# Hamilton Development Corporation

**Conceptual Planning for Wastewater Management**
**in the**
**Hamilton/Wenham Village**

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**June 17, 2014**

**Presented by:**

WRIGHT-PIERCE
Engineering a Better Environment

## Welcome

**Hamilton Development Corporation (HDC)**

*Board of Directors*

- Brian Stein, Chairman
- Anthony Nickas, Treasurer
- Dave Carey
- Bill Gisness
- Rick Mitchell

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## Recent Activities

- 2013 - HDC began operation dedicated to fostering the economic vitality of the Hamilton Business District.
- 2013 – Through a grant from the MAPC, the HDC and towns of Hamilton & Wenham held public meetings & drafted recommendations on downtown infrastructure and zoning.
- 2014 – The HDC purchased 59 & 63 Willow Street. Their future use will be determined by input from the community, land use planning boards, and Selectmen.

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## Purpose of This Meeting

- Bring together Hamilton and Wenham citizens, business owners, and local officials to shape the future of their communities.
- Learn how wastewater generation, treatment and disposal impact the Hamilton & Wenham business districts and their future uses.
- Begin a dialogue on the evolution of the two town's business districts and abutting neighborhoods.

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## Purpose of This Meeting, cont'd

- Increase public awareness of potential options and costs
- Hear from the public on important issues
  - Need for wastewater infrastructure
  - Potential service areas
  - Build-out assumptions
  - Cost allocation issues
- *This is just the beginning of the planning process*

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## How Did This Meeting Come About?

- 1982 Downtown Hamilton Plan
- 2004 Hamilton Master Plan
- 2009 Economic Development Charrette
- 2014 Hamilton-Wenham Village Plan

All recommended infrastructure investments including wastewater treatment, bikeways, sidewalks, parking, and zoning, etc., to support expanded uses in the business districts.

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## Overview of Technical Presentation

1. The wastewater planning process
2. Possible planning areas in Hamilton and Wenham
3. Land use and water use information
4. Wastewater treatment options
5. Options for wastewater disposal or reuse
6. Illustrative costs

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## Conceptual Wastewater Planning

Steps in developing wastewater infrastructure

- Planning
- Design
- Construction

We are just beginning—we are only in the **conceptual planning phase**

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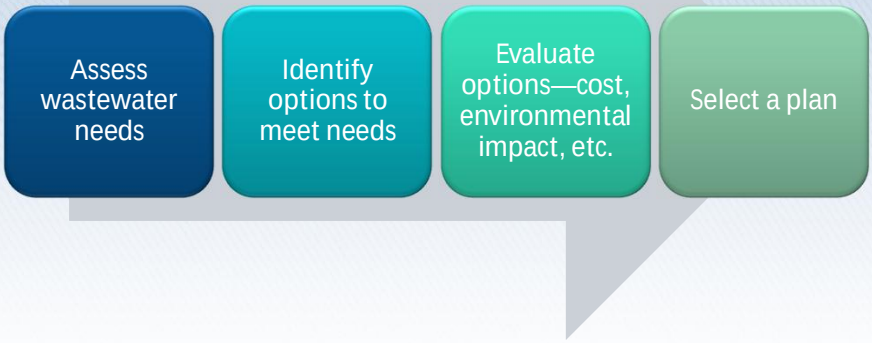
## Planning Phase Tasks

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## Assessing Wastewater Needs

Why might more than a Title 5 system be needed?

1. It may not fully provide sanitary conditions
2. It may cause water supplies impacts
3. It may cause nutrient enrichment of surface waters
4. It may inhibit economic development
5. It may not be convenient or cost-effective

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## Components of a Wastewater System

1. Collection (sewer system)
2. Treatment
3. Disposal/reuse

A system may also may involve transport

- From collection area to treatment site
- From treatment site to disposal/reuse site

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## Possible Sewer Service Areas

- Hamilton Business District (Area A)
- Nearby areas in Wenham (Area B)
- South Hamilton Village (Area C)
- Possible combinations
  - A alone
  - A + B
  - A + B + C

