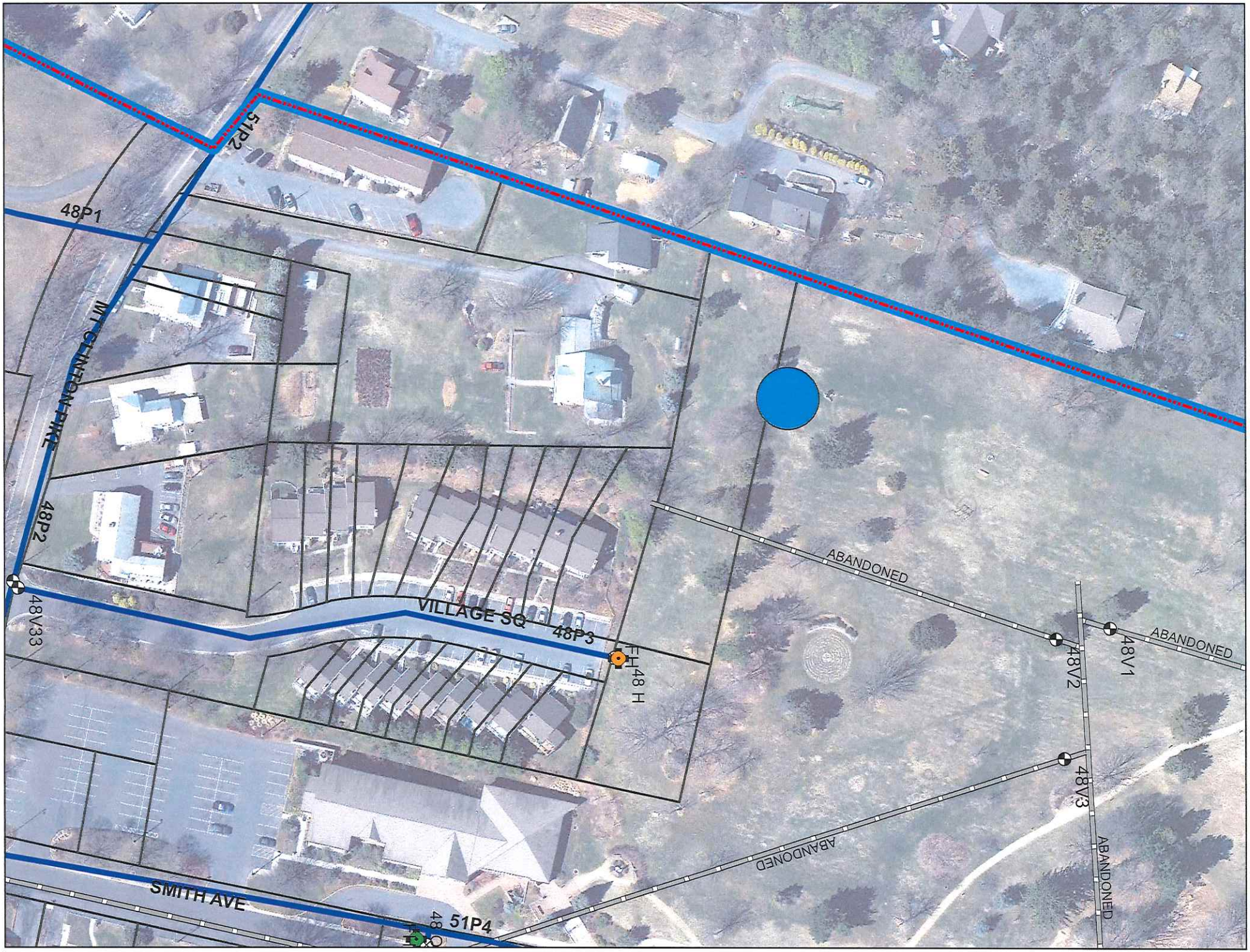
51P2
48P1
MT CLINTON PIKE
48P2
48V33
VILLAGE SQ
48P3
FH 48 H
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