WESTFIELD FLOOD CONTROL COMMISSION ANNUAL REPORT 2020 – 2021

THE CITY OF WESTFIELD

HAMPDEN COUNTY, MASSACHUSETTS

Submitted to:
The Honorable Mayor Donald F. Humason and the Westfield City Council
Passed:
February 17,2021
Prepared by:
Albert G. Giguere Jr.
Chairman
Westfield Flood Control Commission
59 Court Street
Westfield, MA

Overview:

Per Chapter 13 of the City of Westfield Code of Ordinances:

"The mission of the Flood Control Commission has been defined as monitoring and reporting on levees and waterways vital to the city's interest. Construction of Arm Brook and Powdermill Brook Flood Control Dams broadened this mission to include routine maintenance and essential improvements. It is therefore the mission of the Flood Control Commission to perform these duties to the fullest extent possible.

Performance Evaluation:

The municipal flood control infrastructure is identified as follows:

- **Arm Brook Flood Control Reservoir/Dam Project LCA PL 566-83**
- **Powdermill Brook Flood Control Reservoir/Dam Project LCA PL 566-83**
- **Little River Levee LCA PL 84-99**
- **Westfield River Levee**
- **Westfield River Floodway**
- **Williams Riding Way Flood Control Pumping Station**
- **Mainline Drive Flood Control Project**

Informational:

- **The United States Army Corps of Engineers (USACE) operates Flood Control Dams at Littleville & Knightville. These helps control 2 branches of the Westfield River Watershed. Their purpose is to slow and regulate the amount of water flowing downstream, towards Huntington, Russell, Westfield, Agawam, and West Springfield.**
- **The Springfield Water Authority, via Cobble Mountain Reservoir/Dam Project, controls the majority of the water flow for Little River, with Westfield's Granville Reservoir also contributing to the flow of the Little River, via Munn Brook. Several other streams in Granville, Russell, and southwest Westfield also tie into Little River. The only flood control structure downstream of Cobble Mountain Reservoir is Little River Levee.**
- **During "Major Flood" Events, Emergency Releases of Water at any of these sites could place the City at risk.**
- **The capability and functionality of these Flood Control Structures directly affects the City's Flood Insurance.**

Table of Contents:

"Flood Control Infrastructure is an idle giant, often ignored and hidden in plain view, but its importance becomes quite apparent during a flood and it has to work…"

(Albert G. Giguere Jr., 2015 WFCC-USACE Public Hearing on Little River Levee)

GENERAL INFORMATION

The Flood Control Commission is tasked by ordinance, with oversight of Westfield's Flood Control Program, its flood control facilities, and development upon the FEMA-NFIP-designated floodplain. The Westfield Flood Control Commission's role in Westfield's day-to-day operations is relatively insignificant, however the heart of our city lies between two rivers and is the primary focal point of the Westfield River Watershed. This watershed covers 517 square miles, approximately 330,000 acres, or nearly half of the water in the Berkshires & "the Foothills". It includes some 630 miles of rivers & streams, plus 4550 acres of lakes, ponds, and wetlands. The vital importance of this commission is only apparent when you consider the potential volumes of water that can and have devastated our city. Much of our City is built upon a glacial lakebed and prior to that was formerly the ancient river course of the Connecticut River. Much of our City resides upon a "rapid rise floodplain". Our city has a long history of being ravaged by flooding.

The primary river of concern is "The Westfield River", which has (2) USACE Flood Control Dams located on 2 branches of the Westfield River, upstream from our fair city:

- *"Knightville Dam" - 15.97 Billion Gallons of Flood Control Storage Capacity.*
- *"Littleville Dam" - 7.49 Billion Gallons of Flood Control Storage Capacity.*

The secondary river of concern, but of no less importance, is "The Little River", which has 3 sizable drinking-water reservoirs located upstream from our fair city:

- *"Cobble Mountain Reservoir" - 22.8 Billion Gallons.*
- *"Borden Brook Reservoir" - 2.5 Billion Gallons.*
- *"Granville Reservoir" - 1.5 Million Gallons.*

Of additional concern are "Arm Brook" and "Powdermill Brook", which pose serious risks to our residents, businesses, the Massachusetts Turnpike I-90, US Route 202/MA 10, and the CSX/Amtrak Boston-Albany Rail Corridor. Other bodies of water & tributary water courses that bear flood risk; *"Munn Brook", "Moose Meadow Brook", "Great Brook", "Buck Pond Brook", "Sandy Brook", "Barry Brook", "Simmons Brook", "Brickyard Brook", "Brickyard Ponds", and "Hampden Ponds"*.

It must also be pointed out that Westfield would serve as this area's logistical hub for any flood &/or hurricane emergency relief efforts for Western Hampden Country and nearby areas. Our city sits at the confluence of US Interstate 90 -Mass Turnpike, US Route 20, US Route 202/ MA Route 10, MA Route 187, the Boston & Albany Rail Corridor, with MA Routes 23, 57, 66, 112, and MA/CT Route 189 in proximity. Westfield is host to the Massachusetts National Guard 126th Brigade Battalion Support Unit, B Company at the Armory on Franklin Street, with the Massachusetts Air National Guard's 104th Air National Guard Fighter Unit and 3rd Battalion, 126th Aviation Regiment, Detachment 1, C Company, based at Barnes Municipal Airfield. The helicopter unit is the only MEDEVAC unit based in the Commonwealth of Massachusetts. Many people, in the surrounding towns, will rely almost entirely upon Relief and Rescue Operations based out of Westfield, during such an event. Our City's ability and burden to accommodate this role relies heavily upon our flood control infrastructure, and this commission relies entirely upon City Leaders to support our mission.

GENERAL REPORT

"The Flood Control Commission's role is a matter of Public Safety, protecting Westfield's Residents, Their Property, Their Livelihoods, and Infrastructure from Flooding."

Some serious and longstanding issues have yet to resolved. The Flood Control Commission does have plans to address them but lacks the substantial funds needed to undertake such repairs.

Primary Concern to this Commission are the following items:

- *Little River Levee Acquisition, Repair, and Rehabilitation Project.*
- *Powdermill Brook Flood Control Reservoir/Dam Rehabilitation Project.*
- *Arm Brook Flood Control Reservoir/Dam Rehabilitation Project.*
- *Failures to follow the City's NFIP-required Floodplain Management District Ordinance and lack of notification made to this Commission of permits within the floodplain.*
- *Need for a Full-Time Employee to Oversee Day-to-Day Operations & Maintenance.*
- *Claim that the Westfield Flood Control Commission is NOT a Keeper of Property.*
- *Lack of a Cohesive/Coordinated Citywide Flooding Emergency Plan.*
- *Claim that the Westfield Flood Control Commission is "Only" an Advisory Body.*

Going Concern of the Westfield Flood Commission is tied to its ordinance structure, bound with and by requirements that include pursuit of specific knowledge & training in the following;

- *Flood Control "Best Practices" (National Standards: USACE, USDA-NRCS, FEMA)*
- *Floodplain Management "Best Practices" (National Standards: FEMA, USACE)*
- *ARTICLE III Section 3-160 Floodplain Management District Ordinance (FEMA-NFIP)*
- *The National Flood Insurance Plan (FEMA-NFIP)*
- *Massachusetts Emergency Management Agency (MEMA)*
- *Federal Emergency Management Agency (FEMA)*
- *United States Army Corps of Engineers (USACE)*
- *US Department of Agriculture-National Resource Conservation Service (USDA- NRCS)*
- *Massachusetts Department of Conservation & Recreation- Office of Dam Safety (DCR-ODS)*
- *Comprehensive knowledge of all applicable local, state, & federal LCAs/regulations/laws*

Conclusion:

Overall, the City's Flood Control System is functional, however many components of its infrastructure are in various states of disrepair. The Flood Control Commission's "Performance Evaluation of 2015" found that much of the flood control infrastructure needed "Major" to "Significant" repairs. Despite ongoing efforts to address these issues, "Concerning" to "Serious" levels of deterioration continue, which negatively affect individual design capabilities and degrades the overall ability for our city to withstand a serious flooding event. The financial obligations required to repair each of the City's Flood Control Works, to "Original Design Capability", far surpasses the annual budget of this Commission. Issues tied to "Advisory Body", "Keeper of Property", "Property Designation", and the "Lack of a Fulltime City Employee" greatly complicates our mission.

In Closing, The Westfield Flood Control Commission **Cannot Attest** that all of Westfield's Flood Control Infrastructure would be able to fully withstand a sustained flooding event, such as what was observed during the 1955 Flood, or withstand the more significant 100 Year Flood Design Standard.

(Graphic Courtesy of The Westfield River Wild and Scenic Advisory Committee)

1878 Great Flood

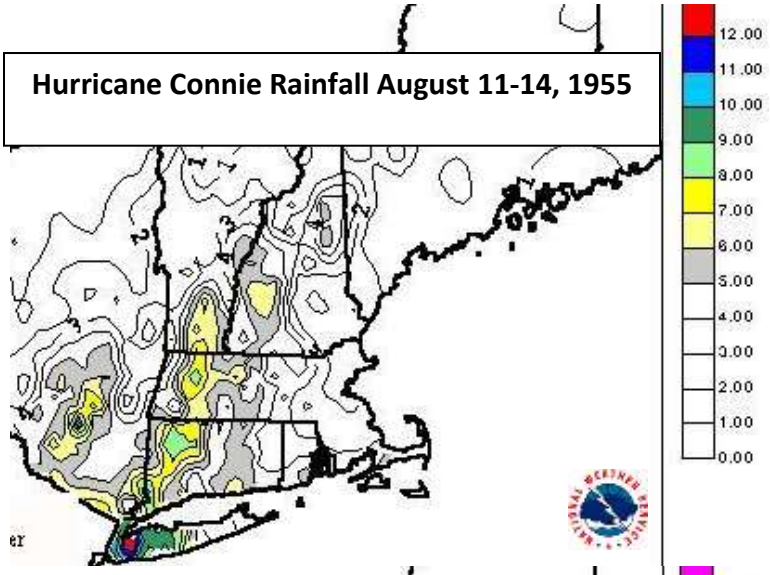
Elm Street

“Great River Bridge.”

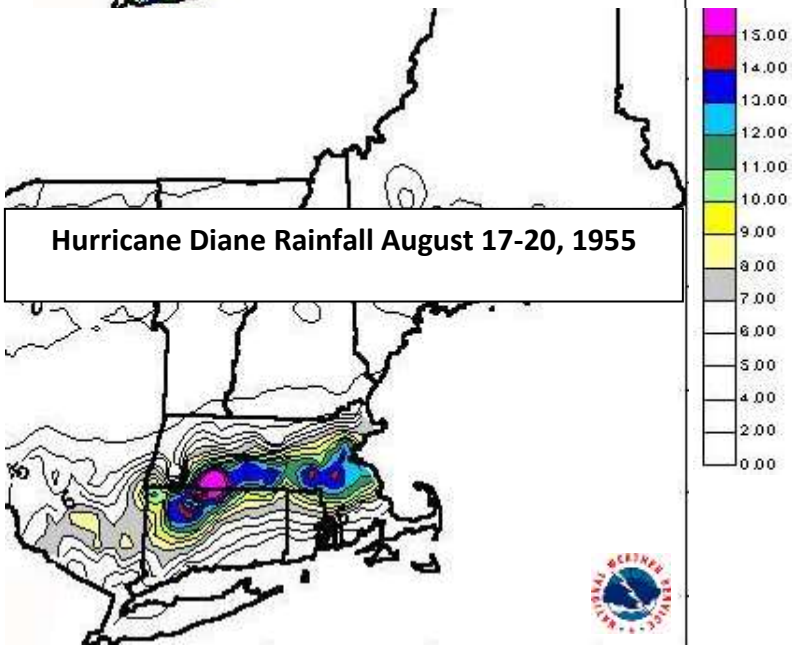
Johnson & Son Organ Factory

(Photo Credit: Westfield Athenaeum)

