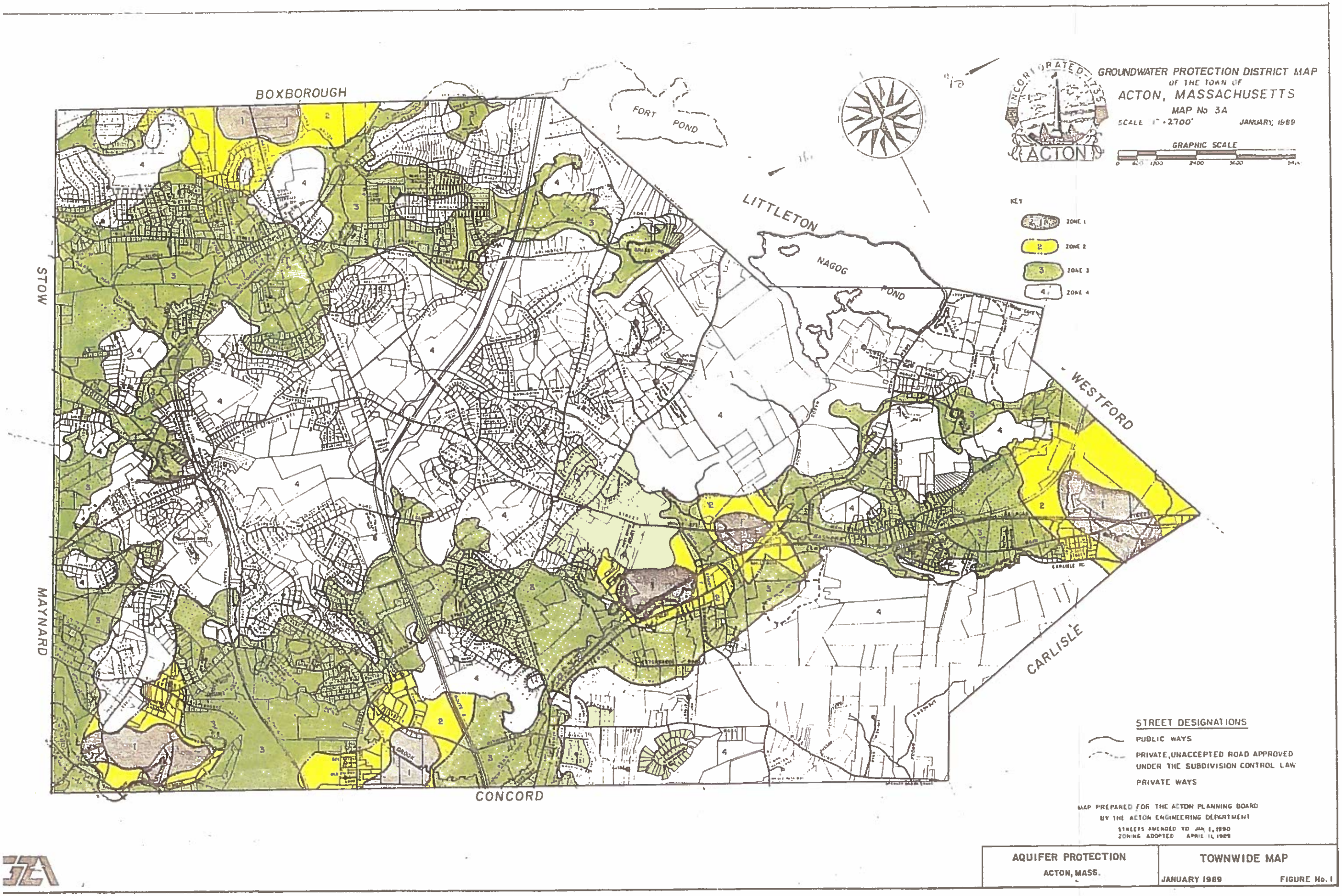
