Industrial/Office Park District
Wastewater Treatment Project

Project Update

Background: General

- **2009 South Shore Chamber of Commerce Report**
  - Identified Exit 15 area in Hingham as ideally located to serve as regional business/commercial center
  - Noted that insufficient septic capacity posed a critical constraint to new growth
- **Expanded wastewater capacity will:**
  - Allow for new and expanded development in existing commercial districts
  - Ensure viability of existing commercial businesses

Economic development that
both protects and expands Hingham's tax base

Background: CWMP

- **At the same time, Hingham was developing its Comprehensive Wastewater Management Plan (CWMP)**
  - Purpose:
    - Review current Hingham wastewater management practices
    - Assess future wastewater disposal needs of the Town
    - Develop and evaluate alternatives
    - Identify solutions to expand sewer into the South Hingham Industrial Park to spur economic growth
  - Findings:
    - Industrial Park Area has highest rate of septic system failures in Town
    - Industrial Park Area is highest Town-wide priority for expansion of sewer/wastewater service
      - Does not preclude additional opportunities from being addressed

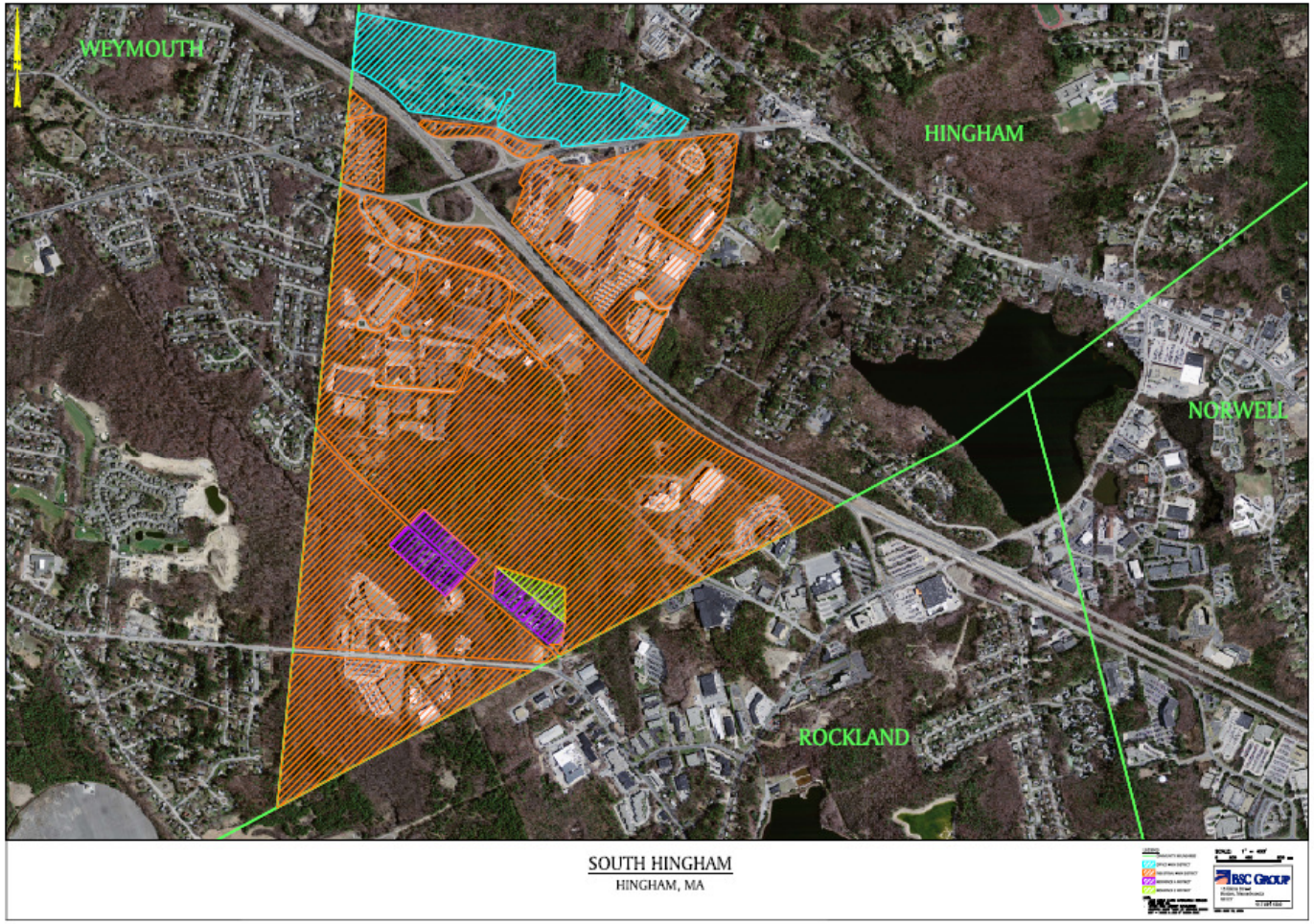
Similar conclusions to Chamber of Commerce report

Background: 2010 Town Meeting

- **3 Articles were approved by Town Meeting in 2010 to advance this project:**
- **Article 31:**
  - Authorized the Board of Selectmen to pursue legislation needed to provide the option for connecting to the MWRA and Weymouth sewer systems
- **Article 32:**
  - Created a new sewer district ("Industrial Park Area") and placed it under the control of the Hingham Sewer Commission
- **Article 33:**
  - Appropriated $15,000 for the design, engineering, and application for connection of the new sewer district to the MWRA sewer system

Objective: To create low-impact growth that drives significant, long-term revenue for Hingham

Where is the Industrial Park Area (IPA)?



Zoning Legend:

Blue: Office Park

Brown: Industrial Park

Purple/Green: Residential

So, what's happened since 2010?