Hurricane Connie Rainfall August 11-14, 1955



Hurricane Diane Rainfall August 17-20, 1955



August 1955

Westfield River @ City of Westfield

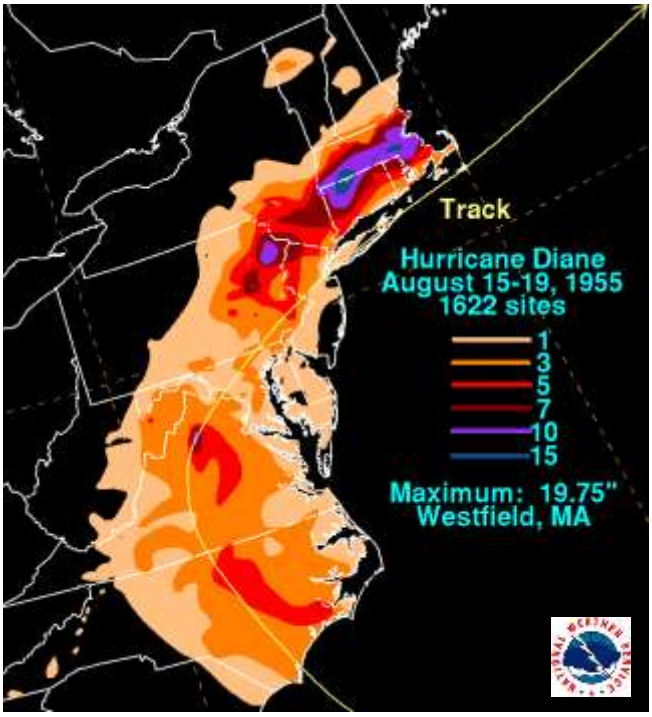
26 inches, Monthly Rainfall Total

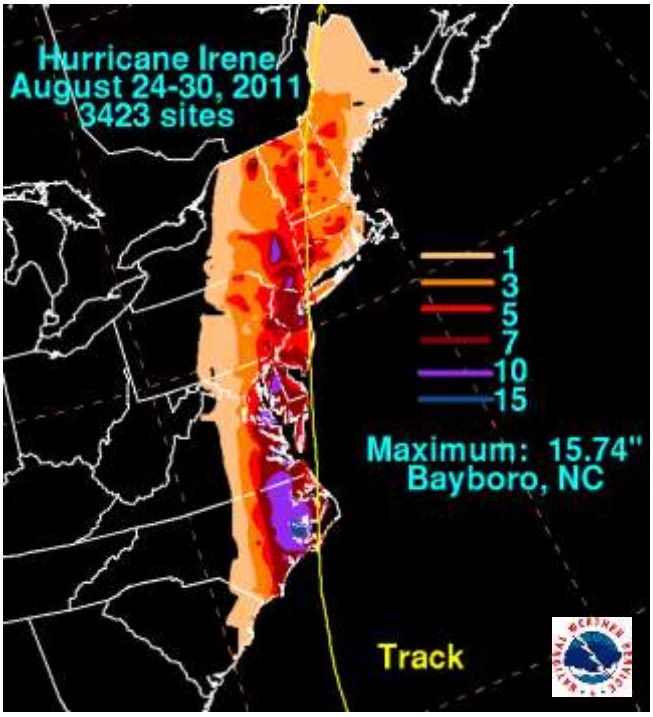
70,300 cubic feet per second

141 cubic feet per square mile

34.2 ft Above Flood Stage

Information NOAA - NWS





<u>Irene 2011</u>, <u>Great River Bridge</u>: this bridge was built following the Great Flood of 1938.
(2011 Under Restoration: Photo Credit Unknown)

The City of Westfield currently does not have any monitoring systems, staff, policy, or unified procedures established to monitor or operate our flood control dams, Little River & Westfield River Levees during flooding events. WFCC Commissioners & Westfield Emergency Management perform limited monitoring during such events.

Left: 12/25/20 Minor Flood, WFCC Chairman monitors Westfield River

Little River Levee General Report

Little River Levee was originally built as part of a Presidentially Declared Natural Disaster Relief Effort, in the aftermath of Hurricane Diane. The United States Army Corps of Engineers (USACE) constructed an approx. 2500-foot Levee that was tied-in between the NY NH & Hartford Railroad embankment (now: Columbia Greenway Trail) and an embanked railroad spur that served the Strathmore (now: Sullivan) & Steven's Papermills (now: The Mill @ Crane Pond).

In 1983, Little River Levee was damaged by a storm, and at City-request, the USACE undertook repairs of a 550-foot segment, via the US Flood Control Act of 1936, Public Law 74 -738. The City signed a Local Cooperation Agreement (LCA), under Public Law 84-99 USACE Rehabilitation & Inspection Program, which requires the sponsor to acquire, operate, and maintain to the USACE Regulatory & Safety Standards. Unfortunately, this repaired segment was never fully acquired, nor maintained to those standards.

Currently, the USACE rates the 550-foot segment as "**UNACCEPTABLE**" due to a number of unresolved USACE-identified issues, including but not limited to:

- **Serious deteriorations of two 36-inch Corrugated Metal Pipes (CMPs) that pose a risk for seepage, internal levee erosion, & the potential failure of the levee during a flood event.**
- **Ineffective backflow prevention as the flap gate valves are bypassed via CMP deteriorations.**
- **Large trees & brush growing on the 550-foot levee segment & within 15 feet of levee toe.**
- **Logs and other woody debris obstructing the CMP intakes, internal passages, & outfalls.**
- **The failure to acquire right-of-way for the regulatory footprint of a USACE levee structure.**
- **Installation of a trash rack (obstruction prevention) be installed at the intakes of the CMPs.**

Continual failures to correct the identified issues has resulted in the 550-foot segment becoming "Inactive" and thus, ineligible for federally assisted repairs, if damages are incurred due to a flood event, under the PL 84-99 LCA.

The remaining 2000-feet of levee are bisected by the 550-foot segment noted above. These 2 other segments have not been maintained for decades. They fail to meet any USACE levee safety criteria & lack a USACE PL 84-99 LCA. These segments are not routinely inspected by the USACE, but all 3 segments are regarded as the totality of the Little River Levee's design. According to USACE, this design is intended to help protect approximately 70 acres from flooding, including: Westfield DPW Headquarters & Fuel Depot, nearby Industrial Areas, South Middle School, Boys and Girls Club, United States Post Office, Big Y, & nearby residences, as indicated by USACE.

As a matter of Public Safety and Duty, it is the Flood Control Commission's desire & recommendation that the entirety of Little River Levee, be Acquired and Rehabilitated to USACE Regulatory Requirements.

The 2020 USACE Safety Inspection Report and the Westfield Flood Control Commission 2021 Little River Levee Report should be considered supplemental to this report.

City of Westfield, Massachusetts

FLOOD CONTROL COMMISSION

February 17, 2021

The Honorable Donald F. Humason, Jr.
Office of the Mayor
59 Court Street
Westfield, MA 01085

Dear Mayor Humason:

I am writing to request your consideration and support of an appropriation of $ 137,500 from the City's Certified Free Cash account to supplement the Flood Control Commissions FY2021 budget. This appropriation request is for two expenses:

$120,000 for land acquisition of 6 parcels for Little River Levee (1983 LCA- USACE), and
$17,500 for the City's contribution to a State 75/25 City cost sharing program for the design and permitting stage of repairs, (amount based on the latest information).[i]

The comprehensive explanation of the repair work required has been provided in WESTFIELD FLOOD CONTROL COMMISSION LITTLE RIVER REPORT 2020-2021, previously sent on February 2, 2021 to you and members of the City Council, Engineering Department, and Department of Public Works, and attached to this request. In summary, the City of Westfield stands in breach of the Local Cooperation Agreement (LCA) with the U.S. Army Corps of Engineers (USACE) Rehabilitation & Inspection Program and this appropriation would allow us to show we are making meaningful progress toward achieving compliance.

The City of Westfield's Flood Control Commission is tasked with, and is working very hard at, protecting the City's assets. We ask for your support in these efforts. An emergency prevented is an emergency well managed.

Should you have any additional questions, please do not hesitate to contact me directly.

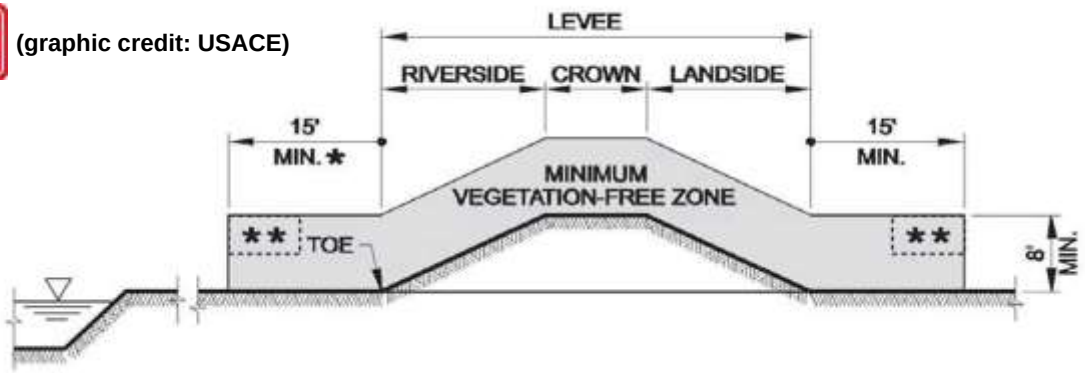
Respectfully Submitted,

Albert G. Giguere Jr.
Chairman
Westfield Flood Control Commission

---

[1] https://www.mass.gov/service-details/dam-and-seawall-repair-or-removal-program-grants-and-funds

(graphic credit: USACE)

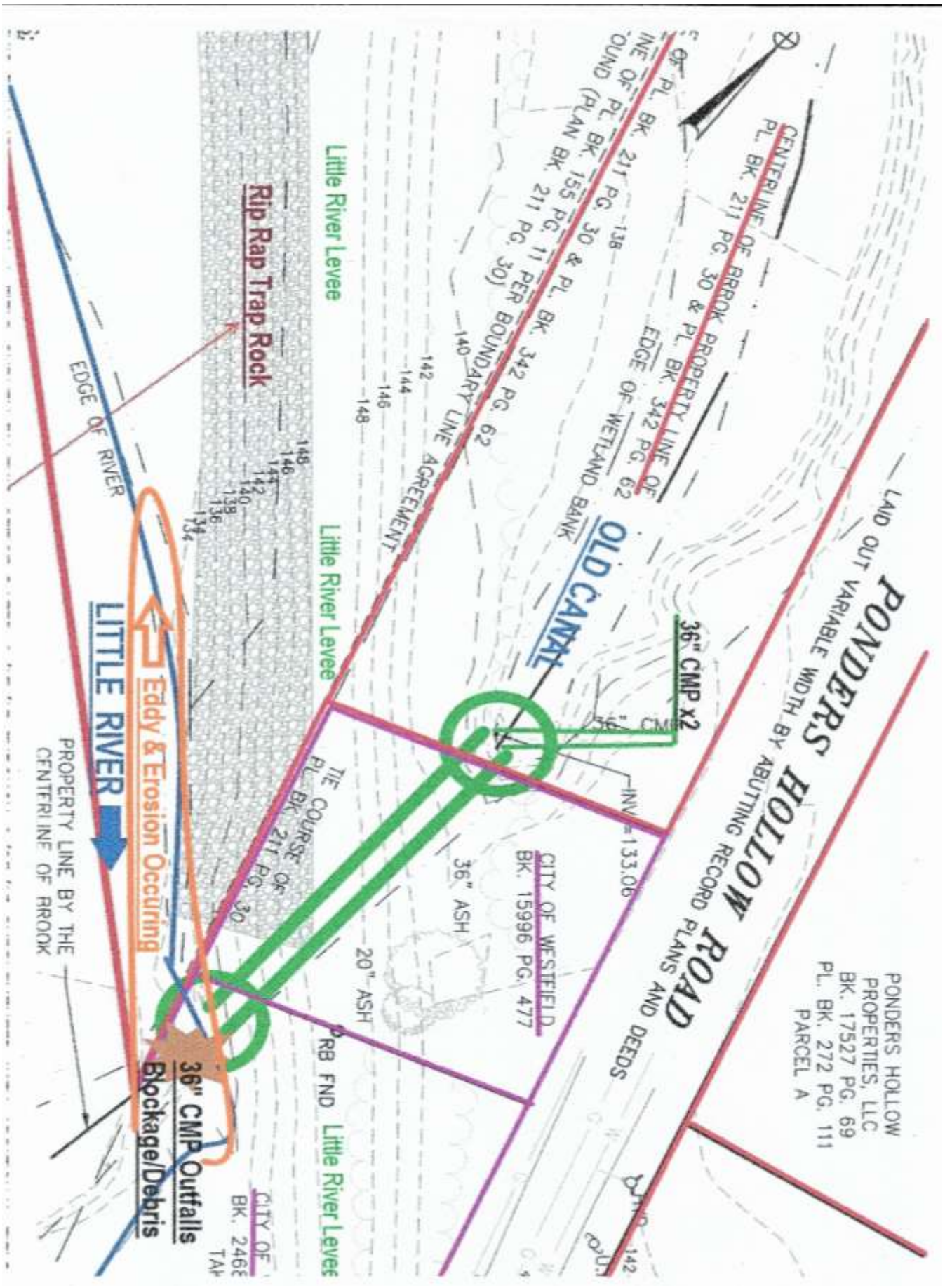


* 15' OR DISTANCE TO EDGE OF NORMAL WATER SURFACE, IF LESS

** IN THIS 4' X 7' TRANSITION ZONE, TEMPORARY OBSTRUCTION BY LIMBS AND CROWN IS ALLOWED DURING DEVELOPMENT OF NEW PLANTINGS, FOR UP TO 10 YEARS

▽ NORMAL WATER SURFACE

(Photo Credits: Albert G. Giguere Jr.)