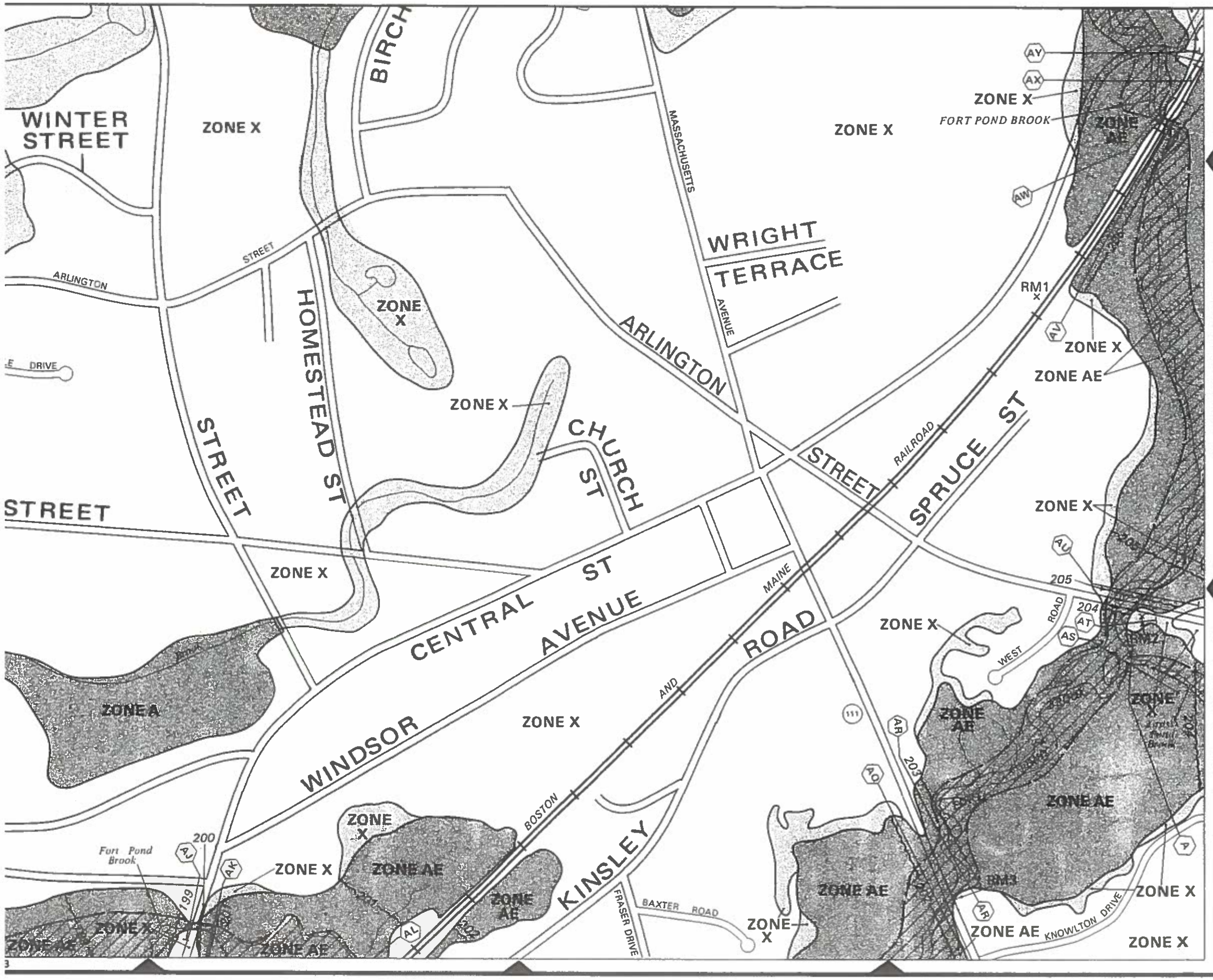