- **Obtained input and sought involvement from Town boards, committees, and citizens:**
  - Board of Selectmen, Comprehensive Wastewater Management Committee, Sewer Commission, Water Supply Committee, Community Planning Department , Hingham Development and Industrial Commission (HDIC), Town Projects Engineer, Farm Hills Neighborhood Association
- **Met with <u>some</u> property owners to discuss project**
- **Evaluated two sewer options**
  - Connect to MWRA via Weymouth
  - Create "Decentralized" on-site wastewater treatment option
- **Concluded after extensive analysis that the MWRA-connection option was not feasible**
  - Constraints associated with connecting to both the Weymouth and MWRA sewer systems

Decentralized option appears to be the most cost-effective and has widespread support

Advantages of Decentralized On-Site System

1. **Less expensive than MWRA option**
2. **Better for the environment**
   - Eliminates inter-basin transfer water-replenishment requirement
   - Provides opportunities for water re-use
3. **Fewer State permitting requirements**
   - No legislation required
4. **Can be phased to address higher-priority areas first**
5. **Diminishes the need for multi-agency dealings (MWRA, Weymouth)**

We are pursuing this option with the goal of going "live" in 2015

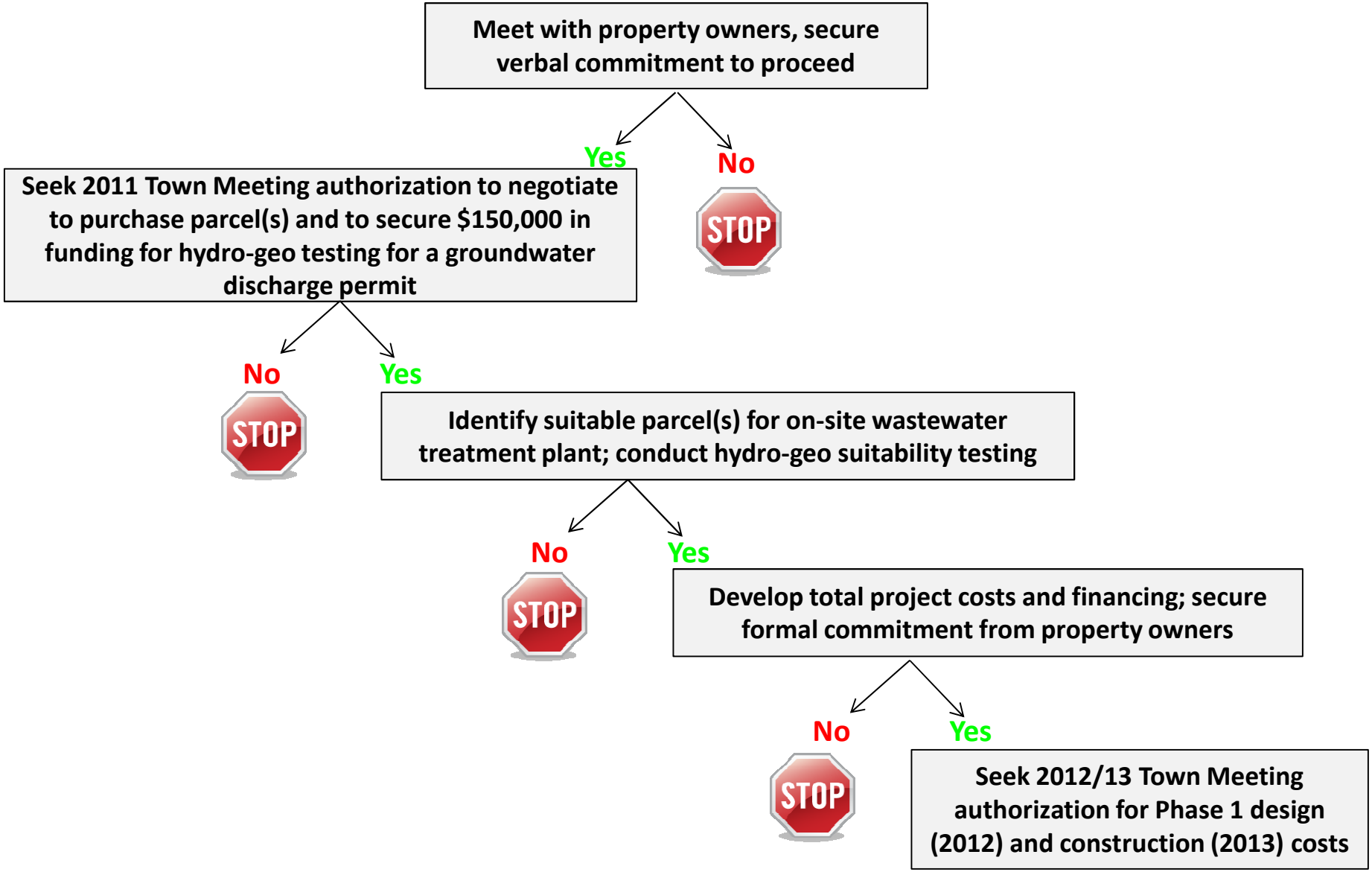
Conceptual Collection System Layout & Phasing