(**Graphic Overlays Credit: Albert G. Giguere** Jr.)

Powdermill Brook Flood Control Reservoir/Dam

This Flood Control Project abuts the Twiss Street Sanitation Transfer Station/ Former Dump and Pioneer Valley Railroad spur. It was built as part of a larger Federal Flood Control Project; "Powdermill Brook Flood Control Project", started in 1961 and completed in 1964. It was designed to handle a 100 Year Flood level storm and controls 2,894 acres of runoff. The Dam contains over 100,000 cubic yards of earthen fill, and is 47ft high above the Powdermill Brook basin, utilizes a drop inlet drain to control normal flow, and has an earthen spillway to control extreme overflow. The United States Department of Agriculture -Natural Resources Conservation Service (USDA-NRCS) and the Massachusetts Department of Conservation and Recreation -Office of Dam Safety (DCR-ODS) oversee and periodically conduct safety standard inspections of the dam, per Local Cooperation Agreement (LCA) and Massachusetts Dam Safety Law. Under state law, the Flood Control Commission must contract with a certified engineer every two years, conduct a Phase 1 Safety Inspection of the dam, and submit it to the DCR-ODS, with copy provided to the USDA-NRCS. Due to its size and risk presented, it is regulated as being a High Hazard Dam. Federal, State, & Municipal funds were involved, and the original construction was authorized, conditionally, by an Act of Congress.

"*Watershed Work Plan for Watershed Protection and Flood Prevention, which was prepared under the Authority of the United States Watershed Protection and Flood Prevention Act, Public Law 566, 83rd Congress, 68 Stat. 666, as amended*."

Status:

The Powdermill Brook Flood Control Reservoir/Dam Project is in the worst overall condition versus Arm Brook Flood Control Reservoir/Dam. Having served the city for a little more than 50 years, it now requires a "Complete Rehabilitation to New Federal Standards", per the USDA-NRCS and concurred by the DCR-ODS. The City is now near the point at which it must commit to the USDA-NRCS Rehabilitation.

Conclusion:

This Flood Control Project is in "**FAIR"** Condition, based upon the DCR-Office of Dam Safety's rating guidelines, and requires a "Complete Rehabilitation". It has a number of Deficiencies and some required immediate remediation to prevent further deterioration that could become costly to repair.

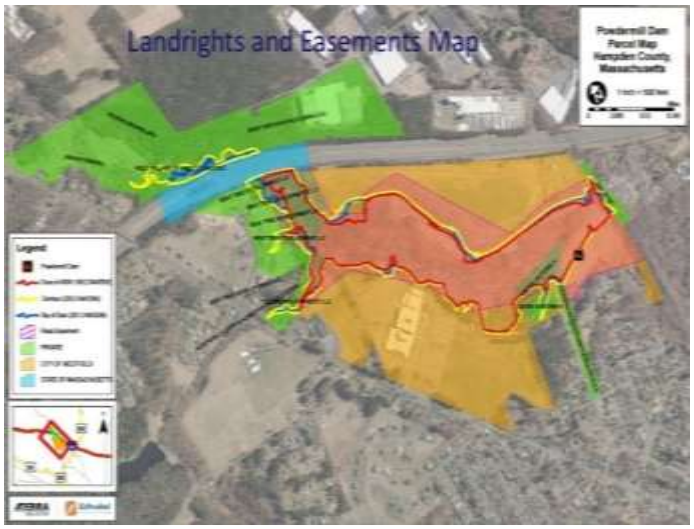
It is the Recommendation of the Westfield Flood Control Commission that the City of Westfield should pursue USDA-NRCS Preferred Alternative #2, incurring all of the permitting costs and all USDA-NRCS land taking recommendations to the ABOVE ASW Crest Elevation to help prevent possible flooding of private property and help curb incursions onto the flood control site, such as illegal dumping of yard waste, illegal ATV traffic, and other issues currently identified at Powdermill Brook Flood Control Dam. The Phase 1 Safety Inspection was recently completed and submitted and should be considered supplemental to this report.

Powdermill Brook Flood Control Reservoir/Dam

- **Note “Pathways”, illegal ATV activity causing significant surface damage to Dam.**

Top Left: Damage caused by illegal ATV activity & damaged plaque @ Park & Rec.
Middle Left: Reservoir Pool choked by weeds and siltation.
Bottom Left: Henry Warchol, Longtime Commissioner examining damage to crest.
Top Right: Dam Crest heavily eroded and damaged by decades of ATV illegal traffic.
Middle Right: ATV activity essentially has turned the dam into an illegal autocross.
Bottom Right: Riser Structure, gate valve, and weed choked reservoir pool.

(Photo Credits: Albert G. Giguere Jr.)



Preferred Alternative

USDA NRCS United States Department of Agriculture Natural Resources and Conservation Service

NRCS planning policy (Principles, Requirements & Guidelines) state that Federal investments in water resources, as a whole, should strive to maximize public benefits, with appropriate consideration of costs. Public benefits encompass environmental, economic, and social goals; include monetary and non-monetary effects; and allow for the consideration of both quantified and unquantified measures.

Alternative 2 maximizes public benefits with consideration of costs

Raise the top of dam 2 feet and construct 106-foot-wide labyrinth weir along with RCC ASW at a total project cost of $7,715,500.

- **Federal Cost = $5,587,300**
- **Nonfederal Costs = $2,128,200**

Description of Alternative 2

Raise the top of dam elevation by 2 feet to EL 205 and construct a 106-foot-wide, 4-cycle labyrinth weir at the existing ASW crest elevation. The chute of the labyrinth weir will be constructed of RCC with reinforced concrete sidewalls. An RCC stilling basin with riprap outlet protection will also be constructed at the toe of the chute.

Economic Impacts / Damages

Without Dam

- Residential Bldgs. = $71,700
- Commercial Bldgs. = $73,600
- Public Bldgs. = $5,200
- Crossings/Roadways = $85,600
- **Total Damages = $236,100**

With Dam in Place

- Residential Bldgs. = $4,900
- Commercial Bldgs. = $11,600
- Public Bldgs. = $200
- Crossings/Roadways = $25,300
- **Total Damages = $42,000**

(Photo & Info Credit USDA-NRCS, Atera Solutions, & Schnabel Engineering)

From: "Lyons, Jim - NRCS, Holden, MA (jim.lyons@usda.gov)" <jim.lyons@usda.gov>
To: Albert Giguere <albert.giguere@cityofwestfield.org>, Brother Al me <brotheral01@hotmail.com>
Cc: "Davis, Deron - NRCS, Amherst, MA" <deron.davis@usda.gov>
Date: 02/26/2020 11:53 AM
Subject: Pond drains for Powdermill and Arm Brook dam

Al,

In follow-up to our discussion last week.

As you are aware, the pond drains for both the Powdermill and Arm Brook dams have not been operated for many years (it is not known when they were last operated). Since the pond drain has not been used for a long time, it is likely that sediment and debris has accumulated in front of the pond drain valve for each of the dams. Operating the ponds drains at this time without inspection runs the risk of possibly damaging the valve stem, guides or causing the valve to be stuck open due to sediment and debris. The pond drain valve and stems should be inspected and any significant sediment/ debris be removed prior to attempting to open the valve. Significant accumulations of sediment/debris should be removed prior to opening the valve and the guides and stem should be repaired if needed. Care should be taken during opening and closing of the valves to prevent damage to the valve stem and guides. To ensure that the valves are functional, the valves should be opened and closed on yearly basis.

Functional ponds drains for both the Powdermill and Arm Brook dams are an important component of the flood water retarding dams. The purpose of the pond drains are to allow for the impoundment level to be lowered for inspection, maintenance and rehabilitation of the dam. As part of the current dam rehabilitation planning contracts the inspection of the principal spillway pipe and riser structure is being delayed due to the inability to lower the impoundment level at both of the dams to allow for video inspection of the principal spillway and riser.