GROUNDWATER PROTECTION DISTRICT MAP
OF THE TOWN OF
ACTON, MASSACHUSETTS
MAP No 3A
SCALE 1" = 2700'
JANUARY, 1989
GRAPHIC SCALE
INCORPORATED 1735
ACTON
KEY
ZONE 1
ZONE 2
ZONE 3
ZONE 4
BOXBOROUGH
STOW
MAYNARD
CONCORD
CARLISLE
WESTFORD
LITTLETON
FORT POND
NAGOG POND
STREET DESIGNATIONS
PUBLIC WAYS
PRIVATE, UNACCEPTED ROAD APPROVED UNDER THE SUBDIVISION CONTROL LAW
PRIVATE WAYS
MAP PREPARED FOR THE ACTON PLANNING BOARD
BY THE ACTON ENGINEERING DEPARTMENT
STREETS AMENDED TO JAN 1, 1990
ZONING ADOPTED APRIL 11, 1989
AQUIFER PROTECTION
ACTON, MASS.
TOWNWIDE MAP
JANUARY 1989
FIGURE No. 1



APPROXIMATE SCALE

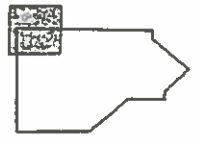
400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
ACTON, MASSACHUSETTS
MIDDLESEX COUNTY

PANEL 1 OF 8
(SEE MAP INDEX FOR PANELS NOT PRINTED)



PANEL LOCATION

COMMUNITY-PANEL NUMBER
250176 0001C

MAP REVISED:
JANUARY 6, 1988

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

F G

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A	No base flood elevations determined.
ZONE AE	Base flood elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE A99	To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
ZONE V	Coastal flood with velocity hazard (wave action); no base flood elevations determined.
ZONE VE	Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X	Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X	Areas determined to be outside 500-year flood plain.
ZONE D	Areas in which flood hazards are undetermined.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet*

D — D — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone*

RM7 X — Elevation Reference Mark

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside special flood hazard areas. The coastal flooding elevations shown may differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

APPROXIMATE SCALE

400 0 400 FEET

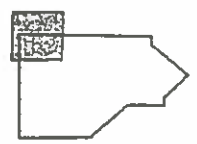
NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
ACTON, MASSACHUSETTS
MIDDLESEX COUNTY

PANEL 1 OF 8

(SEE MAP INDEX FOR PANELS NOT PRINTED)



PANEL LOCATION

COMMUNITY-PANEL NUMBER
250176 0001C

MAP REVISED:
JANUARY 6, 1988

Federal Emergency Management Agency

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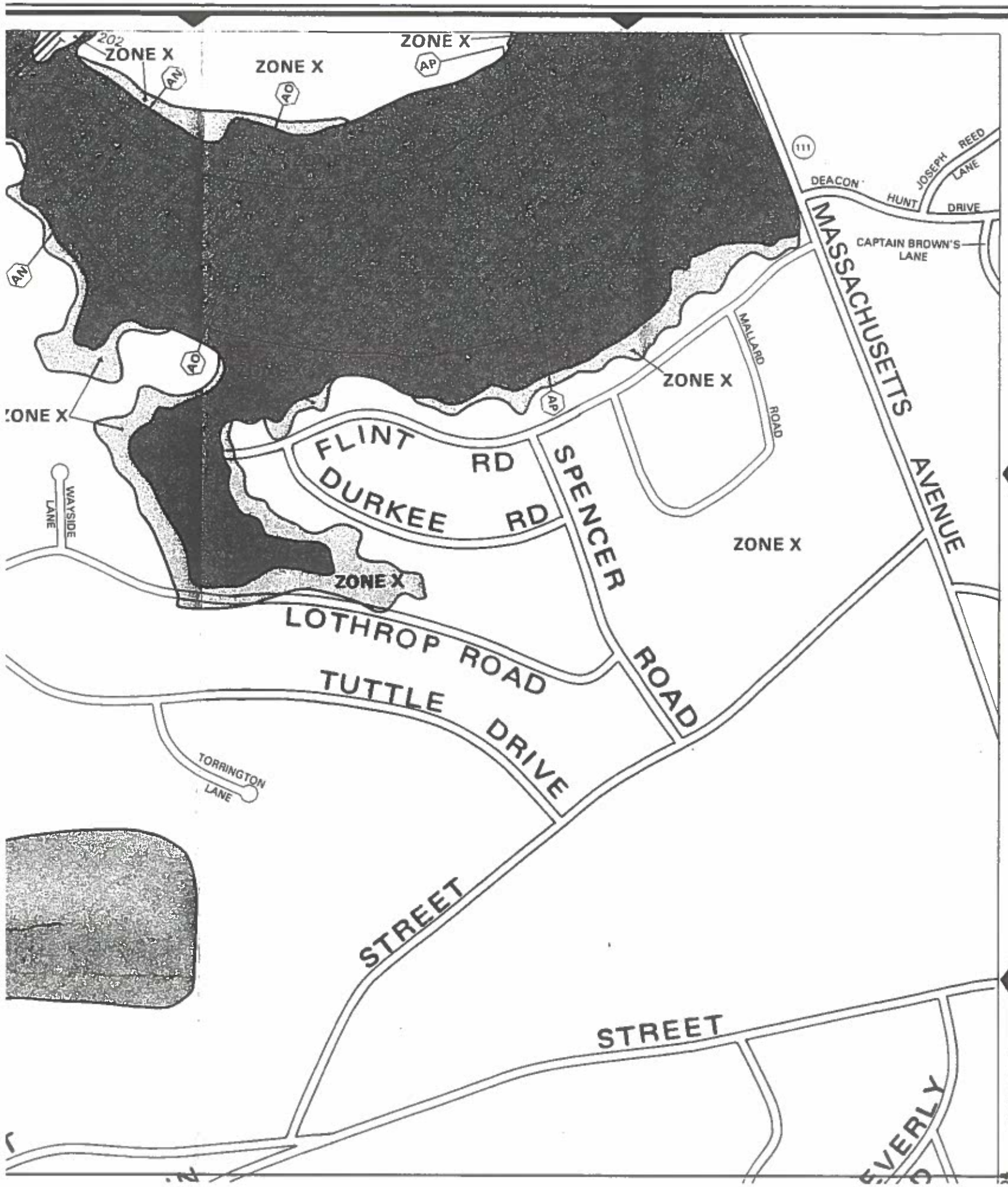

