dam Safety
625 Broadway, Albany, New York 12233-3504

Visual Observations

DAM NAME ------- DAM
STATE ID --- ---- *Section* D *Hazard Code*
COUNTY ESSEX *Inspection Dat*
NEAREST CITY/TOWN ---------- *Inspector(s):*
OWNER'S NAME ----------
DOWNSTREAM HAZARD INTERMEDIATE

WATER LEVEL BEHIND DAM Not spilling - 12 feet +/- below spillway c
DRAIN OPERATION Not operational
DEFICIENCIES

- [X] *1) Seepage*
- [ ] *2) Slope Stability*
- [X] *3)Undesirable Growth*
- [X] *4) Maintenance*
- [X] *5) Surficial Deterioration*
- [X] *6) Voids*

Accompanied by --- ----, of the Town of -----.

Upstream
Horizontal cracking on upstream face
Voids/cracking in valve structure
Light vegetative growth in the cracks
Crest
Debris (old) on crest
Two voids in crest; approx. 15 ft. of valve structure and 30 f
Downstream
Light vegetative growth in masonry; sapling growing on righ
Seepage along downstream toe in multiple locations
Approx. 5 ft x 4 ft void left of downstream rock ledge - stone
left of void

PHOTOGRAPH #'S _____

Photo 3 Dam ID# -------- ------- DAM ----/2007
Upstream face from right - Note horizontal cracking, voids in outlet structure

Photo 4 Dam ID# -------- ----- DAM -----/2007
Upstream face from left - Note horizontal cracking/voids

Photo 5 Dam ID# -------- -------- DAM ----/2007
Downstream Face - Note void at crest

Photo 6 Dam ID# ----- --------- DAM ----/2007
Left downstream face - Note void/exposed stone

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Typical Inspection Letter

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Bureau of Flood Protection and Dam Safety
625 Broadway, Albany, New York 12233-3504
P: (518) 402-8185 F: (518) 402-9029
www.dec.ny.gov

March 7, 2023

[redacted]

Re: [redacted] Dam
State ID#: [redacted]
Westerlo (T), Albany County
Intermediate Hazard, Class B
Condition Rating: "Unsound - More Analysis Needed"

Dear Dam Owners:

Jennifer Ross and I conducted a routine visual inspection at the [redacted] Dam on February 16, 2023, as part of the Department of Environmental Conservation's (Department's) ongoing Dam Safety program. The left/right nomenclature used in this letter and in the enclosed Visual Observation Reports is based on one looking downstream from the center of the crest of the dam.

Inspection

In general, the dam appears to be maintained; however, the visual appearance of the dam does not necessarily reflect an unchanging condition. The observations noted in the enclosed report are primarily maintenance items. These items should be addressed during your ongoing maintenance program, or as part of planned repairs.

Listed below are the highlights of the observations made during the inspection:

1. Wave erosion was noted along most of the upstream embankments. Runoff erosion was noted along the top of the downstream embankment.
2. The right side of the wire mesh cage is broken and can let debris enter the drop inlet spillway.
3. Moderate vegetation growth and small trees are present on the downstream slope and downstream toe.

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Regulations

This dam has a hazard classification of "Class B - Intermediate Hazard." The following table summarizes the current status of compliance for this dam for those sections of the regulations that have specific deadlines for compliance.

Compliance Status Table

Citation	Requirement	Status
673.6	Develop and implement an Inspection & Maintenance (I&M) Plan.	An I&M Plan must be available for review, if requested.
673.7	Develop and submit to the Department an Emergency Action Plan (EAP), and review and update annually thereafter. To be considered "final" a completed Promulgation and Concurrence (P&C) form must also be submitted indicating that the EAP has been distributed to and coordinated with local emergency responders.	**VIOLATION** - Our records show that an EAP does not exist for this dam.
673.8	Submit an Annual Certification to the Department by January 31st of each year (covering the previous calendar year).	**VIOLATION** - An Annual Certification has not been received for this dam.
673.13	The first Engineering Assessment (EA) of a Class B dam was due no later than August 19, 2015, and a full Engineering Assessment is due every 10 years thereafter.	**VIOLATION** - An EA has not been submitted for this dam.