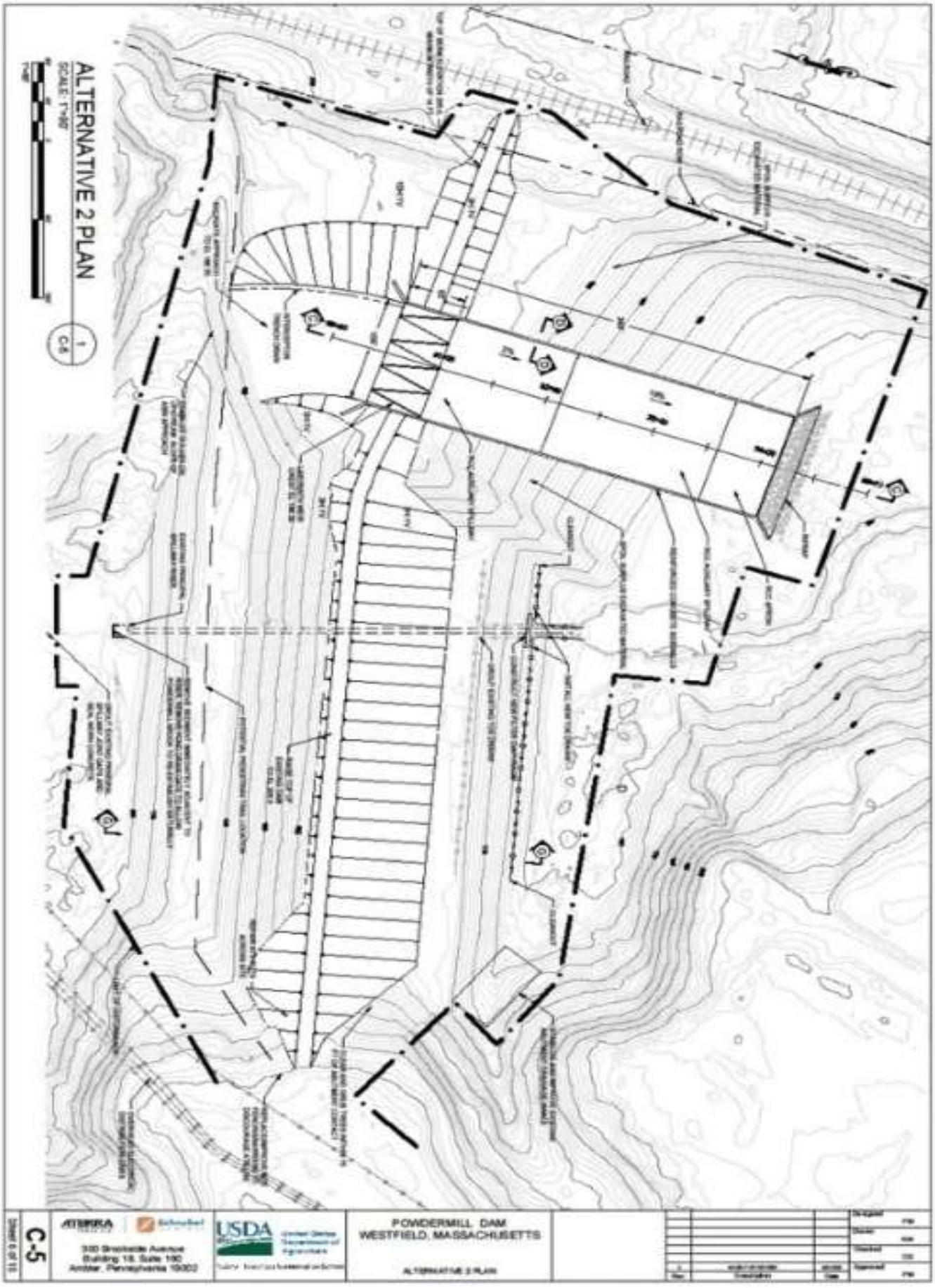
Jim

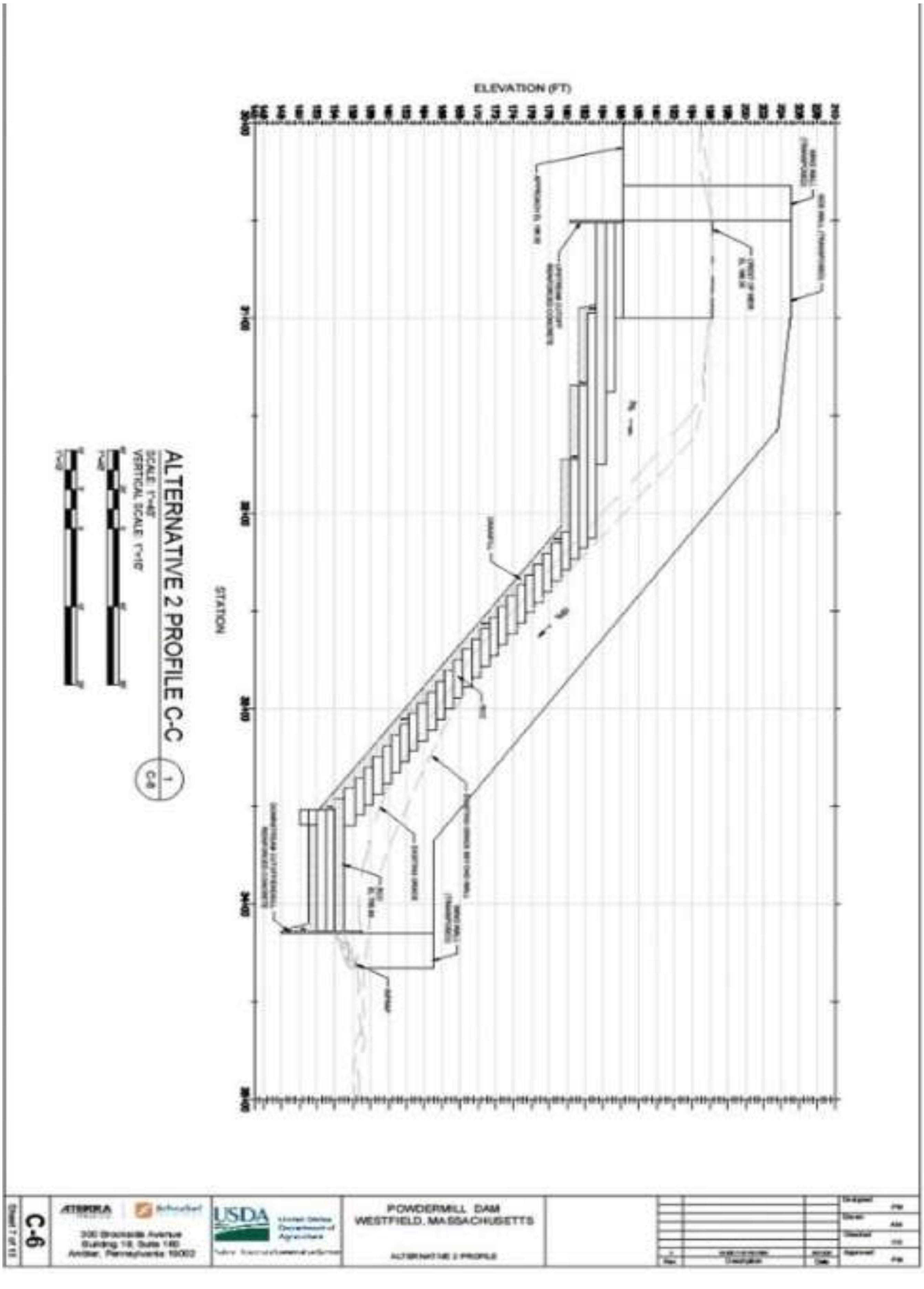
James Lyons
Civil Engineer

USDA NRCS

U.S. Department of Agriculture
Natural Resources Conservation Service
52 Boyden Rd, Suite 100
Holden, MA 01520

Phone 774-345-7027
Email: **jim.lyons@ma.usda.gov**


ALTERNATIVE 2 PLAN
SCALE: 1"=50'
C-5
POWDERMILL DAM
WESTFIELD, MASSACHUSETTS
ALTERNATIVE 2 PLAN
USDA
320 Shoreside Avenue
Building 18, Suite 180
Ambler, Pennsylvania 19002


ELEVATION (FT)
STATION
ALTERNATIVE 2 PROFILE C-C
POWDERMILL DAM
WESTFIELD, MASSACHUSETTS
ALTERNATIVE 2 PROFILE
USDA
C-6

Arm Brook Flood Control Reservoir/Dam

This is the "Jewel" of the Westfield Flood Control System. It was built as part of a larger Federal Flood Control Project; "Powdermill Brook Flood Control Project", started in 1961 and completed in 1964. It was designed to handle a 100 Year Flood level storm and controls 2,164 acres of runoff. The dam contains 77,200 cubic yards of earthen fill, is 56ft high above the Arm Brook basin, utilizes a drop inlet drain to control normal flow, and has an earthen spillway to control extreme overflow. Arm Brook Reservoir covers approx. 13 acres, with 150 acre-feet-of-water, (48,877,715 Gallons) in Non-Flood Conditions. The United States Department of Agriculture -Natural Resources Conservation Service (USDA-NRCS) and the Massachusetts Department of Conservation and Recreation -Office of Dam Safety (DCR-ODS) oversee and periodically conduct safety standard inspections of the dam, per Local Cooperation Agreement (LCA) and Massachusetts Dam Safety Law. Under state law, the Flood Control Commission must contract with a certified engineer every two years, conduct a Phase 1 Safety Inspection of the dam, and submit it to the DCR-ODS, with copy provided to the USDA-NRCS. Due to its size and risk presented, it is regulated as being a High Hazard Dam. Federal, State, & Municipal funds were involved, and the original construction was authorized, conditionally, by an Act of Congress. This including a required Forested Recreation & Wildlife Conservation purpose, titled as:

"*Watershed Work Plan for Watershed Protection and Flood Prevention, which was prepared under the Authority of the United States Watershed Protection and Flood Prevention Act, Public Law 566, 83rd Congress, 68 Stat. 666, as amended*.", and
the "*United States Fish and Wildlife Coordination Act, as amended*."

Status:

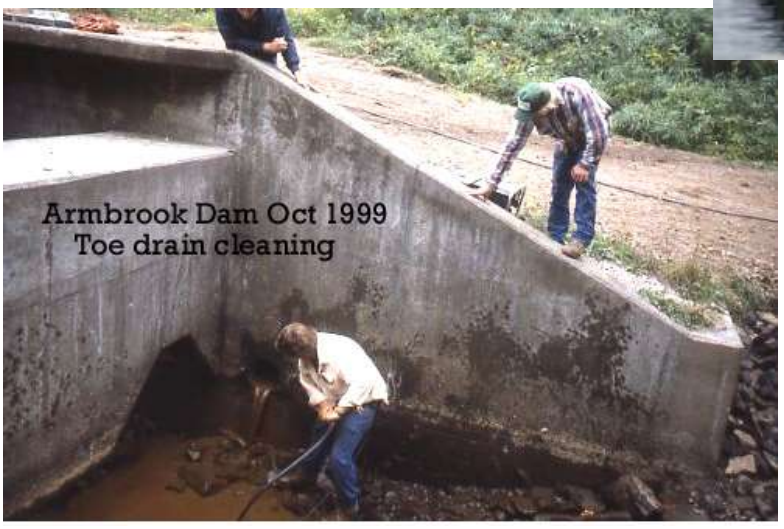
The Arm Brook Flood Control Reservoir/Dam Project is in the best overall condition versus Powdermill Flood Control Reservoir/Dam. Having served the city for a little more than 50 years, it now requires a "Complete Rehabilitation to New Federal Standards", per the USDA-NRCS and concurred by the DCR-ODS. The City is now near the point at which it must commit to the USDA-NRCS Rehabilitation.

Conclusion:

This Flood Control Project is in "**SATISFACTORY"** Condition, based upon the DCR-Office of Dam Safety's rating guidelines, and requires a "Complete Rehabilitation".

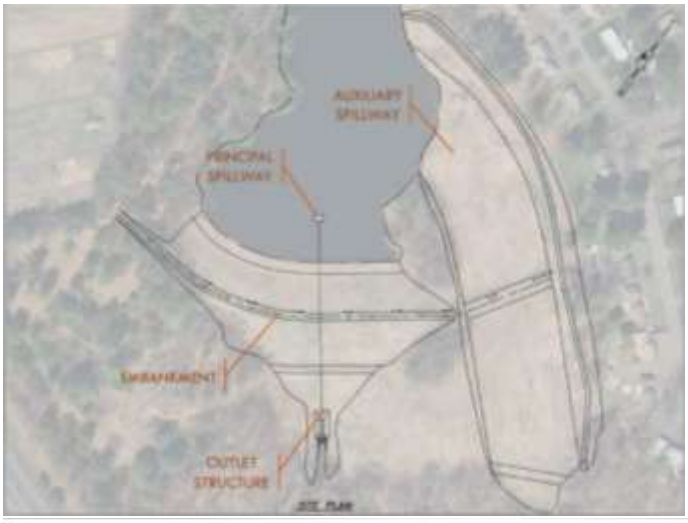
It is the Recommendation of the Westfield Flood Control Commission that the City of Westfield should pursue USDA-NRCS Preferred Alternative #3, incurring all of the permitting costs and all USDA-NRCS land taking recommendations to the ABOVE ASW Crest Elevation to help prevent possible flooding of private property and help curb incursions onto the flood control site, such as illegal dumping of yard waste, illegally placed fencing, and other issues currently identified at Arm Brook Flood Control Dam. The Phase 1 Safety Inspection was recently completed and submitted and should be considered supplemental to this report.

Arm Brook Flood Control Reservoir/Dam



Top Left: View from West End of Dam.
Upper Middle Left: Henry Warchol, Longtime Commissioner @ Dam Face.
Lower Middle Left: Work in Oct 1999 (photo credit Unknown).
Bottom Left: Illegal residential fencing at reservoir edge.
Top Right: Dam Crest Looking North.
Middle Right: Drainage Riser and Gate Valve Stem.
Bottom Left: Dam Outfall and Toe Drain 2020.

(photo credits: Albert G. Giguere Jr., except where noted)