LEGEND

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*Referenced to the National Geodetic Vertical Datum of 1929

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Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale.

APPROXIMATE SCALE

400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
ACTON, MASSACHUSETTS
MIDDLESEX COUNTY

PANEL 3 OF 8
(SEE MAP INDEX FOR PANELS NOT PRINTED)

PANEL LOCATION

COMMUNITY-PANEL NUMBER
250176 0003 C

MAP REVISED:
JANUARY 6, 1988

Federal Emergency Management Agency

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FIGURE 2

SHEET: 2
SCALE: AS SHOWN
DATE: 04-04-2008
JOB NO.: 212761

TOWN OF ACTON
472 MAIN STREET, ACTON, MA

WEST ACTON SEWER EXTENSION

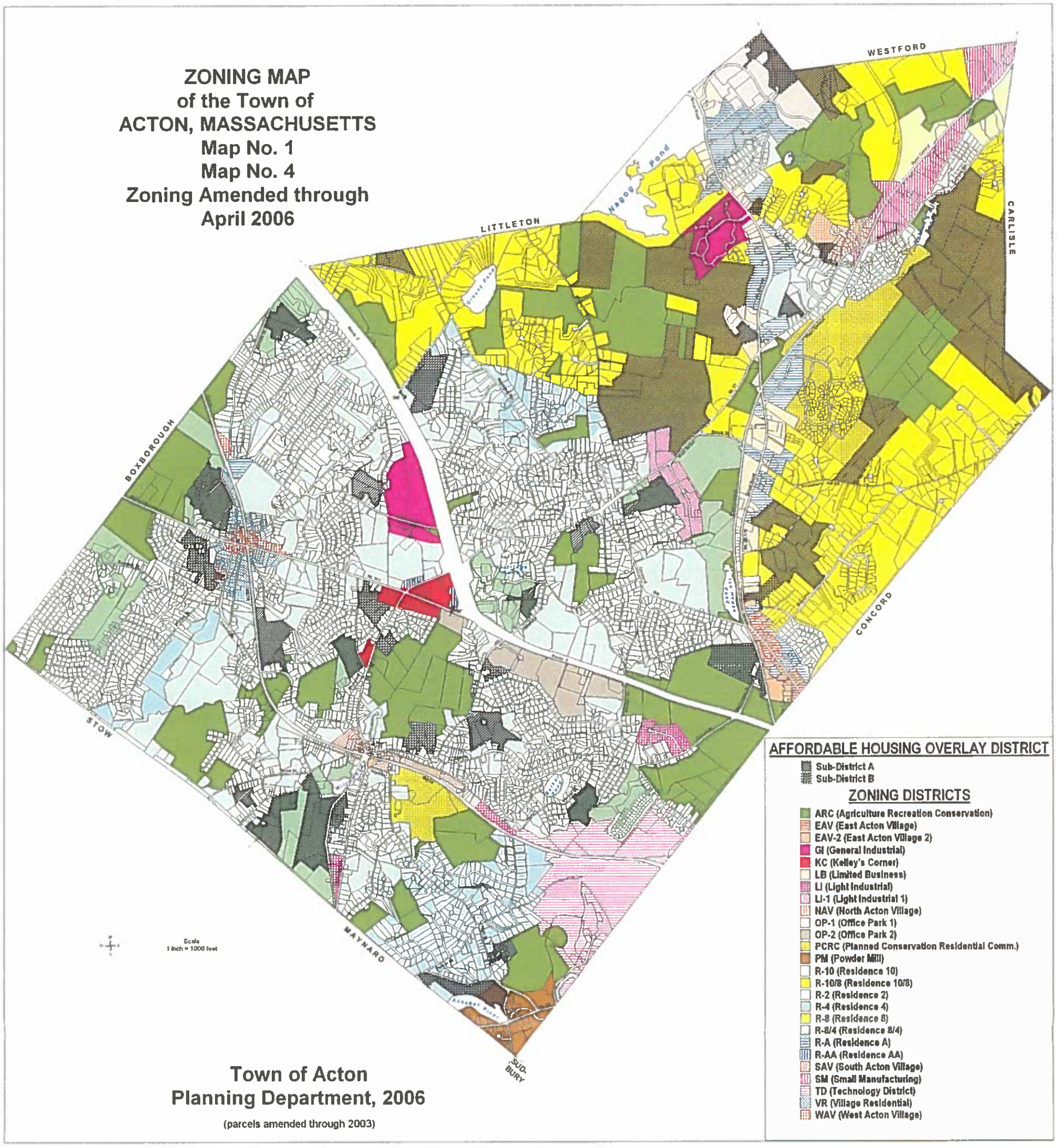
ALTERNATIVE STF-1 & STF-2
SPENCER / TUTTLE / FLINT