Phase 1
South RTE 3

Possible Phase 1A
Abington/Sharp Street area

Phase 2
North RTE 3
Undeveloped

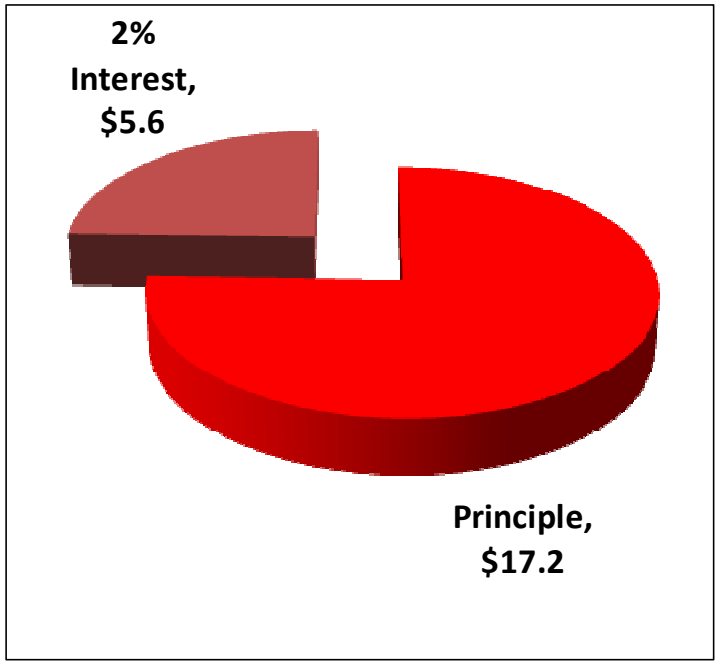
Next Steps


Meet with property owners, secure verbal commitment to proceed
Yes
No
STOP
Seek 2011 Town Meeting authorization to negotiate to purchase parcel(s) and to secure $150,000 in funding for hydro-geo testing for a groundwater discharge permit
No
Yes
STOP
Identify suitable parcel(s) for on-site wastewater treatment plant; conduct hydro-geo suitability testing
No
Yes
STOP
Develop total project costs and financing; secure formal commitment from property owners
No
Yes
STOP
Seek 2012/13 Town Meeting authorization for Phase 1 design (2012) and construction (2013) costs

Phase 1 & 1A Current Project Cost Estimate

Option 1:
State Debt (SRF) at 2%

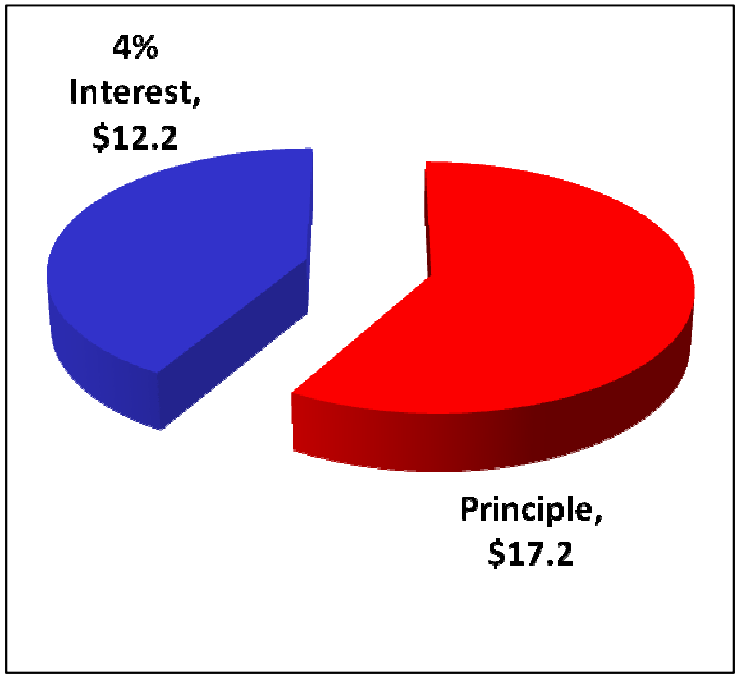
$22.8 million project cost



Preferred option

Option 2:
Town Debt at 4%

$29.4 million project cost



Current Project Status

Accomplishment
• Identified approximate and potential wastewater flows

• Prioritized implementation phases identified
  • Phase I: South of Route 3
  • Phase II: North of Route 3

• Laid out conceptual collection system
• Identified required State permits • Identifying SRF requirements for low interest loans(State Revolving Fund)
• Calculated preliminary project costs

• Identified payment method
  • Property-owner betterments payable over 30 years
  *Betterment = apportionment of **total** project costs to users through a tax levy*

• **Estimated** property-owner costs

Timeline to "Go Live"

Date	Milestone
1/2011	Develop articles for FY2012 Town Meeting (April 2011)
2/2011	Meet with CWMC, Sewer Commission, Board of Selectmen, Water Supply Committee, Aquarion to confirm course
2/2011	Meet with property owners; solicit verbal commitment
3/2011	Complete preliminary site review
4/2011	**Town Meeting**: Request authorization to negotiate for suitable parcel; request funds for hydro-geo testing to obtain groundwater discharge permit
6/2011	Finalize Comprehensive Wastewater Management Plan (CWMP)
7-12/2011	Complete pre-design/hydro-geo testing, address traffic amelioration, hold public meetings
9/2011	Obtain DEP approval
4/2012	**Town Meeting**: Request funds for design funding
5/2012 - 3/2013	Final design, permitting
4/2013	**Town Meeting**: Request funds for construction
5-12/2013	SRF application, approval, bidding phase
2014-2015	Construction


CHURCH
SCHOOL
BARE COVE 1633
TRAIN-BAND
TOWN-MEETING
HINGHAM 1635

Questions

Questions

- **Questions for Sewer Commission to address:**
  - What is the cost to hook up?
  - % buy-in required and by whom
    - Are residences “in” by default or is it elective?
  - How does a property owner indicate they are “in”?
    - Contract?
    - What happens if the property owners don’t accept it?
  - How will the betterment be structured?
    - 3 options
  - Who will run and manage this?
  - We need a policy?
  - We need to establish Commercial Flow Growth currently set at 25%
  - We need To socialize that the town tax base will risk the $150K
- **Other Questions:**
  - Can we strike deal(s) with a contingency for TM approval? Can we meet with Dwyer?
  - Need from AWP: Access, (?) Modify easement