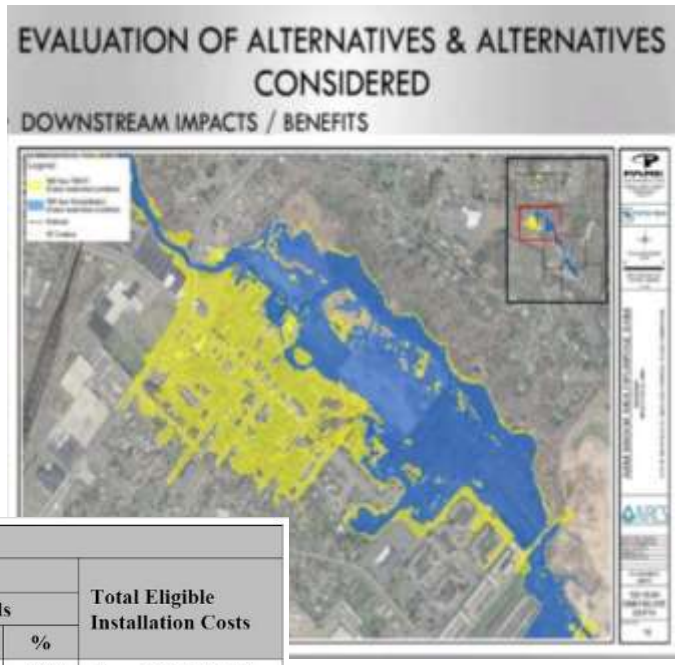


Table S-5: Estimated Project Costs

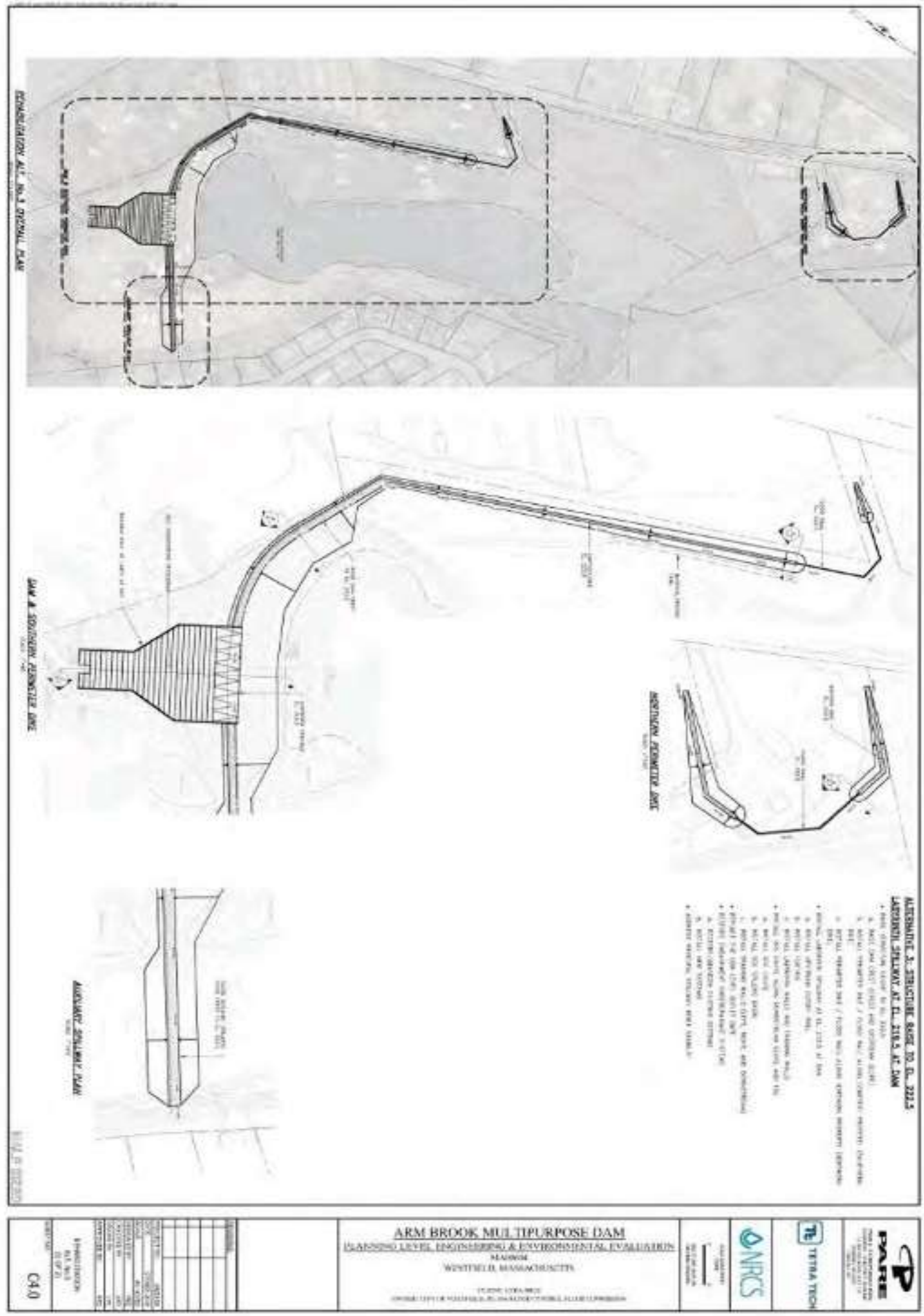
Rehabilitation Alternative #3	Source				Total Eligible Installation Costs
	PL 83-566 Funds		Other Funds		
	$	%	$	%	
Construction	$ 3,456,228.10	65%	$ 1,861,045.90	35%	$ 5,317,274.00
Engineering	$ 1,042,000.00	100%	$ -	0%	$ 1,042,000.00
Relocation	$ -	0%	$ -	0%	$ -
Real Property Rights	$ -	0%	$ 140,000.00	100%	$ 140,000.00
Natural Resources Rights	$ -	0%	$ -	0%	$ -
Project Administration	$ 250,000.00	100%	$ -	0%	$ 250,000.00
Permits	$ -	0%	$ 50,000.00	100%	$ 50,000.00
Total Costs	$ 4,748,228.10	70%	$ 2,051,045.90	30%	$ 6,799,274.00
Annual O&M Costs	$ -	0%	$ 13,750.00	100%	$ 13,750.00

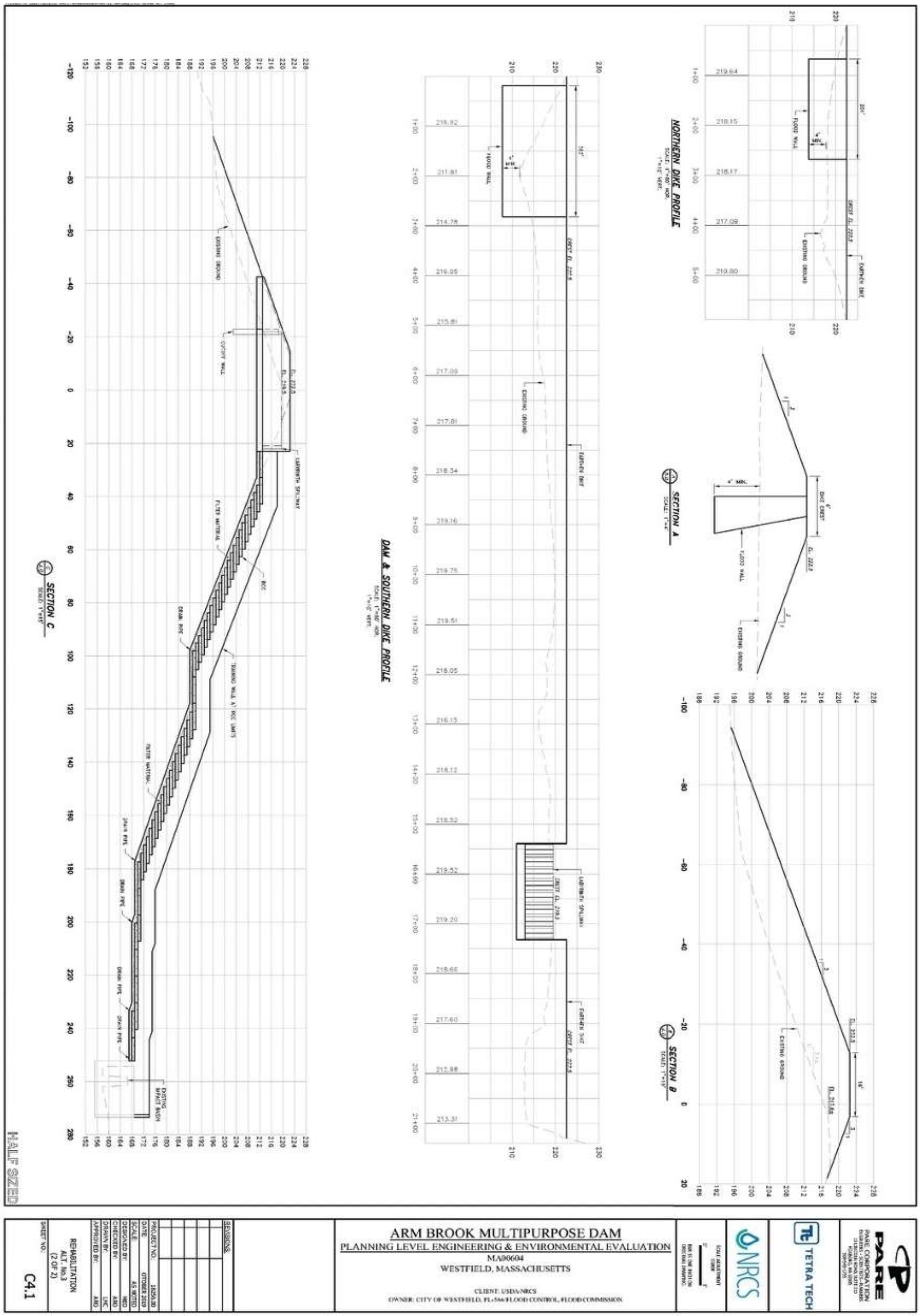
	Alternative	
	No Action Future Without Federal Investment Project (Rehabilitate to State Standards) [1]	Rehabilitate to NRCS High Hazard Potential Dam
Project Investment (rounded)	**$3,880,900**	**$6,804,300**
NED Account		
Adverse, Rehabilitation Cost, Average Annual		$214,300
Total Adverse, Average Annual	**$0**	**$214,300**
Beneficial, Damage Reduction, Average Annual		$84,100
Beneficial, FWOFI Costs Avoided , Average Annual		$127,900
Total Beneficial, Average Annual	**$0**	**$212,000**
Net Benefit		**($2,300)**

[1] The FWOFI Alternative has $3,880,900 in construction costs associated with rehabilitation to Mass DCR standards. In the NED Account display, this Adverse Annual Cost of $127,900 is tracked as a Beneficial Annual value for the Rehabilitation Alternative rather than an Adverse Annual Cost in the FWOFI Alternative.

USDA NRCS
United States Department of Agriculture
Natural Resources and Conservation Service

(Photo & Info Credit USDA-NRCS, PARE Group, & Tetra Tech)


ARM BROOK MULTIPURPOSE DAM
PLANNING LEVEL ENGINEERING & ENVIRONMENTAL EVALUATION
WESTFIELD, MASSACHUSETTS
NRCS
TETRA TECH
PARE
C4.0


NORTHERN DIKE PROFILE
SECTION A
SECTION B
DAM & SOUTHERN DIKE PROFILE
SECTION C
HALF SIZED
ARM BROOK MULTIPURPOSE DAM
PLANNING LEVEL ENGINEERING & ENVIRONMENTAL EVALUATION
MA00604
WESTFIELD, MASSACHUSETTS
CLIENT: USDA-NRCS
OWNER: CITY OF WESTFIELD, PL-566/FLOOD CONTROL, FLOOD COMMISSION
PARE CORPORATION
TETRA TECH
NRCS
REHABILITATION
ALT. No.3
(2 OF 2)
C4.1

Westfield River Levee

The "Westfield River Levee" was built, destroyed by floods, and then rebuilt numerous times, over a 200-year period. Following the 1955 Flood, the current earthen levee structure was partially rebuilt, reinforced, and enhanced with input from USACE. It begins just north of Congress and Ellsworth Streets, passing North of the Army National Guard Armory on Franklin Street. It continues downstream, along the south side of Whitney Park, is then incorporated into the former railroad bridge abutment and Twin Great River Bridge's southern abutments, then continues downstream; north of the residential areas off Meadow Street, ending not far beyond the Williams Riding Way Pumping Station. This levee structure protects the downtown business and residential areas south of the Westfield River during extreme flooding and relies on the Williams Riding Way Pumping Station to remove any water that may accumulate within the protected area. Additionally, the Westfield River Scenic Walkway/Trail now tops a portion of this levee; intersects with the Columbia Scenic Bikeway and will serve our City with an additional use for recreation.