REV	DESCRIPTION	DATE

DESIGNED BY: JCT | CHECKED BY: JDS
DRAWN BY: JCT | Base Map.dwg

WOODARD & CURRAN
www.woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

ZONING MAP
of the Town of
ACTON, MASSACHUSETTS
Map No. 1
Map No. 4
Zoning Amended through
April 2006



Town of Acton
Planning Department, 2006

(parcels amended through 2003)

West Acton Historic District

Local Historic District Map of the Town of Acton, Sheet 3 - 1990

Adopted: Nov. 28,1990
Effective:

Buildings

Stone Walls

Streets

Private Ways

Lot Lines

West Acton Local Historic District Boundary

Scale 1" = 350'

Town of Acton Planning Department 1992

Table 1: West Acton Sewer Extension Project - Cost Comparison of Alternatives						
			Alt. 1: WAC-1		Alt 5: STF-1	
Items	Unit	Unit Cost	Quantity	Cost	Quantity	Cost
Direct Costs						
8" PVC Sewer (8-12 feet)	L.F.	135	2535	$342,225	7260	$980,100
8" PVC Sewer (12-16 feet)	L.F.	150	1065	$159,750	2140	$321,000
8" PVC Sewer (16-20 feet)	L.F.	180	50	$9,000	600	$108,000
8" PVC Sewer (>20 feet)	L.F.	220	0	$0	0	$0
6" PVC Service Stubs (40 lf each)	L.F.	85	3160	$268,600	5080	$431,800
PVC Forcemain	L.F.	60	4900	$294,000	4000	$240,000
PVC Low Pressure Sewer	L.F.	70	2650	$185,500	850	$59,500
Paving - Trenches in Local Streets (3" depth)	Sq Yd.	15	1,914	$28,717	10,198	$152,967
Paving - Trenches in State Roadway (3" depth)	Sq Yd.	15	3,356	$50,333	0	$0
Paving - CDF in Local Roads	Cu.Yd	110	0	$0	1,000	$110,000
Paving - CDF in State Roads	Cu.Yd	110	3,461	$380,722	0	$0
Paving - Overlay Local Roads (3")	Sq Yd.	10	6,933	$69,333	31,344	$313,444
Paving - Overlay State Roads (3")	Sq Yd.	10	14,733	$147,333	0	$0
Water Main Relocation (15% total sewer l.f.)	L.F.	85	945	$80,325	1,628	$138,338
Drainage Pipe Relocation (5% total sewer l.f.)	L.F.	50	315	$15,750	543	$27,125
Ledge Removal (10% total sewer l.f. in ledge)	Cu. Yd.	85	1,386	$117,810	2,387	$202,895
Grinder Pumps	Each	4,200	17	$71,400	13	$54,600
Pump Stations	Each	400,000	2	$800,000	1	$400,000
Easements	L.F.	100	0	$0	500	$50,000
Stream and/or Railroad Crossings	Each	200,000	1	$200,000	0	$0
Construction Contingency Low - 5%	---	5%		$161,040		$179,488
Subtotal - Conceptual Construction Costs Low				$3,382,000		$3,769,000
Subtotal - Conceptual Construction Costs High				$3,865,000		$4,307,000
Indirect Costs						
Design & Permitting (10% of Construction)	Des. Cost	10%	---	$338,200	---	$376,900
Procurement & Constr. Engineering (15%)	Con. Cost	15%	---	$507,300	---	$565,350
Administration (Police, Financing, Legal, etc. - 10%)	Con. Cost	10%	---	$338,200	---	$376,900
Indirect Contingency - 5%	Ind. Cost	5%	---	$193,250	---	$215,350
Subtotal - Conceptual Indirect Costs Low				$1,183,700		$1,319,150
Subtotal - Conceptual Indirect Costs High				$1,546,000		$1,722,800
Total Project Conceptual Costs Low				**$4,566,000**		**$5,088,000**
Total Project Conceptual Costs High				**$5,411,000**		**$6,030,000**
Total LF of Collection Sewer (LF)				$6,300		$10,850
$/Ft of Sewer Low				$725		$469
$/Ft of Sewer High				$859		$556
Estimated SBUs Low			100		120	
Estimated SBUs High			130		130	
Sewers1 (x1000 ft)			6.3		10.9	
SBU Density Low (SBUs per 1000 LF of sewer)			15.9		11.1	
SBU Density High (SBUs per 1000 LF of sewer)			20.6		12.0	
Conceptual Construction Costs per SBU Low			$35,000		$39,000	
Conceptual Construction Costs per SBU High			$54,000		$50,000	
Estimated Flow (5-year winter flow average)	GPD		17,081		20,668	
Title 5 Flows	GPD		54,925		49,610	
ENR Construction Cost Index (February 2008)		8,094				