The full text of the revised 6 NYCRR Part 608 and Part 673, along with technical guidance, templates and forms can be downloaded from the Dam Safety webpage at: http://www.dec.ny.gov/lands/4991.html.

Condition Rating

The Department has not received an Emergency Action Plan, an Annual Certification nor an Engineering Assessment for the dam. Therefore, the Condition Rating of "**Unsound – More Analysis Needed**" remains in accordance with 6 NYCRR Part 673.16 from the 2019 Letter by Jennifer Everleth. This Condition Rating means that the deficiencies at this dam are of such a nature that the safety of the dam cannot be assured, and that the spillway capacity and structural stability of the dam are unknown. **The owner of a dam with a condition rating of Unsound is in violation of 6 NYCRR Part 673 and ECL Article 15 Section 0507.**

Please note that Environmental Conservation Law, Section 15-0507 requires that "Any owner of a dam or other structure which impounds waters shall at all times operate and maintain said structure and all appurtenant structures in a safe condition." You should hire a professional engineer (P.E.), registered in New York State and with experience in dam safety, to fully evaluate the structure and to bring the dam fully into compliance with applicable safety criteria, as discussed in the Department's Guidelines for Design of Dams. **Please provide a written response to the Department within 60 days, identifying the plan and schedule for submitting the above outstanding items.**

Permits

Please keep in mind that any repair or construction activities related to the dam may require permits from Department. Well before beginning work on the dam, please check with the Regional Permit Administrator at the Department's Region 4 - Schenectady office at (518) 357-2455 to see if any permits are required.

Please feel free to contact me by email at Jacob.Luther@dec.ny.gov or by phone at (518) 402-0014; or Jennifer Ross at Jennifer.Ross@dec.ny.gov or by phone at (518) 402-8148 should you have any questions or wish to discuss in greater detail.

Sincerely,

Jacob Luther, EIT, Engineer Trainee
Dam Safety Section

ec: Donald Canestrari P.E., Section Chief, Donald.Canestrari@dec.ny.gov
Jennifer Ross, NYSDEC Dam Safety, Jennifer.Ross@dec.ny.gov
Dave Sherman, NYSDEC Regional Representative, Dave.Sherman@dec.ny.gov
John Weidman, NYSDEC Regional Water Engineer, John.Weidman@dec.ny.gov
Brian Wood, Albany Co. EMO, Brian.wood@albanycountyny.gov

Owner Responsibilities

- Inspection
- Maintenance
- Repair
- Operation
- Monitoring
- Emergency Action
- Regulatory compliance



Lake Placid Village Dam


… 'Owner' means any person or local public corporation who owns, erects, reconstructs, repairs, maintains or uses a dam or other structure which impounds waters."
(translation: the owner is responsible)

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Regulatory breakdown by Hazard Class

Class A, B and C dam owners:

- Inspection, Operation and Maintenance Plan
- Recordkeeping
- Obtain Dam Safety Permit for Construction/Repair work
- Property Transfer Notification*

Class B and C dam owners:

- Emergency Action Plan (EAP)
- Engineering Assessment (EA)*
- Annual Certification (AC)
- Safety Inspections by an Engineer*
- Report of Flow in Auxiliary Spillway

Is my document complete?

Emergency Action Plan

a. Does EAP conform to requirements in Part 673.7 and TOGS 3.1.3 (the components needed for proper implementation).

b. Did you review plan with the County Emergency Management Office

c. Have you had an orientation meeting and submitted the documentation that you have completed the ‘promulgation and concurrence’ – Do you have a schedule for and person identified who performs the Annual Test and updates?

Is my document complete?