Status:

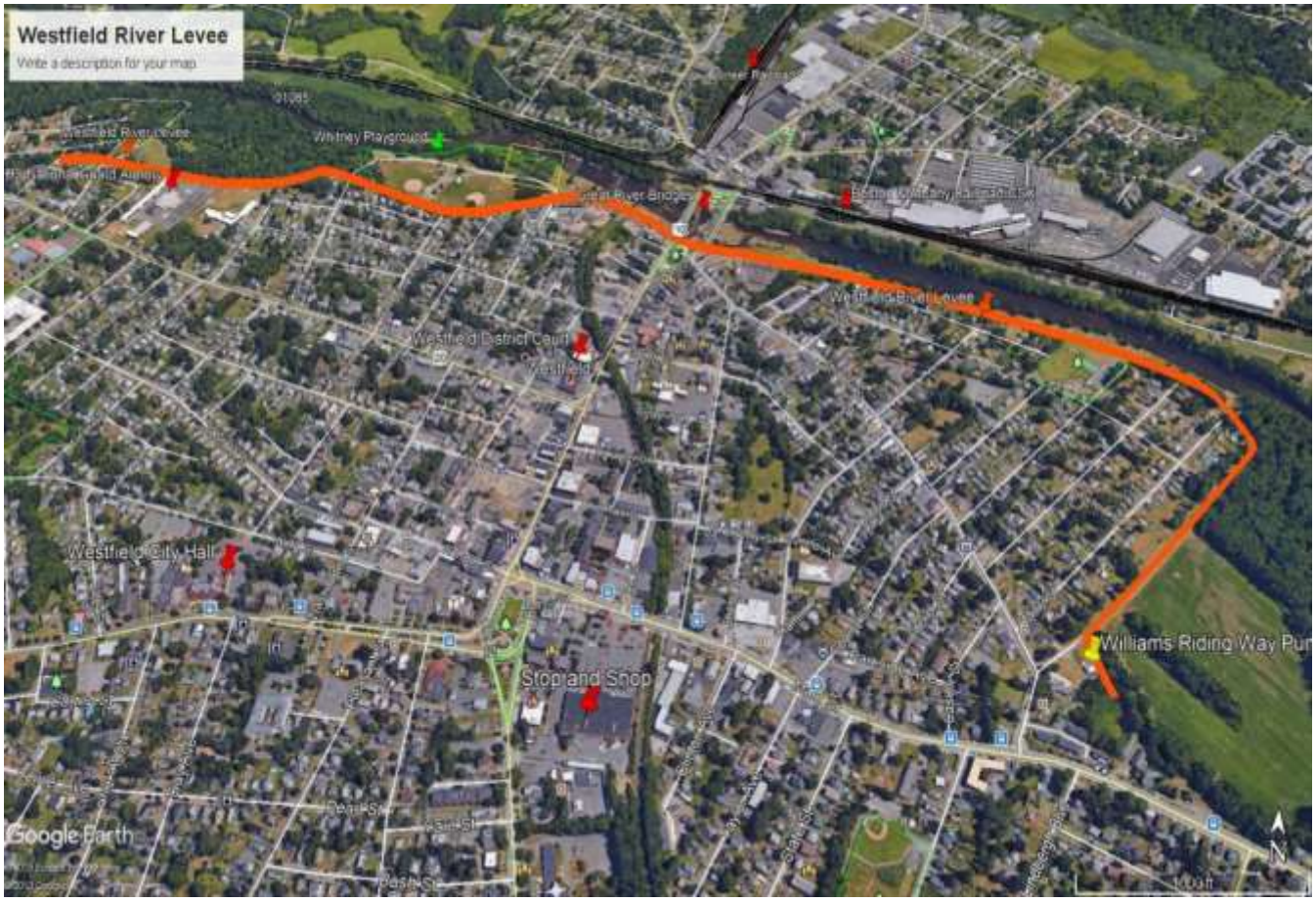
Currently there is a plan to upgrade and reinforce the Levee entirely, by means of the Westfield River Multi-Use Scenic Way. Federal DOT prerequisites necessitate a widening of the structure for the paved pathway top it and will also include some additional height. This will provide several benefits to the city; increased space for recreational activities, increased protection from the wrath of floodwaters, and increased access/awareness of our city's "Jewel", its namesake river that drains much of the Berkshires. In November/December of 2016, the Commission was informed that the Flood Control Commission had oversight and upkeep responsibilities of the Esplanade, Bocce Courts, and Gas Fire Pits near the Great River Bridge. These were sited on flood control infrastructure and installed without consultation of this Commission. It drew concern, as natural gas lines were installed in the levee, posing a fire and safety hazard should they be damaged during a flood event, also noting the electrical power line junction sited nearby. We attempted to address these issues with the Engineering Department and Law Department, while we began to draw up a permit policy for public use. There were many unanswered questions concerning this matter and the Law Department stated in an email in May of 2017, that the Flood Control Commission was "Not the Keeper of Property". The Commission objected in a letter to the City Solicitor, noting: by ordinance, the Mayor and City Council have appropriated monies to the commission for the "promotion", ie maintenance & operation of the flood control properties & facilities. We pointed out that Westfield's flood control facilities are primarily earthen structures, with the "property" being an integral component of their design. We also asked how the commission can expend taxpayer money on facilities it has no control over? Lastly, we pointed to the reason the Commission was created, the multiple LCAs involved, and noted the more recent 17-327 Bikeway Ordinance authorizing the WFCC and other bodies to designate property.

Conclusion:

In the event of severe flooding conditions, similar to what was seen in 1955; the Flood Control Commission is confident that this levee is currently capable of performing to its "As-Designed" capabilities. Further surface reclamation of the levee structure is required, as unmitigated vegetative growth will progressively diminish the levee's capability to withstand extreme flood conditions.

The upkeep & maintenance of the Multi-Use Scenic Way is an unresolved question for us.

Westfield River Levee aka “The Dike”



Westfield River Floodway

The Westfield River Floodway is essentially the passageway which the Westfield River flows and expands during flooding events within the City of Westfield. This includes the USACE & FEMA-designated "Floodplain", i.e., all areas in which the river can spill over into naturally during flood conditions. The purpose of the Westfield River Floodway is to provide space for the Westfield River to spread out, thus reducing the total volume of water contained in the main channel and reducing pressure on the flood control systems in this city, as well as those of Agawam and West Springfield. The floodway is a constantly changing area, directly affected by both man-made development and the river's natural process of erosion and flow. The floodway is an extremely hazardous area due to the velocity of flood water which carries debris, potential projectiles and causes erosion. It should be noted that "development in Zone AE, along watercourses within the City of Westfield, in a regulatory floodway designated on the Hampden County FIRM, all new structures & substantial improvement to existing structures, as well as other forms of development which may restrict or otherwise adversely affect the floodway, shall not be permitted". The purpose of Flood Control Commission oversight of this floodway is to maintain the river's ability to flow downstream, without major obstructions, and to ensure that the river maintains its ability to spread out into designated floodplain areas. Such natural obstructions include trees and brush growing on dry areas of the main section of riverbed, log jams caused by natural debris, and ice jams caused by river ice as it breaks up, or man-made obstructions, such as; bridge abutments, buildings, earthen or structural impediments. All of which can create a dam-effect, which would impede or impound the river, and thus, create an extremely dangerous situation for Westfield, West Springfield, and Agawam.

Status:

Currently, a NOI and Permit to clear debris and growth from the floodway is underway. Regular maintenance of this regulatory floodway is important to the safety of our city and to the FEMA-NFIP LCA requirements. It should be noted that some erosion was observed in the Frog Hollow section of the floodway a few years ago, caused by the Westfield River gradually changing its course. This requires ongoing observation, with a potential for future action to control this. The USACE was notified of this and is aware, but no action is deemed necessary at this time.

Conclusion:

In the event of severe flooding conditions, similar to what was seen in 1955; the Flood Control Commission is confident that this Westfield River Floodway is currently capable of both flowing and absorbing floodwater water, relatively unimpeded, however this is always subject to much change due to natural processes. Some reclamation of the floodway will always be required, as natural processes can drastically change the river channel in a matter of days to even hours. A number of commercial and some residential properties exist within the Westfield River Floodway's USACE & FEMA-designated Floodplain Zones and will always be at risk of flooding. Continued development in the floodway will exacerbate flooding.

Westfield River Floodway

Williams Riding Way Flood Control Pump Station

The "Williams Riding Way Flood Control Pumping Station" (WRW FCPS) was proposed in 1949, design approval was made in 1953, and construction was completed following the 1955 Flood. It was built in conjunction with FEMA, MEMA, & USACE and included upgrades to the Westfield Storm Water Drainage System, the "Westfield River Levee", and the "Little River Dike". The WRW FCPS is located on Williams Riding Way, just off Meadow Street, near the sharp bend. This facility is composed of a large brick and concrete masonry building, two (2) 240 horsepower engines, attached to (2) two large turbines capable of flowing 25,000 GPM each, for a total of 50,000 Gallons per Minute. The building also contains a 20-horsepower electric pump capable of 10,000 Gallons per Minute to pump out the facility. The "WRW FCPS" is an extremely important part of our City's complex drainage system, as it is the City's **ONLY** flood control pumping station. It is designed to be activated when the city's gravity-fed stormwater drainage systems can no longer effectively evacuate stormwater from the Downtown and Meadow Street Areas. Once floodwater in the river reaches approximately 12.5 feet Above Flood Stage, the stormwater drainage outfall points have one-way "duck bill" check valves that are designed to close the system off from the rising water. Stormwater from the Western Avenue area and all the "Downtown Areas" between the Little River Levee and Westfield River Levee, then flows to the WRW FCPS, which is the lowest point in the Stormwater Drainage & Flood Control Levee System. Additionally, this facility serves a secondary function; in the event that the City Sewage Plant becomes inundated by flood water, the WRW FCPS is equipped with a sewage bypass valve, when actuated, allows the facility to pump combined storm water and sewage into the Westfield River, preventing raw sewage from backing up into the homes and businesses in the Meadow Street area.

Over the last 8 years, this facility underwent a significant rehabilitation to correct decades of neglect, unsafe working conditions, and almost complete inoperability. The rehabilitation included masonry repairs, complete roof replacement, energy-efficient electrical systems and lighting, infrared heating, fan ventilation, a dehumidifier, Supervisory Control and Data Acquisition (SCADA), replacement of all three pump engines, refurbishment of the primary pumps, ancillary pump, right-angle drives, valves, and all other associated equipment, and a 500kW diesel generator was installed, with a fuel tank capacity of 1,333 Gallons for 36 Hours of run time @ 100% load. The sewage bypass Valve is currently under contract for repairs, as it is not fully operational at this time and the sump pit will require some repairs to complete the facility rehabilitation.

Status:

Jeffrey Gamelli, Ken Gagnon, and the DPW's Water Resources staff have been performing outstanding day-to-day operation and maintenance of the facility. This has included 109.10 Work Hours, $2834.12 Labor Costs and $200 Material Costs for $3034.12 in annual costs. This has saved the city a considerable amount of money that would otherwise be lost to deterioration caused by a lack of maintenance and general neglect. These costs were borne by their department and have not been reimbursed by the Flood Control Commission, as that mechanism is not defined at this time.

Conclusion:

The routine maintenance of this facility should remain a top priority for the City of Westfield. At this time, there is no written policy as to who is required to operate/maintain this facility. Its primary purpose is as a Flood Control facility and the Water Resources Dept has the knowledge and expertise to best operate and maintain the facility. This issue should not be left unresolved, as it could result in future neglect and disrepair. **Please see following 2-page letter & notation.**

February 10, 2021

SUBJECT: **WESTFIELD – WESTFIELD RIVER LEVEE MULTI-USE PATH**
Project File No. 608073

Albert Giguere
Westfield Flood Control Commission, City Hall
59 Court Street
Westfield, MA 01085

Dear Mr. Giguere:

I am responding to your comments sent following the Design Public Hearing on August 19, 2020, regarding the Westfield River Levee Multi-Use Path in the City of Westfield. Your comments and specific responses to the comments are provided below.

- *General support of the project as both a public amenity and improvement to the flood control structure;*
- *Configuration of the multi-use path and Williams Riding Way Flood Control Pumping Station driveway to prevent motor vehicle and pedestrian conflicts;*
- *Inclusion of fencing at the pump station to prevent vandalism;*
- *Ensuring that shrubs or trees are not proposed on the levee toe, face, or crest of the levee;*
- *Mention of the Ellsworth Neighborhood Residents' concerns.*

Response:

Regarding the Williams Riding Way Flood Control Pumping Station site configuration, a site meeting was held on August 27, 2020 including Department of Public Works (DPW) staff responsible for operation of the pump station. A revised path ramp and pump station access configuration was presented to the DPW and was met with approval from the meeting participants.

Additionally, potential fencing was discussed, but DPW and Engineering believed fencing would make necessary access more difficult. At this time, fencing will not be included in the multi-use path project but may be addressed in the future by the DPW and WFCC if vandalism becomes an issue at this location. Vandalism has not historically been a significant issue at this site, and new pathway lighting and increased activity at the pump station site should only lead to a decreased risk of vandalism.

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
www.mass.gov/massdot

Inclusion of a guardrail at the edge of the adjacent parking lot was also discussed to define the parking area and prevent unauthorized vehicles from accessing the wet well area adjacent to the pump station. If a guardrail is installed, maintenance access to the pump station structures and manholes will need to be considered and layout will be confirmed with DPW and WFCC.

Plans for vegetation along the new path are limited to areas where screening may be desirable for adjacent private properties. The planting will be done in a built up "planting berm" with species appropriate for use in vicinity to a levee according to Army Corps of Engineers design standards. All other embankments will be seeded with suitable perennial grass, conforming to applicable standards for levee construction.

The City of Westfield Engineering department will continue to discuss improvements at the Williams Riding Way Flood Control Pumping Station with both the Westfield Flood Control Commission and the Department of Public Works to ensure that the final layout is accepted from an operations & maintenance perspective.

We have also included responses to the neighborhood concerns.

Should you have any further questions or comments regarding this project, please feel free to contact the Project Manager, Joseph Yoo, at (857) 368-8815 or by email at Joseph.Yoo@dot.state.ma.us.