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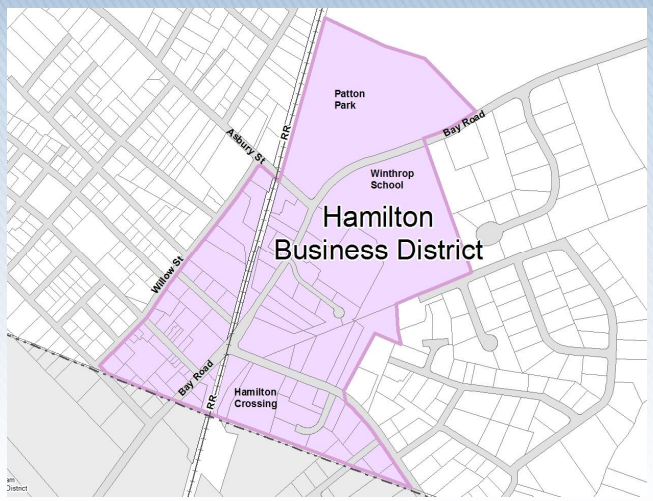
# Hamilton
# Business District (Area A)

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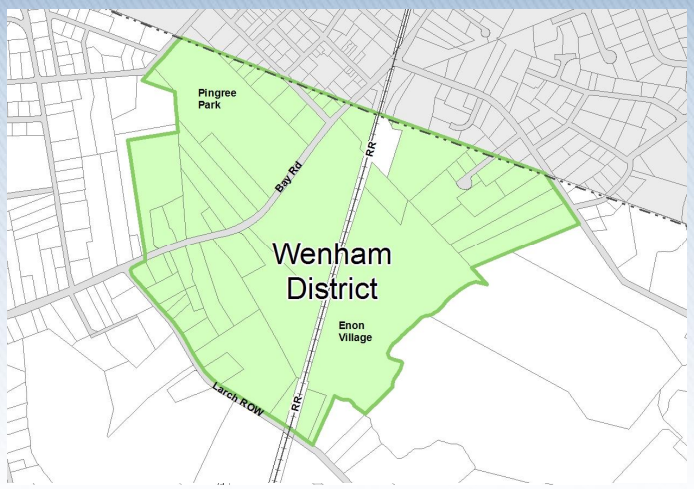
# Nearby Areas in
# Wenham (Area B)

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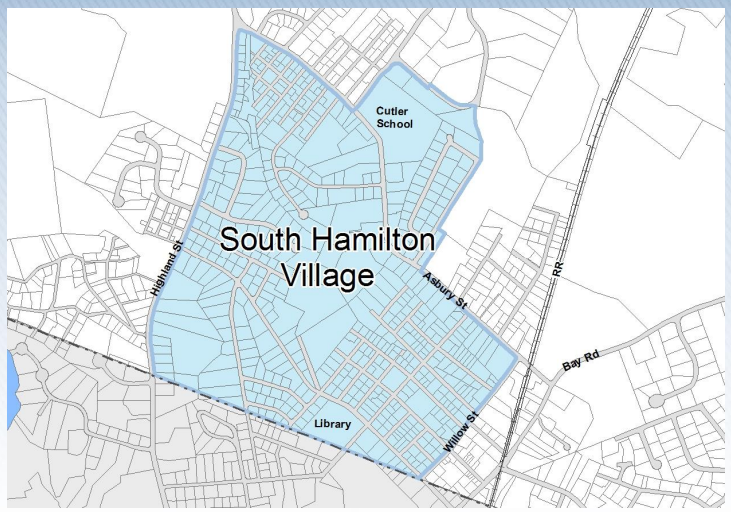
# South Hamilton Village (Area C)

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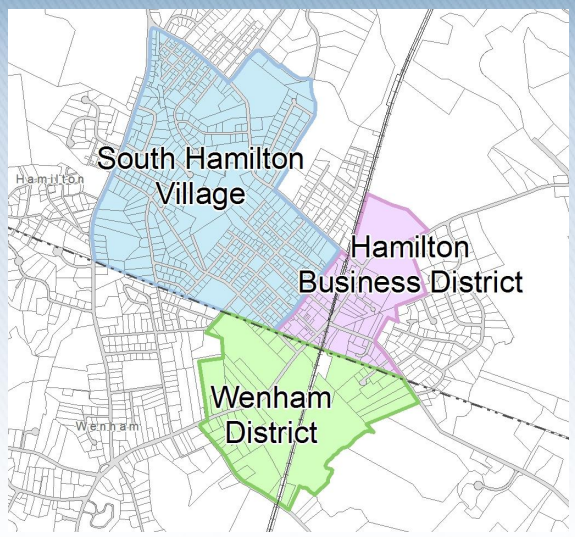
# Overall Area