Backup: Warrant articles

2010 Town Meeting: Article 31

- **ARTICLE 31. Will the Town authorize, but not require, the Board of Selectmen to: (1) petition the Great and General Court of the Commonwealth to enact special legislation to permit the area encompassing all of the land in southwest Hingham that is included in the Industrial Park and Office Park Districts, as well as the small residentially-zoned carve-outs on Abington Street, as shown on the map entitled 'Zoning Map – Parts A and C of Town of Hingham Massachusetts,' prepared by Coler and Colantonio and dated 2009, to connect to the Weymouth sewer system and/or the Massachusetts Water Resources Authority (MWRA) sewer system; and, (2) enter into permanent membership and become a permanent member of the MWRA for the supply of a supplemental public water supply for the Town of Hingham in accordance with Section 8(d) of Chapter 372 of the Acts of 1984 and any successor legislation thereto, and authorize the Board of Selectmen to enter into long-term contracts and/or agreements to carry out the foregoing and, further, to maintain and further such membership, or act on anything relating thereto?**

- **COMMENT: Securing special legislation is the first step towards provision of adequate sewer and water service to the commercially-zoned properties included in the Industrial Park and Office Park Districts in South Hingham. Sewering of the Industrial/Office Park Area will enable: (1) low-impact, high-value development; (2) increased permit-fee and property-tax revenue for the Town; and, (3) local job growth.**
  The Massachusetts Water Management Act of 1986 requires that every gallon of wastewater removed by sewer through an inter-basin transfer be replenished on a one-for-one basis. Authorizing the Board of Selectmen to join the MWRA provides a third option for sourcing such replacement water in addition to utilizing the Aquarion Water Company of Massachusetts or the Town of Weymouth. The choice of provider will be based on a number of factors, the most important of which are cost and adequacy of supply.

2010 Town Meeting: Article 32

- **ARTICLE 32. Will the Town: (1) create a sewer district encompassing all of the land in southwest Hingham that is included in the Industrial Park and Office Park Districts, as well as the small residentially-zoned carve-outs on Abington Street, as shown on the map entitled 'Zoning Map – Parts A and C of Town of Hingham Massachusetts,' prepared by Coler and Colantonio and dated 2009, to be known as the Industrial/Office Park Sewer District; and (2) place such sewer district under the control of the Board of Sewer Commissioners, or act on anything relating thereto?**

- **COMMENT: In July, 2009, the Comprehensive Wastewater Management Committee released its draft report identifying the Industrial Park Area—containing the Industrial Park and Office Park Districts—as a top Town priority for consideration of sewer treatment.**

- **In December, 2009, the South Shore Chamber of Commerce presented to Town officials and the Hingham Business Council a study describing economic-development challenges and opportunities in the Industrial Park Area. The study highlighted the lack of sewer service as a major hurdle to development. Shortly thereafter, a well-established, reputable developer submitted a permit application to the Planning Board to build a major medical facility in the Industrial Park Area; the permit was approved by the Planning Board on March 1, 2010. To help secure Town support for sewer service, the developer offered to bear the cost of constructing the first phase of sewer infrastructure—estimated to be approximately $500,000—which would enable connection of the Industrial Park Area to Weymouth's sewer main.**

- **In response to the two aforementioned studies, a potential near-term building project which could provide the Town substantial new permit fees and property-tax revenues, and a developer willing to absorb significant construction costs, the Board of Selectmen commissioned a conceptual planning study in December, 2009. The study was jointly funded by Planning Board, Board of Health, and Sewer Commission funds supplemented by two major developers currently in the Industrial Park Area. The study's purpose was to determine the feasibility of creating a new Industrial/Office Park Sewer District, which would be served by the Massachusetts Water Resources Authority (MWRA) through a connection with Weymouth's sewer system.**

- **A February 2010 initial meeting with representatives of the Weymouth Sewer Department elicited a positive response regarding such an Industrial Park Area sewer connection, based on the volume of flows proposed. Likewise, an initial meeting in February among Town officials, Industrial Park Area business representatives, and the MWRA generated a similarly positive response regarding the MWRA's receptivity to serving the proposed sewer district.**

2010 Town Meeting: Article 33

- **ARTICLE 33. Will the Town raise and appropriate or transfer from available funds a sum of money for the design, engineering, and application for connection of a sewer district, encompassing all of the land in southwest Hingham that is included in the Industrial Park and Office Park Districts, as well as the small residentially-zoned carve-outs on Abington Street, as shown on the map entitled 'Zoning Map – Parts A and C of Town of Hingham Massachusetts,' prepared by Coler and Colantonio and dated 2009, to be known as the Industrial/Office Park Sewer District, to the Massachusetts Water Resources Authority (MWRA) sewer system, or act on anything relating thereto?**
- **COMMENT: Creation of the proposed Industrial/Office Park Sewer District by the Town requires submission to and approval by the MWRA of a detailed application containing information about community support for the project, estimated build-out, wastewater flows, and environmental impacts.**
- **The Town will contract with a knowledgeable engineering firm to work with the Town Administrator, Director of Community Planning, Projects Engineer, and Sewer Commission to perform the design, engineering studies, and cost-estimation necessary for completion of the MWRA sewer application at a fixed cost to the Town of $58,000.**
- **Preliminary estimates of permit fees from the recently-permitted medical facility development are approximately $150,000. Feedback from existing commercial property owners in the Industrial Park Area indicates that access to sewer would likely prompt similar revenue-generating development in the form of new construction or expansion of existing facilities.**
- **Were the MWRA application for sewer connection to be approved, the design and construction costs of any related sewer-infrastructure development would be privately financed on either a 'pay-as-you-go' basis—similar to the approach employed during the commercial re-development of the former Hingham Shipyard—or through betterment assessments. In the unlikely event that any Town-financed sewer-infrastructure development were to be contemplated, prior Town Meeting authorization would be required.**