Sincerely,

Marie Joyce Rose

Marie Joyce Rose, PE
Director of Roadway Project Management

cc: Richard Masse, District 2 Project Development Engineer
David Billips, DPW Director
Jeremy Cigal, City of Westfield
Mark Cressotti, City of Westfield

The Westfield Flood Control Commission does not agree with the MassDOT decision to disregard the need for security fencing at the Williams Riding Way Flood Control Pump Station and has asked for reconsideration of the matter. The facility has a history of vandalism, including an attempt to force open an access door, prior to its rehabilitation a few years ago. There is also concern for the safety of children playing at the site, above the sump chamber pit, i.e., a potential risk that a child could fall through the wooden decking, if it fails.

Considering its significance to public safety during flood emergencies, and the elements noted above, the security of this facility is of paramount concern to the Commission.

Williams Riding Way Flood Control Pump Station

Mainline Drive Flood Control Project

The Mainline Drive Flood Control Project is a recent addition to the Westfield Flood Control System. It was designed to mitigate, and control flooding issues caused by the Westfield River and Little River backing up into the area's stormwater outlet drain. A one-way outlet drain valve was installed, along with anti-erosion measures. The purpose of this flood control project is to control bank erosion caused by Little River and to prevent water from backing up through the stormwater drainage system into the area. The area lies within the USACE & FEMA-designated floodplain and cannot prevent flooding of the area in extreme flooding events. This flood control structure also cannot remove excess runoff from the area and thus the area may be subject to flooding caused by heavy rainfall or meltwater once the river height exceeds the cutoff level for the one-way valve.

Status:

Mainline Drive has long been an area that has seen almost routine flooding problems. Over the last few years, efforts were undertaken to redesign and reconfigure the cause of the river-induced backflow into the storm water drainage system. This effort was spearheaded by Engineering Department Head, Mark Cressotti, and his staff. Anti-erosion gabion wall barriers, along with stone slope protection, were installed and the storm drainage system was rebuilt, with the addition of a one-way outlet drain valve. Vegetative overgrowth and other debris from the area were removed during the construction. There was also an eminent domain land taking required because of a parcel of private land on the site. The project is now nearing completion.

Conclusion:

This is a very new flood control work, so therefor; it is in "As-Designed Condition" and is expected to function as intended. It is important to note that this flood control structure is not designed, nor capable of preventing the Little River and Westfield River from overflowing their banks and flooding the area during larger flooding events. It is also not capable of removing excess runoff from Mainline Drive once the one-way outlet drain valve is closed due to larger increases in river height. It is Unclear to this Commission who overseeing the maintenance of this facility, despite our ordinance. The Commission is concerned that over time, this issue may lead to the deteriorations seen at other flood control infrastructure sites, leading to future costly repairs.

Mainline Drive Flood Control Project

Westfield, The Island City

Glossary

Dam Face - The external upstream and downstream surfaces of a dam structure.

Dike - a relatively short length, concrete or earthen-fill barrier that confines or diverts floodwater of a river channel, thus protecting flood prone areas. Sometimes used slangily to refer to a levee.

Drainage Area - the total land area where surface water runs off and collects in a stream, or series of streams that make up a single watershed.

Drop Inlet Drain - a device, in a stream or water impoundment/dam, preventing water from rising above a certain elevation. Once water reaches a certain level, excess water passes into the structure and is diverted to via a conduit to the opposite side of the impoundment.

Earthen Dam - an engineered impediment of well-compacted, layered earthen fill, used to control or restrict the flow of a stream or river, which employs drain zones to collect & remove seep water, thus preserving its integrity.

Earthen Fill - a well-graded and/or engineered mixture of soil containing principally gravel, sand, silt, and clay, which is used with other materials to construct dams, levees, dikes, and hurricane protection barriers.

Erosion - is the process by which soil and rock are removed by natural processes such as wind or water flow and transported and deposited in other locations. While erosion is a natural process, human activities have increased it 10-40 times the natural rate. Excessive erosion causes problems such as land degradation, sedimentation of waterways, and ecological collapse due to loss of the nutrient rich upper soil layers.

Flash Floods - usually result from intense rainfall over a relatively small area, or areas heavily saturated from previous precipitation. The National Weather Service is responsible for issuance of Flash Flood Warnings.

Floods - are caused by many factors: heavy rainfall, highly accelerated snowmelt, severe winds over water, unusual high tides, or failure of dams, levees, retention ponds, or other structures that retained the water, and can be exacerbated by increased amounts of impervious surface which reduces vegetation that can absorb rainfall.

Flood Stage - The stages established by the National Weather Service, in which a river overflows its channel banks.

FEMA - Federal Emergency Management Agency (FEMA)

Federal Project - A flood control work authorized by Congress or by a Federal agency and conditionally turned over to a local city, town, county, or state agency for operation and maintenance.

Flood Control Act of 1936 - The Flood Control Act of 1936, PL. 74–738, (FCA 1936) was an Act of the United States Congress signed into law by President Franklin Delano Roosevelt on 22 June 1936. It authorized civil engineering projects such as dams, levees, dikes, and other flood control measures through the United States Army Corps of Engineers and other Federal agencies. It further put watersheds, water flow retardation, and soil erosion prevention under the Department of Agriculture via Soil Conservation Service.

Flood Control Project/Works - Structures designed and constructed to prevent damage by irregular and unusual rises in water level and include levees, dikes, channels, dams, and pumping stations

Floodplain - the land adjoining a river, stream, ocean, or lake that is likely to be flooded during periods of excess precipitation or abnormal high tide. Under FEMA and USACE specifications, areas designated to flood.

Floodway (Regulatory USACE/FEMA) – a river channel and adjacent land areas that must be reserved in order to discharge floodwaters, without cumulatively increasing water surface elevation above a designated height.

Floodwalls - reinforced concrete walls that act as barriers against floodwaters and confine them to the river channel, protecting flood prone areas. Floodwalls are usually built-in areas with a limited amount of space.

Gabion Wall - a retaining wall constructed of trap rock filled wire mesh baskets.

NRCS - United States Department of Agriculture's Natural Resources Conservation Service.

Levee - an elongated naturally occurring ridge or artificially constructed earthen wall, often parallel to the course of a river in its floodplain or along low-lying coastlines.

Outlet Drain- gated conduits, usually located at the base of a dam or the exit point for a stormwater drainage system.

Pumping Station - a structure containing pumps that discharges floodwaters from a protected area over or through a levee or floodwall into a river or ocean.

Spillway - a channel-shaped structure, which allows water exceeding the storage capacity of a reservoir to pass through or around a dam instead of overtopping it.

Stone Slope Protection - a layer of large pieces of trap rock or other stone, underlain by a layer of gravel bedding, designed to prevent erosion from stream flow, wave attack, and runoff.

Riparian Area - is the interface between land and a river or stream, significant in ecology, environmental management, and civil engineering because of their role in soil conservation and habitat biodiversity.

Stormwater - is water that originates as rain, snow, or snowmelt that cannot be absorbed into the soil due to impervious surfaces such as asphalt, concrete, compacted soils, or structures, & flows into storm drains.

Storm Water Drainage System - designed to drain excess rain and ground water from paved streets, parking lots, sidewalks, and roofs into a network of piping that eventually leads to a nearby body of water.

Training Dike - a structure extending from the shore into the water that redirects the current, preventing sediment from settling and ensuring that adequate depths are maintained.

Training Wall - a structure built along channel banks to narrow the channel area, thereby controlling the velocity of the flow of water, and preventing the buildup of sediment. Training walls and training dikes have the same purpose: to ensure adequate depths are maintained.

USACE - US Army Corps of Engineers (USACE)

Weir - a concrete structure designed as part of the spillway that allows water to exit a reservoir and over the spillway.

Ordinances: Westfield Flood Control Commission

ARTICLE III. Section 13-51: Flood Control Commission

- **Sec. 13-51. - Established.**
  There is hereby established in the city a commission to be known as the municipal flood control commission. (Code 1971, § 13-33)
- **Sec. 13-52. - Composition; terms of office. *(*Changed in 2015 to 5 Members, as below.*)***
  The municipal flood control commission shall be composed of five members, who shall be appointed by the mayor, subject to city council confirmation. They shall serve from the first Monday in February following their appointment for terms for five years and until their successor is named.
  (Code 1971, § 13-34; Ord. No. 1628, 5-7-15)
- **Sec. 13-53. - Filling vacancies.**
  If there is of a vacancy in the municipal flood control commission, the mayor with the confirmation of council shall make an appointment to fill the unexpired term. (Code 1971, § 13-35)
- **Sec. 13-54. - Expenditure of moneys.**
  The municipal flood control commission shall have the power to expend such sums of money as may be appropriated by the mayor and city council for flood control promotion. (Code 1971, § 13-36)
- **Sec. 13-55. - Chairman; meeting date.**
  Members of the municipal flood control commission shall elect their own chairman and establish a regular meeting date. (Code 1971, § 13-37)
- **Sec. 13-56. - Annual report.**
  The municipal flood control commission shall file at least one report annually. (Code 1971, § 13-38)
- **Sec. 13-57. - Powers and duties generally.**
  The municipal flood control commission shall meet with county, state and federal agencies regarding flood control projects affecting the city. The commission shall study and submit their recommendations to the mayor and the city council. The commission shall regularly inspect any existing dikes and waterways and any future dikes or flood projects in which the city has a vital interest. In cooperation with the engineering department, recommendations on repairs and any other pertinent matters should be made to the mayor and city council by the commission. Any repairs or construction will be under the supervision of the engineering department. (Code 1971, § 13-39)
- **Sec. 13-58. - Inspection of dangerous conditions; correction.**
  If the municipal flood control commission shall be informed, or has reason to believe, that any refuse or obstruction shall endanger or be likely to endanger the flood control program of the city, then the commission shall make or cause to be made an investigation of the facts and inspect the property where the suspected danger may exist. If the commission shall find that such danger exists, it shall give notice thereof to the owner or his duly authorized agent and to the occupant of the premises, and shall order that such danger be corrected. (Code 1971, § 13-40)
- **Sec. 13-59. - Enforcement of article; injunction relief.**
  The municipal flood control commission is hereby empowered to enforce the provisions of this article and to institute appropriate legal proceedings to restrain by injunction the continuance of any danger to the flood control program of the city. (Code 1971, § 13-41)

ARTICLE III. Section 13-183: Conservation Commission – (As Pertaining to WFCC)

- **Sec. 13-183. - Notice of hearing.**
  Any person filing a notice of intent with the conservation commission shall provide a list of immediate abutters according to the most recent records of the city assessors, including those across a traveled way, or any other persons as the conservation commission shall require.
  The conservation commission shall combine its hearing under this article with the hearing conducted under the Wetlands Protection Act, M.G.L.A. c. 131, § 40. Notice shall be given as for hearing under the Wetlands Protection Act, M.G.L.A. c. 131, § 40. The applicant shall pay for the notice to be published and mailed.
  The Westfield Conservation Commission shall, no later than five days in advance of a public hearing, deliver copies of each notice of public hearing to the city department of public works, water department, health department, the planning board, the municipal flood control commission & the city engineer, and may deliver copies of same to such other city officers, departments, boards or commissions as it deems pertinent. Each said city officer, department, board or commission may participate in the public hearing in person or by submission of written material and the Westfield Conservation Commission shall take the information into account but shall not be bound thereby.

ARTICLE VIII. Section 17-327: Bikeways – (As Pertaining to WFCC)

Sec. 17-327. - Established.

The city council may from time-to-time designate areas within the city on municipally owned property as bikeways. The city council hereby authorizes the Flood Control Commission, the park and recreation department, and the school committee to designate areas as bikeways, subject to conditions set forth in this article. (Code 1971, § 16-201)

ARTICLE III, Section 3-160: Floodplain Management District

Section 3-160.1 Intent.

The Floodplain Management District is intended to promote the good health, safety and general welfare of all users of property within areas prone to flooding; to minimize the need for flood rescue and relief efforts generally undertaken at the expense of the general public; to minimize prolonged interruptions of business; to minimize damage to public facilities and utilities; to help maintain a stable tax base by providing for the sound use and development of flood prone areas in such a manner as to minimize future flood blight areas; and, to insure that all users of land within the flood prone areas are notified of the potential hazards that may be caused by flooding.

The Floodplain Management District is also intended to minimize public and private losses due to flood conditions in specific areas by special requirements designed to:

1.) **Restrict or prohibit uses which are dangerous to health, safety and property due to water, erosion, flood heights and velocities;**
2.) **Require that land uses vulnerable to floods be protected against flood damage at the time of initial construction;**
3.) **Control the alteration of natural floodplains, stream channels and natural protective barriers, which re-involved in the accommodation of flood waters;**
4.) **Control filling, grading, dredging and other development which may increase erosion or flood damage; and;**
5.) **Prevent or regulate the construction of flood barriers which unnaturally divert flood waters, or which may increase flood hazards to other lands.**

Section 3-160.2 General Provisions.