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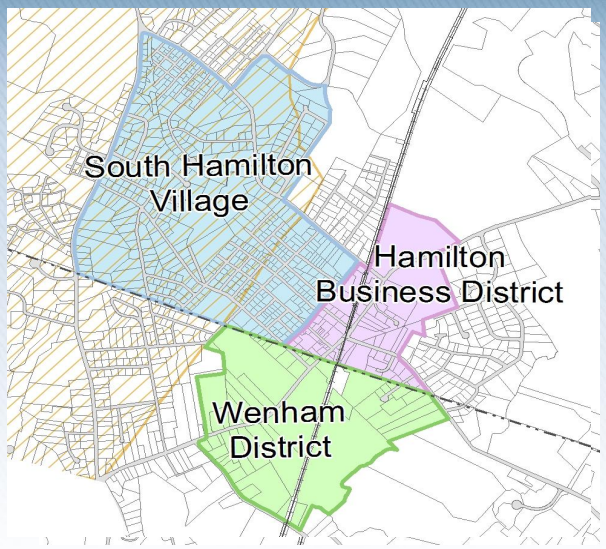
## Water Supply Recharge Area

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## Parcels and Lot Size

| | Parcels | Avg. Lot Size, acre |
|---|---|---|
| Area A—Hamilton Business District | 80 | 0.79 |
| Area B—Nearby Wenham Neighborhoods | 50 | 1.53 |
| Area C—So. Hamilton Village | 530 | 0.43 |

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## Existing Land Use

| | Resid. Parcels | Comm. Parcels | Munic./ Instit. Parcels |
|---|---|---|---|
| Area A—Hamilton Business District | 32 | 35 | 13 |
| Area B—Nearby Wenham Areas | 45 | 5 | 0 |
| Area C—So. Hamilton Village | 498 | 2 | 30 |

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## Typical Wastewater Flows

| Flows in gallons/day per parcel | Area A Hamilton Bus. Dist. | Area B Nearby Wenham | Area C So. Hamilton |
|---|---|---|---|
| Single-fam. residential | 183 | 181 | 180 |
| Multi-fam. residential | 216 | | 324 |
| Housing Authority | | 4,300 | 1,800 |
| Boulders | | 1,850 | |
| General commercial | 167 | 156 | 211 |
| Hamilton Crossing | 3,100 | | |
| Schools | 740 | | 716 |

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## Build-Out Projections

| Flows in gallons/day | Area A Hamilton Bus. Dist. | Area B Nearby Wenham | Area C So. Hamilton |
|---|---|---|---|
| Current flows | 18,000 | 15,000 | 98,000 |
| Growth allowances | | | |
| • Vacant land develop. | 0 | 5,000 | 1,500 |
| • Commercial re-develop. | 20,200 | 1,500 | 0 |
| • General increase | 1,800 | 1,500 | 9,500 |
| Total increase | 22,000 | 8,000 | 11,000 |
| *Increase as % of current* | *122%* | *59%* | *12%* |

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## Simplified Needs Assessment

| | Area A Hamilton Bus. Dist. | Area B Nearby Wenham | Area C So. Hamilton |
|---|---|---|---|
| Sanitary | √ | √ | √ |
| Water Supply Protection | | | √ |
| Surface Water Protection | | | √ |
| Economic Development | √√√ | √√ | |
| Cost, convenience | √ | √ | √ |