2011 Town Meeting Article Drafts

- **Will the Town:**
  - (1) Authorize, but not require, the Board of Selectmen to acquire a parcel(s) or real property(s) for purpose of siting a wastewater treatment facility/dispersal area, utility corridor, access roadway and
  - (2) Raise and appropriate, borrow or transfer from available funds an appropriate sum of money for said purchase(s), or act on anything relating thereto?
- **Will the Town raise and appropriate, borrow or transfer from available funds a sum of money for the engineering and permitting associated with obtaining a "Groundwater Discharge Permit" for a prospective wastewater treatment facility, or act on anything relating thereto?**

Backup: Additional project information

IMPLEMENTING EFFECTIVE BETTERMENT POLICY FOR WASTEWATER PROJECTS: WALKING THE LABYRINTH

The Devil is in the Details

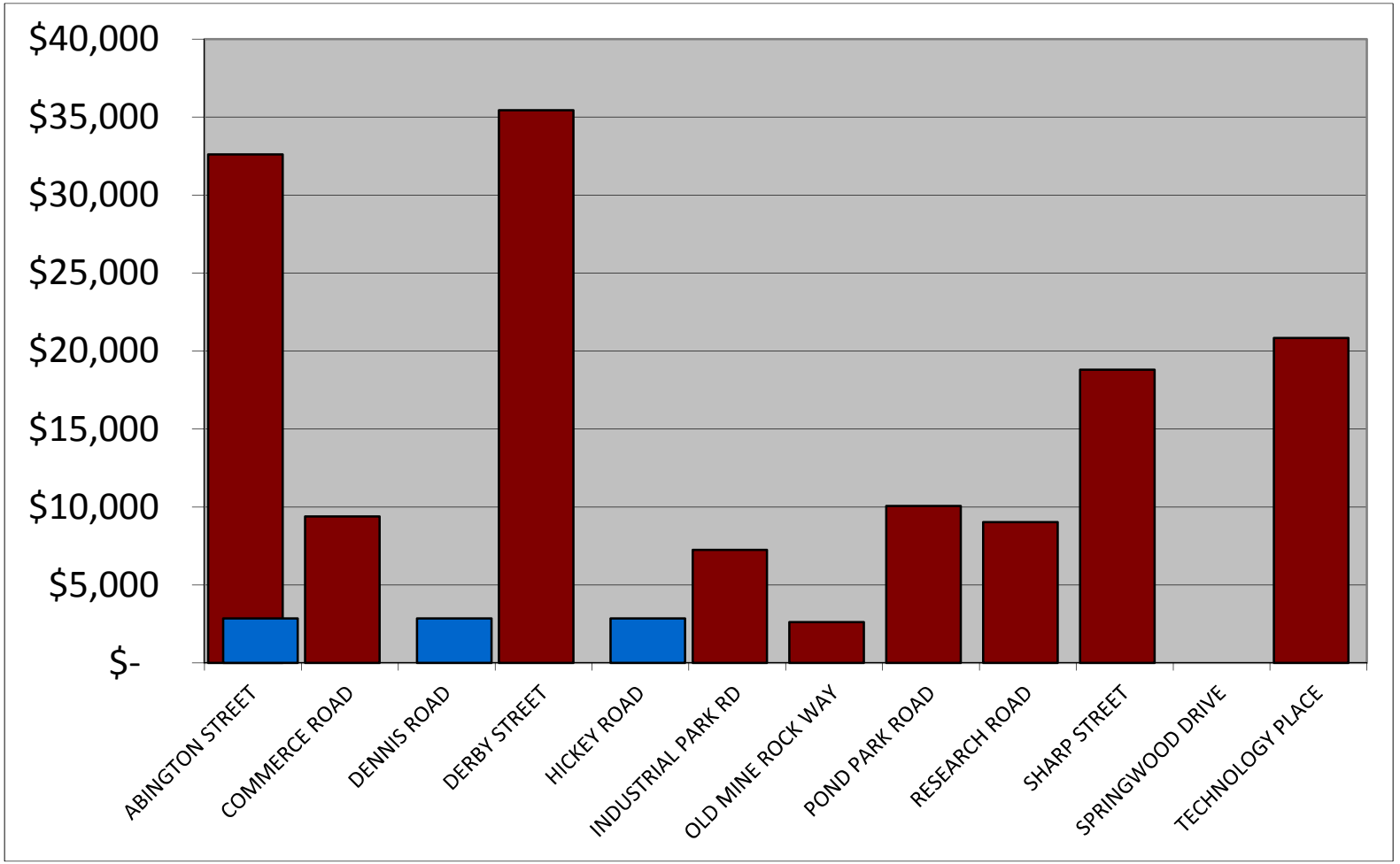
- **There are a number of issues related to implementation of a betterment program. Each issue presents its own peculiarities and need for careful attention. These include:**
  - Determining the amount of the project capital to be recovered by betterments
  - Identifying the source of revenue for funding the portion not covered by betterments
  - Collecting funds through estimated assessments
  - Codifying procedure for assigning multiple units to non-residential properties
  - Assessing undeveloped lots
  - Determining highest and best use
  - Assessing dividable lots
  - Codifying appeals process
  - Accounting for exemptions and deferrals
  - Establishing interest and term of betterment