Engineering Assessment (EA)

a. Does EA conform to req'ments in Part 673.13 and TOGS 3.1.4.

b. Is EA stamped and sealed by NYS Professional Engineer

c. Is there a results section which clearly identifies if the dam is in conformance with dam safety criteria (spillway capacity, stability, other…)

d. If dam does not meet safety criteria is there a schedule for further investigation and/or remedial measures?

e. Has the EAP been reviewed; has the I&M Plan been reviewed and updated such that the engineer's inspection and monitoring recommendations have been implemented.

Hazard Classification

Class A – Low hazard

Class B – Intermediate hazard

Class C – High hazard

Class "C" or "High Hazard" dam – a dam failure may result in widespread or serious damage to home(s); damage to main highways, industrial or commercial buildings, railroads, and/or important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; or substantial environmental damage; such that loss of human life or widespread substantial economic loss if likely.

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Hazard Classification - Guidance

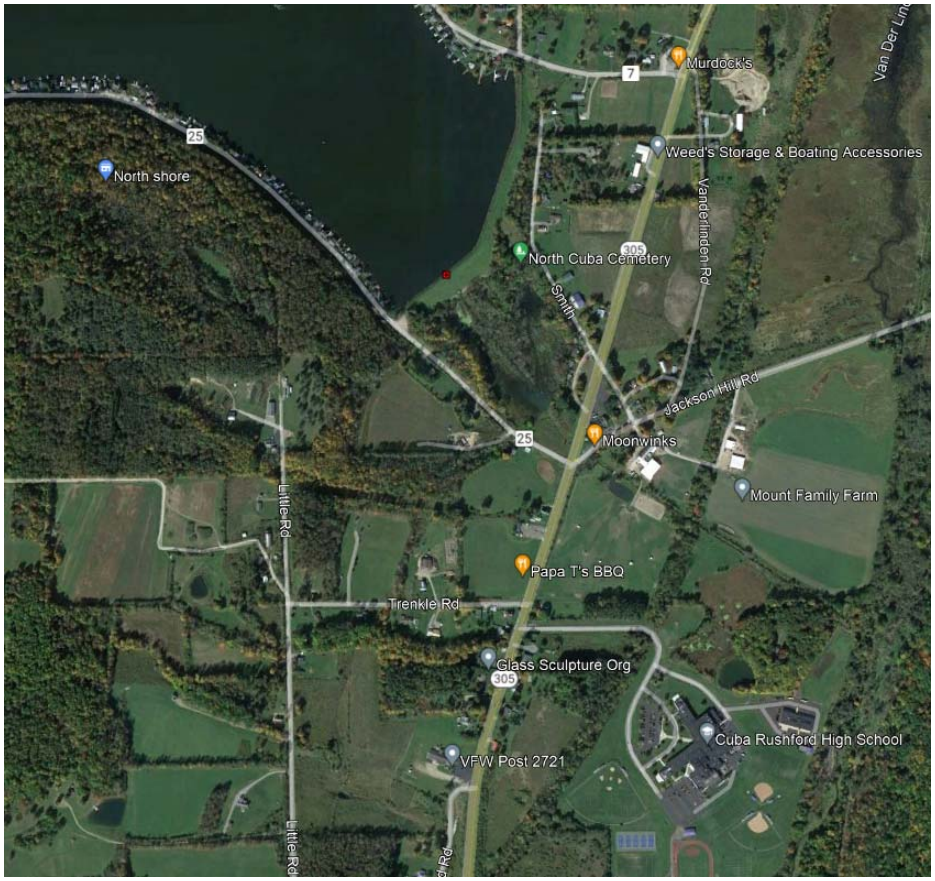
TOGS 3.1.5 Guidance for Dam Hazard Classification (Draft)

- Hazard classification process
- Dam break assessment standards
- Owner's can contest to the assigned hazard class