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## Treatment Options

1. Simple septic tank
   *Only permitted at flow < 10,000 gpd*
2. Modular treatment system
3. South Essex Sewer District

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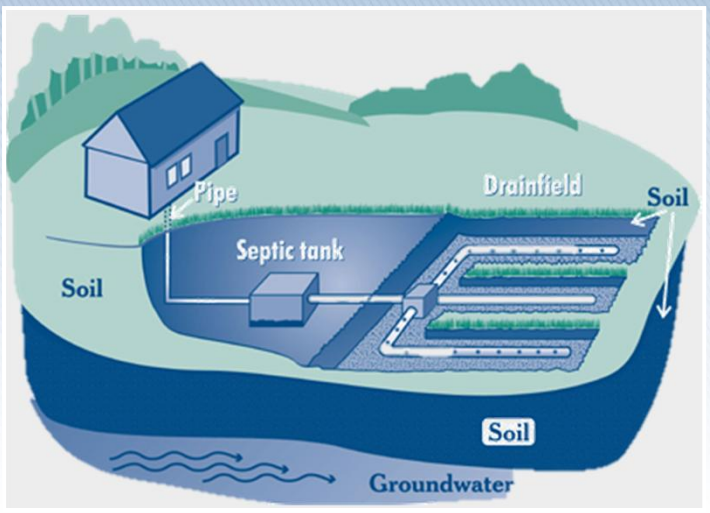
## Simple Septic Tank

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## Modular Treatment System

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## Modular Treatment System

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## Modular Treatment System

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## Modular Treatment System

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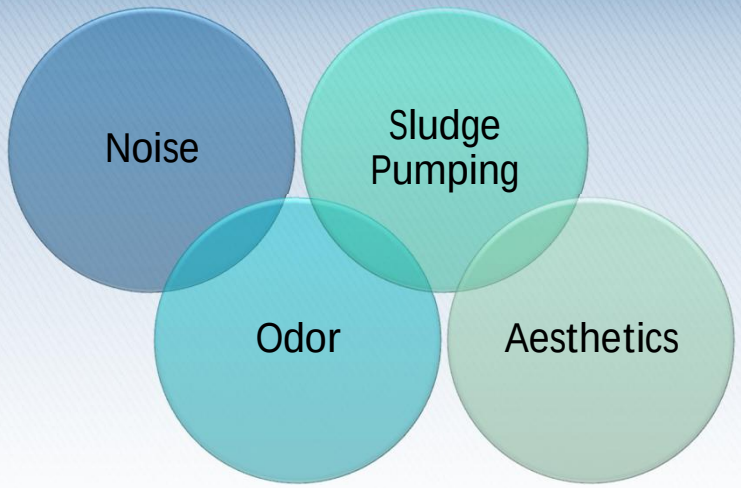
## Potential Issues

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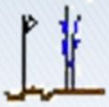
## Disposal and Reuse Options

- Subsurface leaching
- Rapid infiltration
- Spray irrigation
- Drip dispersal



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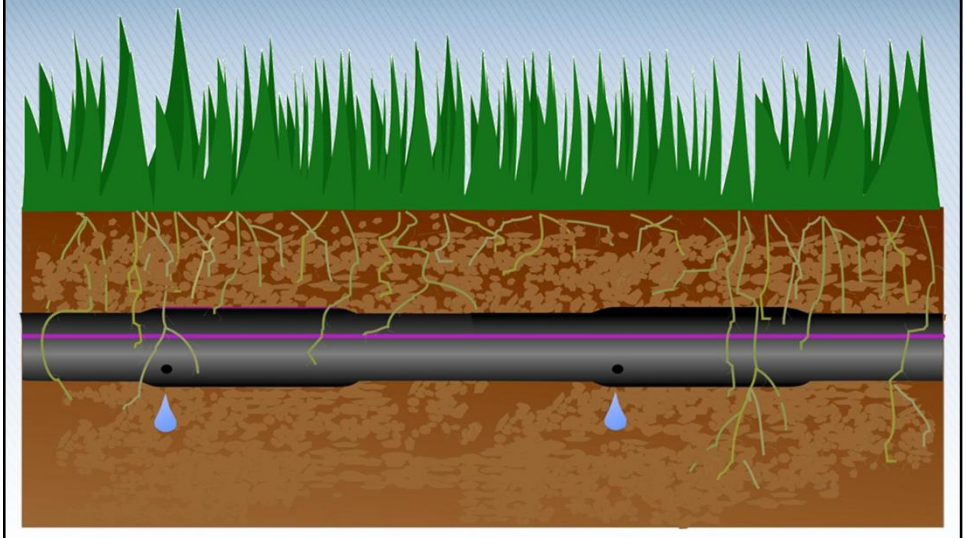
## Drip Dispersal