Backup: Additional cost data

Summary: Total Project Cost by Street

	Current Use By Location Gals/Day	Projected Use By Location Gals/Day	Projected Increase in Flow Based on FAR Gals/Day	Percent Increase	Projected Cost By Location & Current Use	Projected Cost By Location & Projected Use	Total Number of Properties	Commercial Properties	Residential Properties	30-year Betterment Commercial Property	30-year Betterment Residential Property	Average 30 -Year Bettement Cost for Commercial Property	Average 30 -Year Bettement Cost for Residential Property	Average Annual Bettement Cost for Commercial Property	Average Annual Year Bettement Cost for Residential Property
ABINGTON STREET	27758	35340	7582	21%	$11,070,999	$ 9,203,264	24	8	16	$7,828,235	$1,375,029	$ 978,529	$85,939	$32,618	$ 2,865
COMMERCE ROAD	2099	2165	66	3%	$ 837,165	$ 563,806	2	2	0	$ $563,806	$ -	$ 281,903		$ 9,397	
DENNIS ROAD	660	660	0	0%	$ 263,234	$ 171,879	2	0	2	$ -	$ 171,879		$85,939		$ 2,865
DERBY STREET	2250	4084	1834	45%	$ 897,390	$ 1,063,499	1	1	0	$1,063,499	$ -	$ 1,063,499		$35,450	
HICKEY ROAD	1650	1650	0	0%	$ 658,086	$ 429,696	5	0	5	$ -	$ 429,696		$85,939		$ 2,865
INDUSTRIAL PARK RD	7931	9182	1251	14%	$ 3,163,199	$ 2,391,283	11	11	0	$2,391,283	$ -	$ 217,389		$ 7,246	
OLD MINE ROCK WAY	97	302	205	68%	$ 38,687	$ 78,531	1	1	0	$ 78,531	$ -	$ 78,531		$ 2,618	
POND PARK ROAD	8014	12768	4754	37%	$ 3,196,303	$ 3,324,983	11	11	0	$3,324,983	$ -	$ 302,271		$10,076	
RESEARCH ROAD	8765	9367	602	6%	$ 3,495,832	$ 2,439,256	9	9	0	$2,439,256	$ -	$ 271,028		$ 9,034	
SHARP STREET	5513	28157	22644	80%	$ 2,198,804	$ 7,332,823	13	13	0	$7,332,823	$ -	$ 564,063		$18,802	
SPRINGWOOD DRIVE	1320	1320	0	0%	$ 526,469	$ 343,757	4	4	0	$ -	$ 343,757	$ -		$ -	
TECHNOLOGY PLACE	7200	7200	0	0%	$ 2,871,647	$ 1,875,039	3	3	0	$1,875,039	$ -	$ 625,013		$20,834	

Phase 1 Option 1
Average annual betterment cost by street



Construction Cost Detail

- **Total Construction Costs = $17.2 million**
  - $11.5 million Treatment Facility
  - $5.7 million Infrastructure

Hingham Treatment Facility – Estimate of Probable Cost

Item	*Cost*
Decentralized Treatment Facility	
Equipment, tanks, and appurtenances	$6,500,000
Subsurface Disposal System Allowance	$300,000
Subtotal	$6,800,000
Construction Contingency (25%)	$1,700,000
Total Construction Cost	$8,500,000
Escalation to midpoint of construction	$9,300,000
Engineering and Implementation(20% of Subtotal)	$1,900,000
Land Acquisition / Easements (Allowance)	$300,000
Total	**$11,500,000**