What factors into Downstream Hazard Classification –

Potential Downstream Impacts

- Loss of human life
- Damages to homes
- Interruption of important utilities
- Isolation of homes from emergency services
- Flooding of special or emergency care facilities



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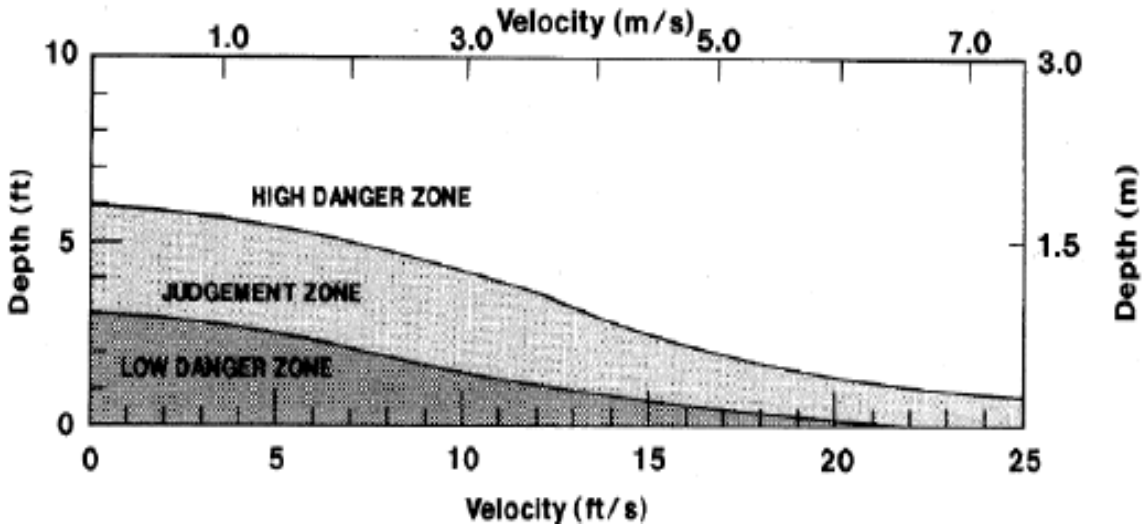
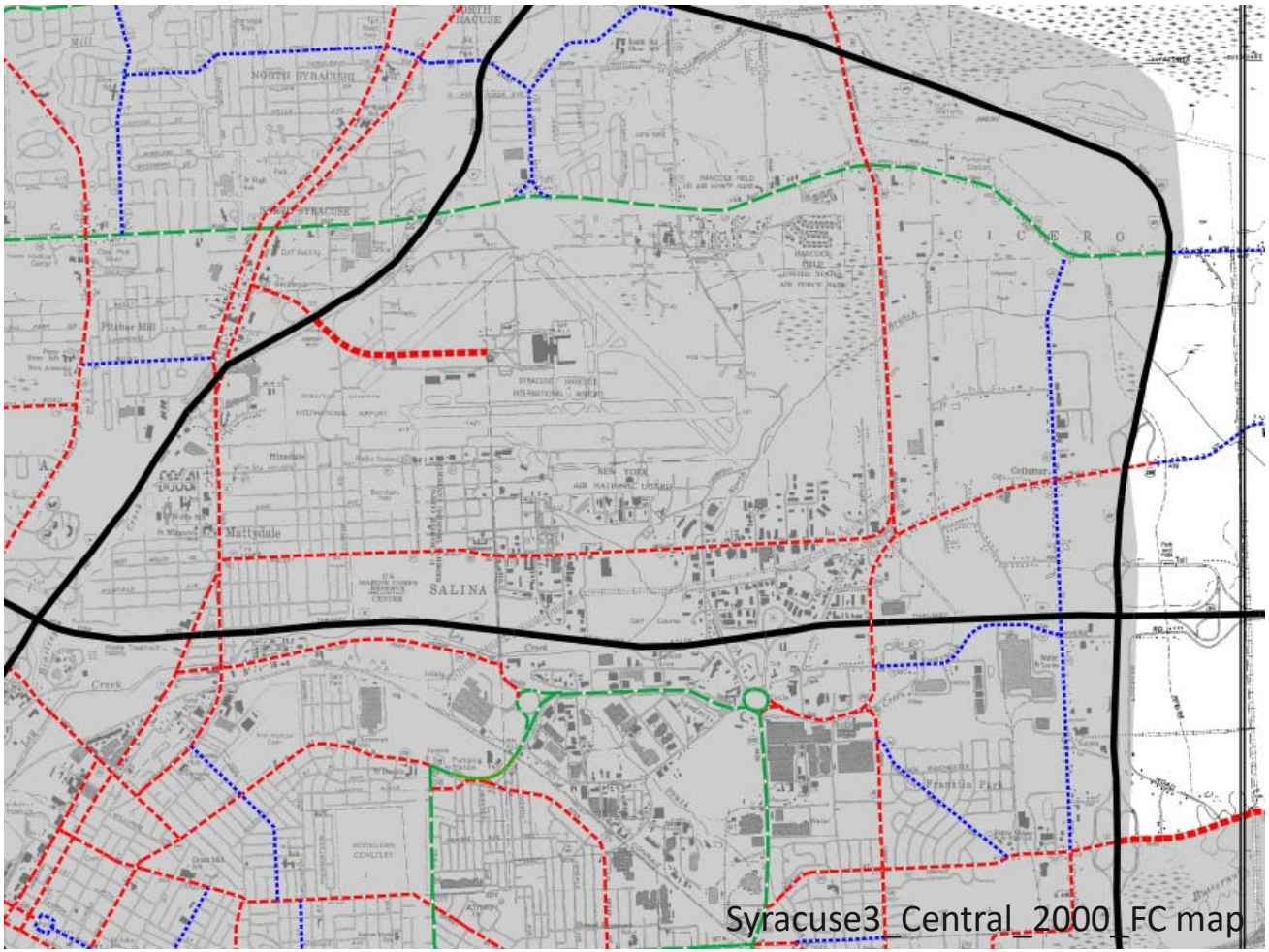
Damages to Homes - Assessment