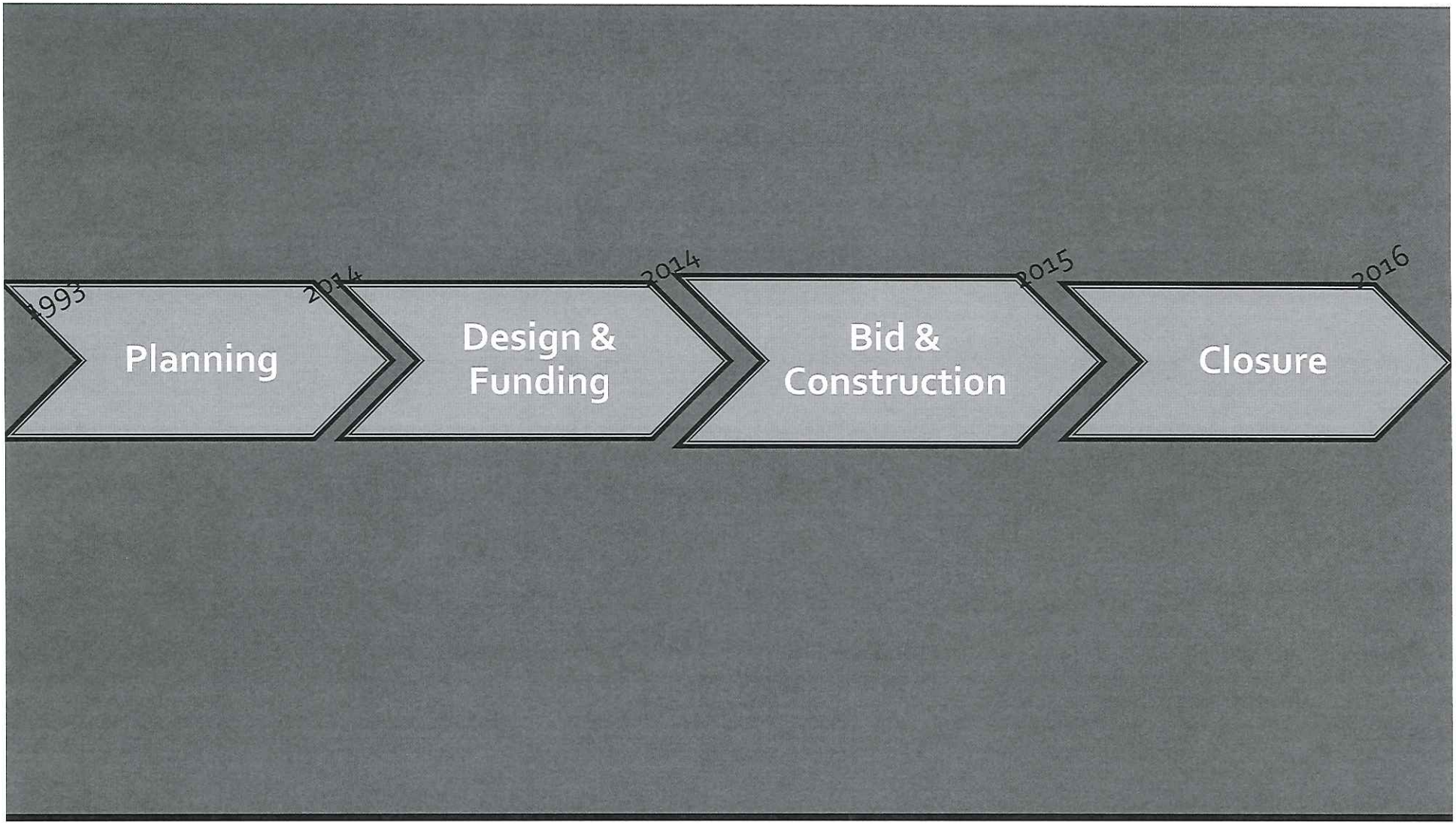
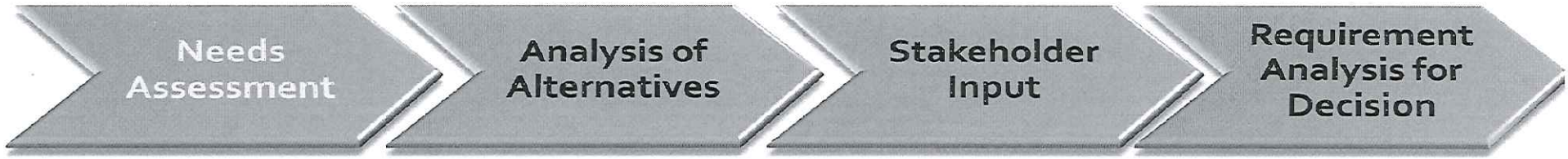
48V3
ABANDONED
ABANDONED
SMITH AVE
51P4