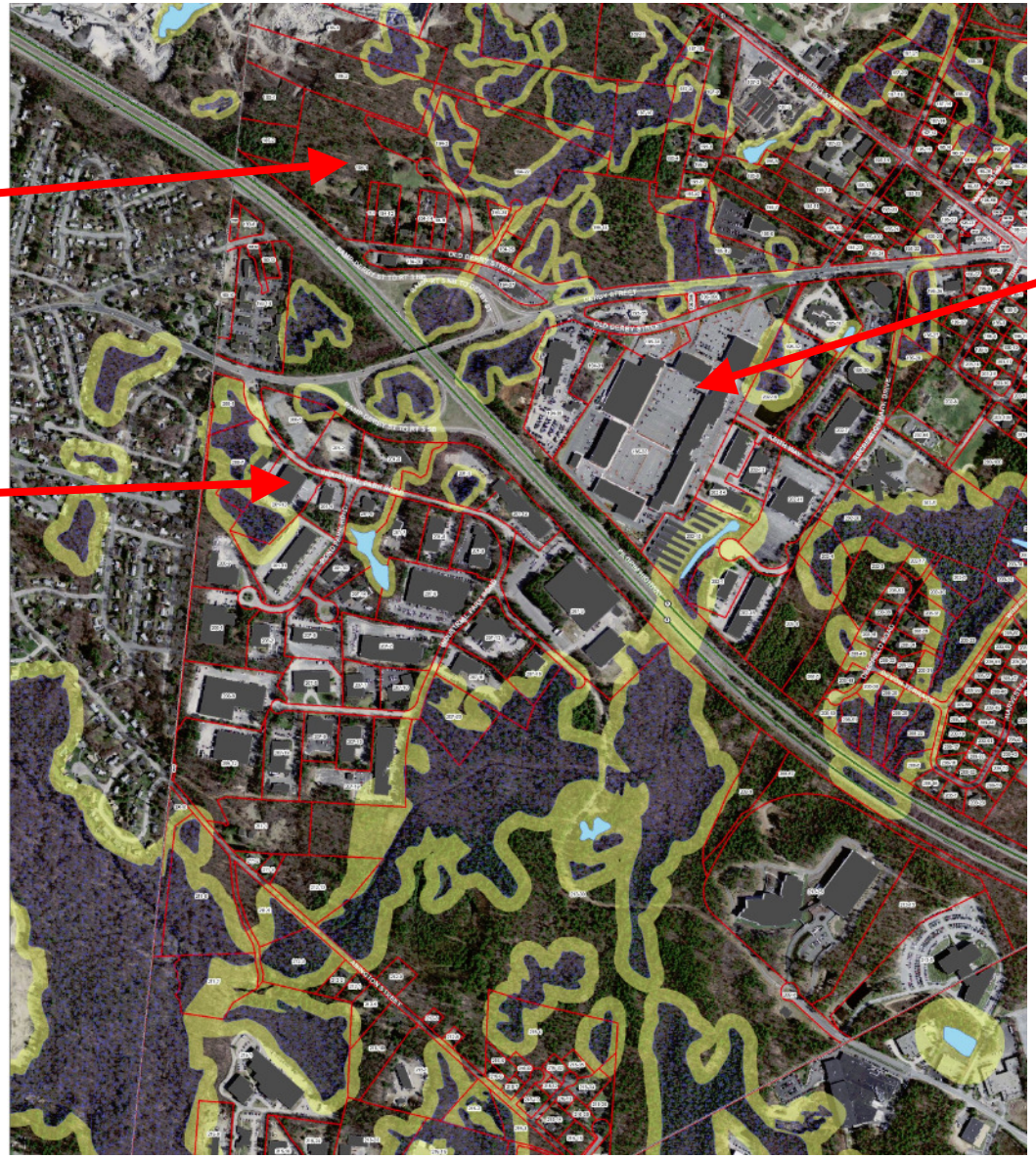
Construction Cost Detail

- **Total Construction Costs = $17.2 million**
  - $11.5 million Treatment Facility
  - $5.7 million Infrastructure

Snap Shot of Infrastructure Costs

		Allocated Cost	*Current Flow*	*Proj Flow*	*% of Cost*
Abington Street Pumping Station (to Ind. Park Rd.)		$ 2,403,570	50.4%	59.8%	42.5%
	ABINGTON STREET DENNIS ROAD HICKEY ROAD SPRINGWOOD DRIVE SHARP STREET				
			Current Flow	*Proj Flow*	*% of Cost*
Industrial Park Rd Pumping Station (to Commerce)		$ 3,253,770	49.6%	40.2%	57.5%
	COMMERCE ROAD DERBY STREET INDUSTRIAL PARK RD OLD MINE ROCK WAY POND PARK ROAD RESEARCH ROAD TECHNOLOGY PLACE				
		$ 5,657,340	**Total**		

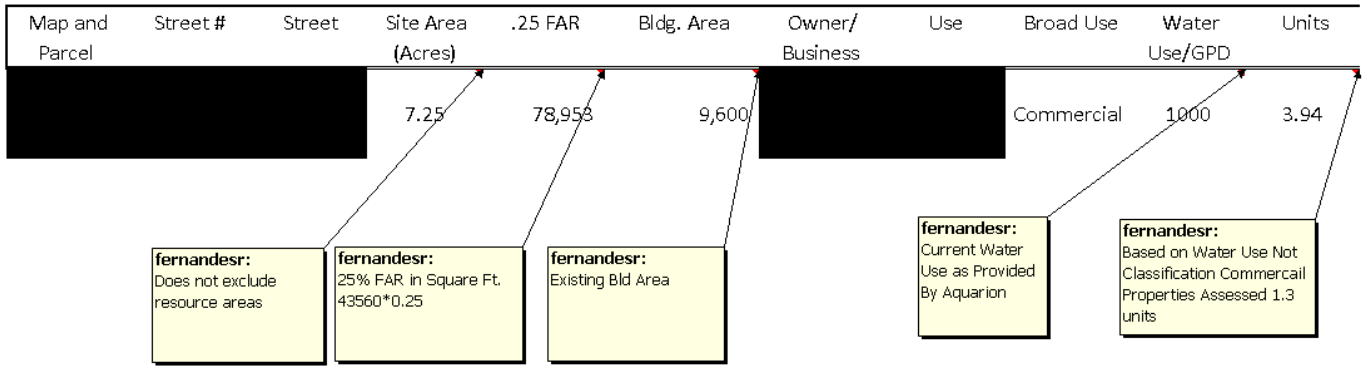
Constraints Plan



15.203: System Sewage Flow Design Criteria

TYPE OF ESTABLISHMENT	UNIT	GALLONS PER DAY	MINIMUM ALLOWABLE GPD FOR SYSTEM DESIGN
(3) COMMERCIAL (continued)			
Factory, Industrial Plant, Warehouse or Dry Storage Space without cafeteria	per person	15	
Factory, Industrial Plant, Warehouse or Dry Storage Space with cafeteria	per person	20	

Conceptual Betterment Calculator



Total Arces	Potential	Exisiting	Total Available Growth (based on .25 FAR)
435	4,377,344	2,299,706	2,077,639