ACTON MA
SEWER EXTENSION – FEASIBILITY STUDY & CONCEPTUAL DESIGN
FEASIBILITY AND DESIGN SERVICES FLOWCHART

FEASIBILITY & PRELIMINARY DESIGN

Task 1.0 Feasibility Study & Concept Design

- Kick-off meeting
- Define project purpose and drivers
- Identify stakeholders and their rolls
- Collect data on flows and loads
- Identify possible solutions
- Evaluate possible alternatives based on stakeholder input
- Recommend viable alternatives
- Prepare order of magnitude cost estimate on recommended solution
- Identify permitting parties
- Identify site constraints
- Prepare "take-off" construction cost estimate and design budget

Completed this Report May 2008

Task 2.0 Prepare Design Basis Report

- Prepare Conceptual layout
- Assess permitting requirements – costs, schedule impacts.
- Site Layout
- Initial equipment list
- Architectural concepts-narrative
- Assess availability of electrical and other utilities
- Safety & health Issues
- Narrative description of operation and maintenance issues
- Prepare instrumentation basis of design
- Prepare preliminary drawing list
- Prepare SCADA outline
- Bidding alternatives
- Prepare financial plan
- Prepare Town Meeting material

DESIGN

Task 3.0 Stakeholders Agreement

Agreement between Client and W&C.

- Scope, schedule, budget
- Funding source(s)

Task 4.0 Permit Preparation & Approvals

- Wetlands delineation
- Survey
- Local: Conservation, road and DPW permits
- MEPA (ENF/NPC) if necessary
- WWTF groundwater discharge permit amendment if necessary
- Sewer Extension Permit
- MassHighway
- Stormwater General Permit
- Identify easements
- Public outreach plan

Task 5.0 Prepare Final Design

- Geotechnical investigation (borings)
- Final equipment and piping plans, elevations and details
- Final architectural plans, elevations and details
- Final instrumentation plans and details
- Final electrical plans and details
- Technical specifications
- Division O and I of specifications
- Final Detailed Cost Estimate
- Installation & operation
- Easements
- Secure funding for construction
- Develop considerations for construction sequencing and traffic control
- Public outreach/meetings

Task 6.0 Procurement

- Public Bid (& Private Bids)
- Post Bid reviews
- Bid Evaluation and Award
- Contract Executions

Note: Process varies based upon limits of public and private procurement

Notes:

1. Tasks can run concurrently; however they are generally performed in this sequential order

08/03/07