Flood Depth	1 to 10 homes	11 to 99 homes	100 or more homes
Up to 1 ft above lowest occupied floor	A	B	C
Greater than 1 ft above lowest occupied floor	B	B	C
Above the Low Danger Zone	C	C	C

ACER 11 Table For Homes- Flood Depth vs Velocity



Impacts on Roads



Syracuse3_Central_2000_FC map

Functional Classification System				
Urban		Functional Classification	National Highway System	**Rural**
Interstate	11			01 Interstate
Principal Arterial (Expressway)	12			
Principal Arterial (Other Street)	14			02 Principal Arterial
Minor Arterial	16			06 Minor Arterial
Collector	17			07 Major Collector
				08 Minor Collector
Local	19			09 Local
Urban Area				

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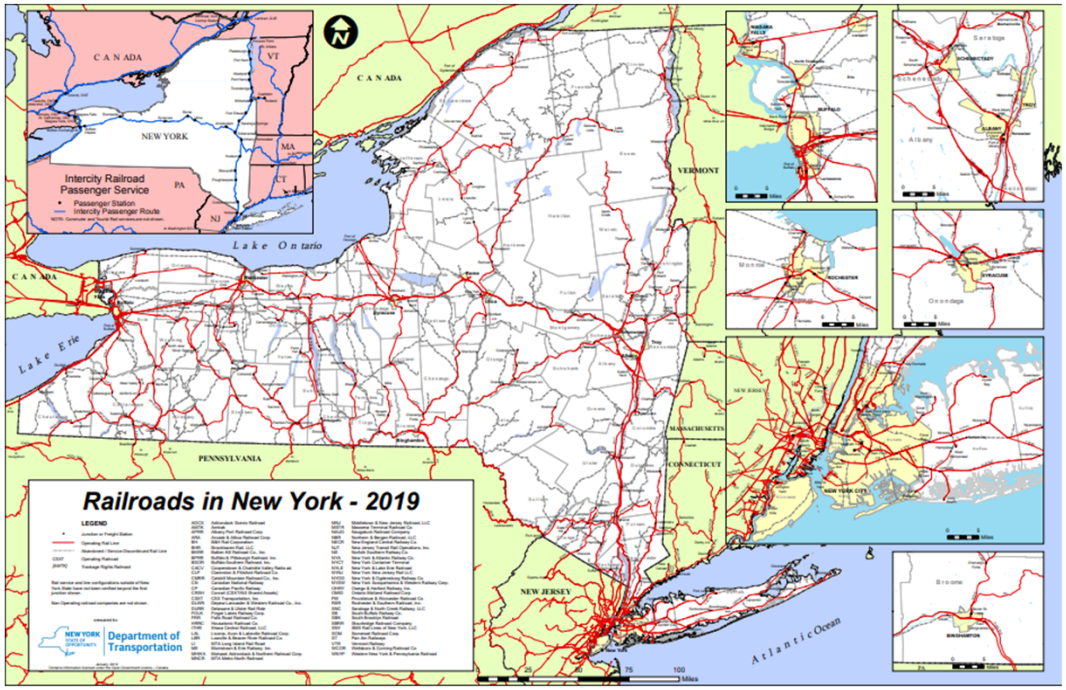
Impacts on Roads

Overtopping of road embankment

NYSDOT Functional Class	DSS Road Type	Hazard Classification
Urban – Principal Arterial Interstate	Main Highway	C
Rural – Principal Arterial Interstate	Main Highway	C
Urban – Principal Arterial Expressway	Main Highway	C
Urban – Principal Arterial - Other	Main Highway	C
Urban – Minor Arterial	Main Highway	B
Rural - Principle	Main Highway	B
Rural – Minor Arterial	Main Highway	B
Urban - Collector	Main Highway	B
Rural Major Collector	Main Highway	B
Rural Minor Collector	Minor Road	A
Rural Local	Minor Road	A
Urban Local	Minor Road	A

Impacts on Railroads

Railroad Type	Hazard Classification
Intercity passenger, Commuter and Transit lines	C
Interregional, Intercity, Utility, and STRACNET freight lines	C
Rail yards or storage sidings that could result in hazardous material release	C
Scenic and Tourist lines	B
Other freight lines	B



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Hazard Class Can Change - ‘Hazard Creep’

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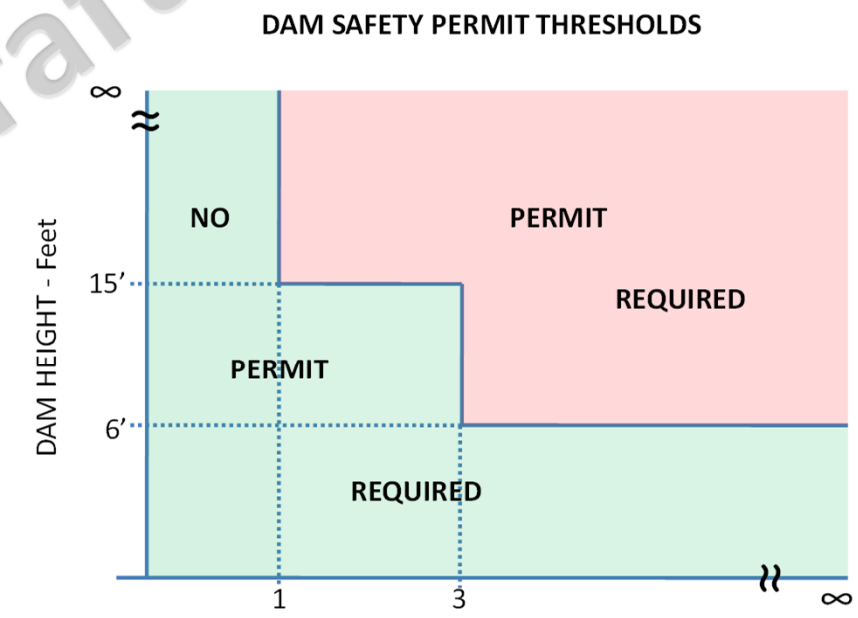
Permitting
(6 NYCRR Part 608 – Permit Criteria)