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## Subsurface Leaching: Oak Bluffs

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## Rapid Infiltration: Cohasset

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## Spray Irrigation

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## Drip Dispersal: Sherborn

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## Drip Dispersal: Sherborn

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## Drip Dispersal: Pine Tree Camp

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## Potential Disposal Sites

- Patton Park
- Pingree Park
- Hamilton Library
- Schools

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## Costs and Funding

- Two types of costs
  - Capital cost
  - O&M cost
- Grants and loans to offset capital costs
  - Economic Development Agency
  - Rural Development (FmHA)
  - State Revolving Loan Fund
- Public-private partnerships

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## Costs and Funding

- Even with grants, there will be a **local share** of capital costs
- Two basic ways to fund local share
  - betterment assessments
  - general taxation
- Typical way to fund O&M costs
  - quarterly or monthly user fee
  - generally based on water use

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## Capital and O&M Costs

| Illustrative Costs | Hamilton Business District alone | HBD + Wenham Area | HBD + Wenham + So. Ham. Vill. |
|---|---|---|---|
| | Area A | Areas A & B | Areas A, B & C |
| Capital Cost, $M | 9 | 13 | 32 |
| O&M Cost, $/yr | 360,000 | 470,000 | 800,000 |
| Typical User Charges for connected parcels | | | |
| Residential, $/yr | 1,800 | 1,500 | 900 |
| Commercial, $/yr | 6,400 | 5,300 | 3,300 |

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## Capital Cost Components Areas A + B

| Illustrative Cost | Cost, $M |
|---|---|
| Collection | 4.1 |
| Treatment | 6.6 |
| Disposal/reuse | 1.5 |
| Land | 0.3 |
| Total | 12.5 |

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## Financing Capital Costs through Property Taxation (no grants)

| Illustrative Costs | Hamilton Business District alone | HBD + Wenham | HBD + Wenham + So. Ham. Vill. |
|---|---|---|---|
| | Area A | Areas A & B | Areas A, B & C |
| Capital Cost, $M | 9 | 13 | 32 |
| Debt service (5%, 20-yr) | 720,000 | 1,000,000 | 2,580,000 |
| Tax rate impacts, $/yr, for all taxable parcels | | | |
| Residential—$400,000 | 220 | 190 | 700 |
| Commercial—$400,000 | 220 | 190 | 700 |
| Tax rate increase | 2% to 3% | 2% to 3% | 9% to 10% |

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## Financing Capital Costs through Betterment Assessments (no grants)

| Illustrative Costs | Hamilton Business District alone | HBD + Wenham | HBD + Wenham + So. Ham. Vill. |
|---|---|---|---|
| | Area A | Areas A & B | Areas A, B & C |
| Capital Cost, $M | 9 | 13 | 32 |
| Properties Served | 80 | 130 | 680 |
| Costs per Property Served (not town-wide) | | | |
| (100% betterments) | 110,000 | 96,000 | 47,000 |

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## Cost Impacts of Growth

| Illustrative Costs | Hamilton Business District alone | HBD + Wenham | HBD + Wenham + So. Ham. Vill. |
|---|---|---|---|
| | Area A | Areas A & B | Areas A, B & C |
| Capital Costs, $M | | | |
| • No Growth | 6.6 | 9.7 | 29.7 |
| • With growth | 8.9 | 12.5 | 32.2 |
| • Incremental cost of growth | 2.3 | 2.8 | 2.5 |
| | +36% | +29% | +8% |

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## Growth Management Concepts

- Flow-Neutral Planning

  *Allow no more flow than would occur under Title 5*

- Checkerboard Sewer System

  *Plan to serve only certain lots, with rest staying on Title 5*

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## Next Steps

Make your voices heard ! !

Comment opportunities:

Written

US Mail:

Town Hall, P.O. Box 429, Hamilton 01936

Town Hall suggestion box

Email

Kristine Cheetham, Planning Coordinator

kcheetham@hamiltonma.gov

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## Next Steps

- Obtain feedback from local boards and committees
- Continue discussions on important issues
  - Wastewater needs
  - Possible service areas
  - Amount of reserve capacity (build-out)
  - Grants and loans
  - Best mix of taxation and betterments

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Questions / Discussions