Betterment Based Current Usage

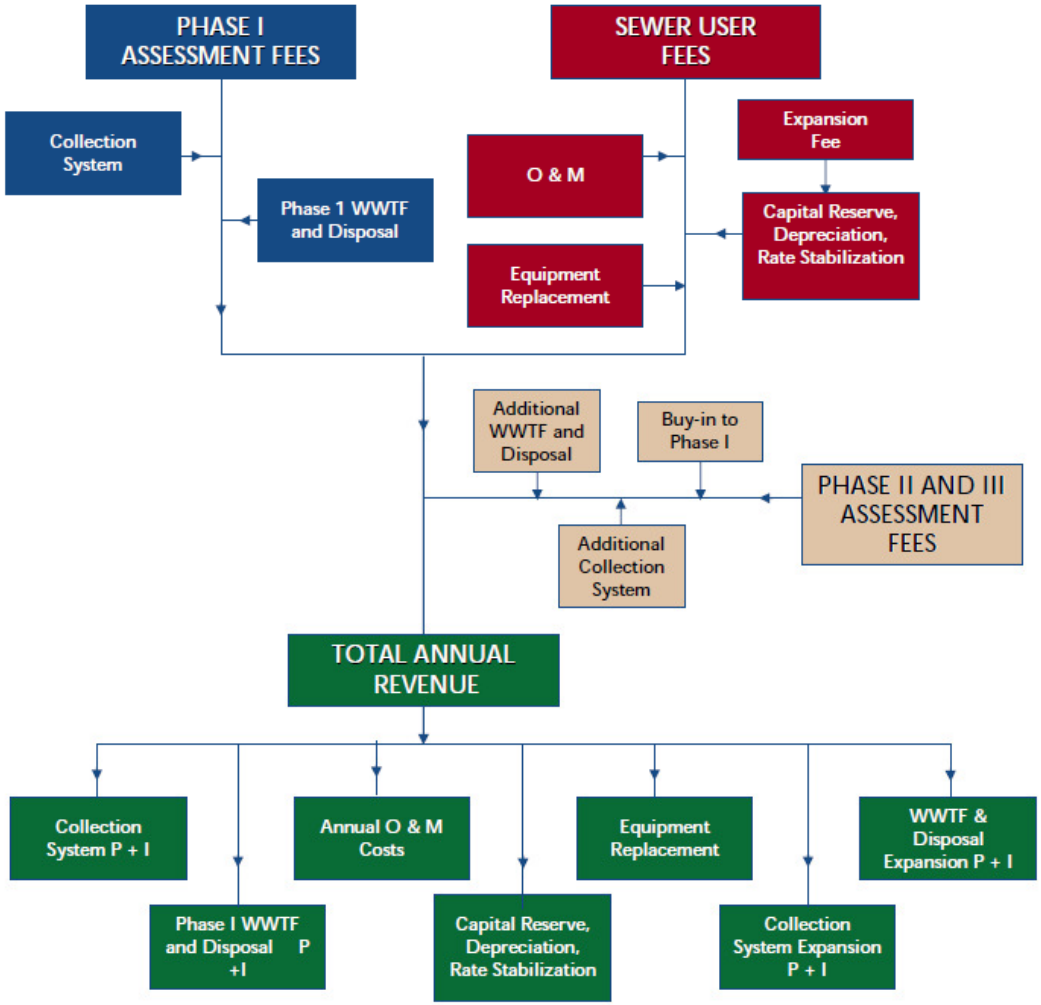
Percentage of total usage	30-year Total Betterment Current Useage	Plant Betterment annual cost	Annual Sewer Fees for O & M	Total Annual Cost Plant Option	30-year Total Betterment Current Useage	MWRA Betterment annual cost	Annual MWRA FEE $8.50/100 Cu. Ft.	Total Annual Cost MWRA Option	30-year MWRA FEE 8.50/Cu. Ft.
1.29%	$ 295,956	$ 9,865	$ 2,004	$ 11,870	$ 223,687	$ 7,456	$ 4,091	$ 11,547	$ 122,727

Betterment Based FAR Usage (Built-Out)

Projected Water Use	Project Water Use Based on Title V	Project Water use based on 25% Comm Growth	Percentage of total usage	30-year Total Betterment Projected Usage	Plant Betterment annual cost	Annual Sewer Fees for O & M	Total Annual Cost Plant Option	30-year Total Betterment Current Useage	MWRA Betterment annual cost	Annual MWRA FEE $8.50/100 Cu. Ft.	Total Annual Cost MWRA Option	30-year MWRA FEE 8.50/Cu. Ft.	30 Year Septic Replacement Costs
8224	720	1250	1.32%	$ 302,936	$ 10,098	$ 2,052	$ 12,149	$ 228,963	$ 7,632	$ 33,645	$ 41,277	$ 1,009,336	$ 70,000

Revenue Flow Considerations

Town of Hingham
Annual Revenue Flow



Flows

HINGHAM, MA - INDUSTRIAL PARK SEWER PROJECT
TABLE 1 -- ANALYSIS OF WATER AND WASTEWATER FLOWS BY PHASE

Wright-Pierce, 16 Sept 2011

Flow Unit Source	Current Water Use Ann. Avg. (gpd) Aquarion	Current WW Flow Ann. Avg. (gpd) W-P	Current WW Flow Title 5 (gpd) CDM	New Development Title 5 (gpd) CDM	New Redevelopment Title 5 (gpd) CDM	New Vacant Land Title 5 (gpd) CDM	Future WW Flow Title 5 (gpd) CDM	Future WW Flow Ann Avg (gpd) See Note 5	Future WW Flow Max Month (gpd) See Note 6	Future WW Flow Short-Term Peal (gpd) See Note 7	Future WW Flow Peak Hour (gpd) See Note 8
Phase 1	27,100	23,000	66,285	25,750	13,258	20,000	125,000	62,500	78,100	125,000	325,000
Phase 2	28,900	24,600	52,800	75,000	10,560	10,000	148,000	74,000	92,500	148,000	384,800
Phase 3	14,400	12,200	22,190	0	4,438	10,000	37,000	18,500	23,100	37,000	96,200
Total	70,400	59,800	141,275	100,750	28,256	40,000	310,000	155,000	193,700	310,000	806,000

Notes:
1) Water use data provided by the Town/ Aquarion for period Jan 2007 to Aug 2010.
2) Current annual average wastewater flow estimated by W-P based on current annual average water use and a consumptive use factor of 0.85.
3) Current and new Title 5 wastetwater flow estimated by CDM (CWMP, Section 5.3.1, Appendix C).
4) Flows by phase estimated by W-P based on CWMP Appendix C.
5) Relationship between Title 5 and Annual Average wastewater flow is based on provisions in Title 5.
6) Relationship between Annual Average and Maximum wastewater flow is based on W-P experience (1.25 times Annual Average).
7) Short Term Peak wastewater flow is considered equivalent to Title 5 flow.
8) Relationship between Annual Average and Peak Hour wastewater flow is based on Merrimack Curve (CWMP, Section 5.2, 5.2 times Annual Average).

Sites