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Submission Requirements for a Dam Safety Permit

- Supplement D-1 Form
- Has dam been reviewed in conformance with NYSDEC's Guidelines for Design of Dams, Revised January 1989, and other sound engineering principles, and is remedial work bringing dam into conformance with the standards?
- Have Engineering Reports, Plans, Specifications been stamped by a licensed NYS Professional Engineer;
- Have adequate plans, sections, details been included to provide to technical review;
- Have model assumptions been clearly explained in the Engineering Report. Have model input/output/executable files been included technical submission.
- Is your EAP up to date, Ann. Cert submitted, I & M Plan updated?

Grant Opportunities

DEC DELIVERS
KEEPING YOU CONNECTED AND INFORMED
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Dam Safety Awareness Day and Grants for Dam Repair

May 31 is National Dam Safety Awareness Day. On this day, we remember the lessons learned from past dam failures and rededicate ourselves to the effective public-private partnerships that work to keep America's dams safe, operational, and resilient.

The issue of dam safety was recognized nationally in 1889 when the failure of the South Fork Dam near Johnstown, Pennsylvania, claimed more than 2,200 lives. DEC encourages you to understand the importance of properly operating and maintaining dams in preventing loss of life and economic and environmental damage. Commemorate Dam Safety Awareness Day by learning more about New York's dam safety program and DEC's role in dam oversight.

Funding for Dam Repair or Engineering Design Report

New this year, the Water Quality Improvement Project (WQIP) grant program includes "Dam Safety Repair/Rehabilitation". Municipalities can apply for up to $5 million* to repair a dam with a downstream hazard classification of Class C (High) and Class B (Intermediate) to reduce flood risk and promote climate change resilience. Find more information on DEC's WQIP webpage. Municipalities can also apply for funding from the Non-Agricultural Nonpoint Source Planning and MS4 Mapping Grant (NPG) to complete an engineering design report for a Class C or Class B hazard dam.

* Funding for this WQIP project type is contingent upon DEC's allocation of funding from the Clean Water, Clean Air and Green Jobs Environmental Bond Act.

For more information on these and future Grant Opportunities please subscribe to DEC's Making Waves Publication.

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THANK YOU!

QUESTIONS?

NEW YORK STATE | Department of Environmental Conservation

- Neal Tomann
- Putnam County Soil & Water District
- 845-878-7918
- neal.tomann@putnamcountyny.gov

- Enforcement gap:
  - There is no county level enforcement.
  - DEC corresponds directly with the dam owner and local code enforcement.
  - Be aware if you or your lake are downstream from a defective dam.
  - PC Soil & Water is the county level resource, not authority.

- Funding:
  - Water Quality Improvement Project (WQIP) Program Overview 2023 (ny.gov)
  - Pages 85 – 96. Two potential areas for funding:
    - Dam Safety Repair / Rehabilitation
    - Aquatic Connectivity Restoration (Breach)
    - Compare your situation with the goals of the grant program and the scoring criteria.

- Do what you can now.
  - Dam situations can be overwhelming. Start small(er).
    - Look for funding for the initial engineering report. (WQIP requirement)
    - Do what you can too to at least get better access.
    - Familiarize yourself with the state and local permit process.


Too steep for vehicles
Poor access to areas that need maintenance.


Negligible difference in water levels.
Aquatic Connectivity Restoration / Breach