The Floodplain Management District is herein established as an overlay district, to include all special flood hazard areas within the City of Westfield designated as Zone A or AE on the Hampden County Flood Insurance Rate Map (FIRM) issued by the Federal Emergency Management Agency (FEMA) for the administration of the National Flood Insurance Program. The map panels of the Hampden County FIRM that are wholly or partially within the City of Westfield are panel numbers 25013C0160E, 25013C0163E, 25013C0164E, 25013C0170E, 25013C0180E, 25013C0190E, 25013C0191E, 25013C0193E, 25013C0352E, 25013C0355E, 25013C0358E, 25013C0359E, 25013C0360E, 25013C0376E, 25013C0377E, 25013C0378E, and 25013C0379E dated July 16, 2013, and revisions thereto.

- **The exact boundaries of the District may be defined by the 100-year base flood elevations shown on the FIRM and further defined by the Hampden County Flood Insurance Study (FIS) report dated July 16, 2013. The FIRM and FIS report are incorporated herein by reference and are on file with the Engineering Department. The FIRM is also on file with the City Clerk, Planning Board, Building Department and Conservation Commission.**
- **The provisions and requirements of all underlying zoning districts, unless otherwise described by this Floodplain Management District, shall remain in effect as described elsewhere in the zoning ordinance and as shown, defined and bounded on the zoning map, as amended. Said zoning districts shall be subject also to the further requirements of this section.**
- **A Development Permit shall be required in conformance with the provisions of this ordinance for all improvements and changes made to the property including, but not limited to, new building construction; existing building reconstruction and substantial improvement made thereto; new, or substantial improvement made to, mobile home park or trailer park and existing mobile homes and trailer homes; other types of structures; all mining, dredging, filling, drilling, grading, paving or excavation operations.**
- **All provisions of this ordinance shall be considered as minimum requirements; liberally construed in favor of the governing body; and deemed neither to limit nor repeal any other powers granted under state statutes.**
- **The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by manmade or natural causes.**
- **This ordinance does not imply that land outside the district or uses permitted within such areas will be free from flooding or flood damage.**
- **This ordinance shall not create liability on the part of the City of Westfield or by any officer or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made thereunder.**

Section 3-160.3 Definitions.

Unless specifically defined below, words or phrases used herein shall be interpreted so as to give them the meaning they have in common usage.

1. **Appeal.** A request for a review of the administrator's interpretation of any provision of this ordinance or a request for a variance.

2. **Area of Special Flood Hazard.** The areas designated as A and AE and the Floodway on the "Flood Insurance Rate Map" are the specific areas of special flood hazard; generally, such land in a floodplain within the City and subject to a one-percent or greater chance of flooding in any given year.

3. **Base Flood.** The flood having a one- percent chance of being equaled or exceed in any given year.

4. Development. Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations.

5. **Development Permit.** A permit issued by the administrator of this ordinance for all development within the areas of special flood hazard. In the case of the requirement of a building permit for some or all of the work, the administrator may allow the Development Permit to be issued concurrently and in the form of the building permit, where the otherwise required information has been provided. In the case where no building permit is required, the administrator may allow a permit issued by the Conservation Commission to serve as the Development Permit where the applicant has provided satisfactory evidence to demonstrate compliance with this ordinance.

6. **Flood or Flooding.** A general and temporary condition of partial or complete inundation of normally dry land areas from the over-flow of inland waters and/or the unusually and rapid accumulation of runoff of surface waters from any source.

7. **Flood Barrier.** For the purpose of this ordinance, any building, wall, fence, embankment, dike or other structure constructed in an area, & any man-made change to the natural topography of any area, including grading, mounding, filling excavating, paving, mining, dredging, or drilling that creates an obstruction causing flood water to be unnaturally diverted away from the area to the detriment of other lands.

8. **Flood Insurance Rate Map (FIRM).** An official map of a community on which the Federal Emergency Management Agency has delineated both the areas of special flood hazards and the risk premium zoned applicable to the Community.

9. **Flood Insurance Study.** An examination, evaluation, and determination of flood hazards, &, if appropriate, corresponding water surface elevations, or an examination, evaluation & determination of flood-related erosion hazards.

10. **Floodway.** The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

11. **Mobile Home or Trailer.** A structure, transportable in one or more sections, which is built on a permanent chassis and designed to be used with or without a permanent foundation when connected to the required utilities. It does not include recreational vehicles or camping trailers placed on a site for not more than 180 days.

12. **Structure**. A walled and roofed building, to also include a gas or liquid storage tank, mobile home and trailer home, that is principally above ground.

13. **Variance**. A grant of relief to a person from the requirements of this ordinance which permits construction in a manner otherwise prohibited by this ordinance where specific enforcement would result in substantial hardship.

Section 3-160.4 Administration

1.) Designation and Duties of the Administrator. The Superintendent of Buildings shall be the Administrator and implementer of the provisions of this ordinance and shall exercise the authority to require the submission of all reasonable information on which to base a determination. Duties of the Administrator shall include, but not be limited to:

a) Reviewing all development permits to assure that the permit requirements of this ordinance have been satisfied and to assure that all necessary permits have been obtained from those federal, state or local governmental agencies from which prior approval is required.

***b) Notifying the Westfield Conservation Commission and the Westfield Flood Control Commission regarding an application for development permit within the Floodplain Management District.**

1) The Conservation Commission shall review the applications within the scope of its authority related to conservation matters and shall forward its recommendation to the Administrator within the allotted time designated by the General Laws of the Commonwealth of Massachusetts, Chapter 131, Section 40.

***2) The Flood Control Commission shall review the applications within the scope of its authority related to the Control of flooding and shall forward its recommendations to the Administrator within 20 days.**

c) Verifying and recording the actual elevation in relation to mean sea level of the lowest floor, including basement of all new or substantially improved structures.

d) Verifying and recording the actual elevation in relation to mean sea level to which the new or substantially improved structures have been flood proofed.

e) Obtaining certification from a registered professional engineer or architect when flood-proofing is utilized for a particular non-residential structure.

f) Making the necessary interpretation as to the exact location of the boundaries of the special flood hazard areas particularly where there appears to be a conflict between a mapped boundary & actual field conditions, notwithstanding a Letter of Map Amendment/Letter of Map Revision from FEMA may also be required.

g) Obtaining, reviewing and reasonably utilizing any base flood elevation data available from a federal, state, or other source when base flood elevation data has not been stipulated by the Flood Insurance Rate Maps (FIRM) and Flood Insurance Study, thereto provided by the Federal Emergency Management Agency (FEMA).

h) Maintaining all records pertaining to the provisions of this ordinance and assuring that said records shall be open for public inspection.

2.) Permit Procedures. Application for a Development Permit shall be made to the Administrator on forms furnished by same. The following shall be provided with the application:

a) The elevation in relation to mean sea level of the lowest floor including the basement of all structures. A declaration stating whether or not all structures contain a basement also shall be provided.

b) The elevation in relation to mean sea level to which any non-residential structure has been flood proofed.

c) A certificate from a registered professional engineer or architect that any non-residential flood-proofed structure meets the flood-proofing criteria of applicable codes.

d) A description of the extent to which any watercourse will be altered or relocated as a result of the proposed development.

e) In addition, the Administrator may require plans, in duplicate, drawn to scale showing the nature, location, dimensions & elevations of the area in question, existing or proposed structures, development, fill, storage of materials, drainage facilities and the location of the foregoing.

Section 3-160.4 Administration - Continued

3.) Appeals.

a) The Zoning Board of Appeals of the City of Westfield shall hear and decide petitions for variances from the requirements of this ordinance.

b) The Zoning Board of Appeals shall hear and decide appeals when it is alleged that there is an error in any requirement, decision, or determination made by the Administrator in the enforcement or administration of this ordinance, as provided by the General Laws of the Commonwealth of Massachusetts, Chapter 40A, Section 8.

c) Variances may be issued for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places, without regard to the procedures set forth in the remainder of this subsection, provided a determination is made that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

d) In deciding upon such applications, the Zoning Board of Appeals shall consider all technical evaluations, all relevant factors, standards specified within this ordinance, and:

1) The danger that materials may be swept onto other land to the injury of others.
2) The danger to life and property due to flooding or erosion damage.
3) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner.
4) The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use.
5) The safety of access to the property in times of flood by ordinary and emergency vehicles.
6) The expected heights, velocity, duration, rate of rise & sediment transport of the flood waters expected at the site.
7) The costs of providing governmental services during and after flood conditions including maintenance and repair of public utilities and facilities such as sewer, gas, electrical and water systems, streets and bridges.

e) Generally, variances may be issued for new construction and substantial improvements to be erected on a lot contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing that the aforementioned items **3.d.1** through **3.d.7** have been fully considered and that an enforcement of the provisions of this ordinance would involve substantial hardship, financial or otherwise to the variance petitioner and that desirable relief may be granted without substantial detriment to the public good and without nullifying or substantially derogating from the intent or purpose of this ordinance.

f) Variances shall not be issued within the designated floodplain if any increase in flood levels during the base flood discharge would result.

g) Conditions for Variances**.**

1) A variance shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief. Those granted within the floodplain all require adherence to all of the regulations of this ordinance pertaining to the base flood.
2) In addition to normal criteria on which decisions by the Zoning Board of Appeals are normally based as described elsewhere in this ordinance. A variance additionally shall only be issued upon a determination that the granting of the variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, creation of nuisances, or causing fraud on or victimization of the public.
3) Any applicant to whom a variance is granted by the Zoning Board of Appeals for a structure where the basement elevation is below the flood elevation shall be given written notice that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest flood elevation.

***h) The Zoning Board of Appeals shall notify the Westfield Conservation Commission & Westfield Flood Control Commission of variances applied for within the Floodplain Management District.**

Section 3-160.5 Provisions for Flood Hazard Reduction

1.) General Standards. In all areas of special flood hazards the following provisions are required:

a) In Zones A and AE, along watercourses that have not had a regulatory floodway designated, the best available Federal, State, local, or other floodway data shall be used to prohibit encroachments in floodways which would result in any increase in flood levels within the community during the occurrence of the base flood discharge.

b) Base flood elevation data is required for subdivision proposals or other developments greater than 50 lots or 5 acres, whichever is the lesser, within unnumbered A zones.

c) All subdivision proposals must be designed to assure that:
1) such proposals minimize flood damage.
2) all public utilities and facilities are located and constructed to minimize or eliminate flood damage; and
3) adequate drainage is provided to reduce exposure to flood hazards.

d) A certification by a professional engineer or architect, registered in Massachusetts, that the standards of this subsection are satisfied shall be provided to the Administrator.

2.) Dimensional Standards. For any new residential construction within the areas of special flood hazard, no lot shall have less than 21,780 square feet in area, nor less than 100 feet of frontage, unless the underlying or other overlay district requires a greater amount.

3.) Notification. In a riverine situation, the Administrator shall notify the following of any alteration or relocation of a watercourse:

1. Adjacent Municipalities.
Southampton, Holyoke, W. Springfield, Agawam, Southwick, Granville, Russell, Montgomery

2. NFIP State Coordinator, Massachusetts Department of Conservation and Recreation, 251 Causeway Street, Suite 600-700 Boston, MA 02114-2104

3. NFIP Program Specialist, Federal Emergency Management Agency, Region I, 99 High Street, 6th Floor, Boston, MA 02110

*Section 3-160.6 Floodways.

Since the floodway is an extremely hazardous area due to the velocity of flood water which carries debris, potential projectiles and causes erosion, in Zone AE, along watercourses within the City of Westfield that have a regulatory floodway designated on the Hampden County FIRM, all new structures and substantial improvement to existing structures, as well as other forms of development which may restrict or otherwise adversely affect the floodway, shall not be permitted.

7/8/2013 – Article 3, Section 3-160 FLOOD ZONE DISTRICT deleted in its entirety and replaced with 3-160 FLOODPLAIN MANAGEMENT DISTRICT

Respectfully Submitted,

Albert G. Giguere Jr.
Chairman
Westfield Flood Control Commission

Flood Control Commissioner Approval:

- ✓ **John "Jack" Leary:** John D. Leary Jr.
- ✓ **Barry M. Plumley:** Barry M. Plumley
- ✓ **Mark Goodniss:** Mark M. Goodniss
  Vice Chairman
- ✓ **Albert G. Giguere Jr.:**
  Chairman

Date: February 17, 2021