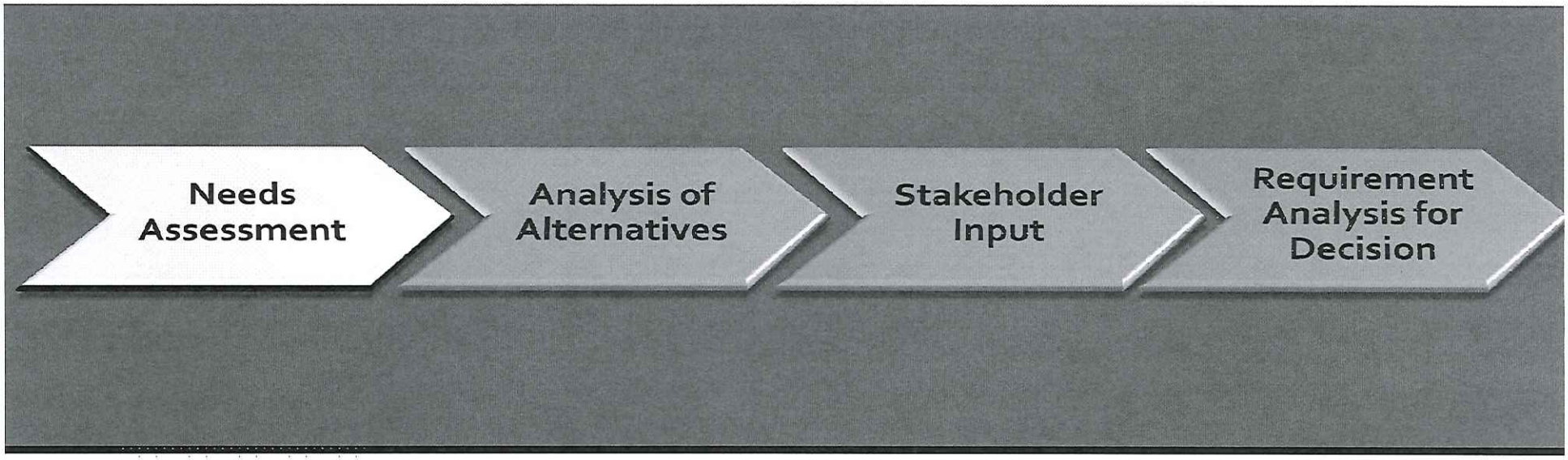
Park View Water Tank Project



Park View Tank and Pump Station Project Timeline

Park View Tank and Pump Station Planning Phase Timeline



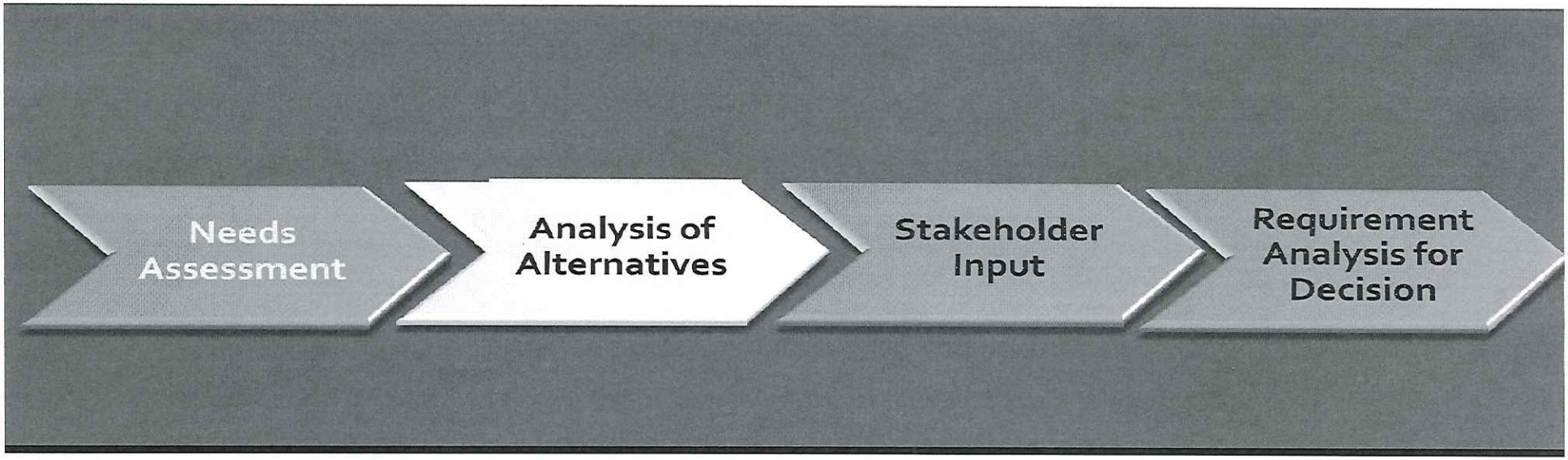


Tank

Pump Station

Insurance Services Office (ISO)

Mr. David Gray
Engineering Division
Harrisonburg Public Utilities



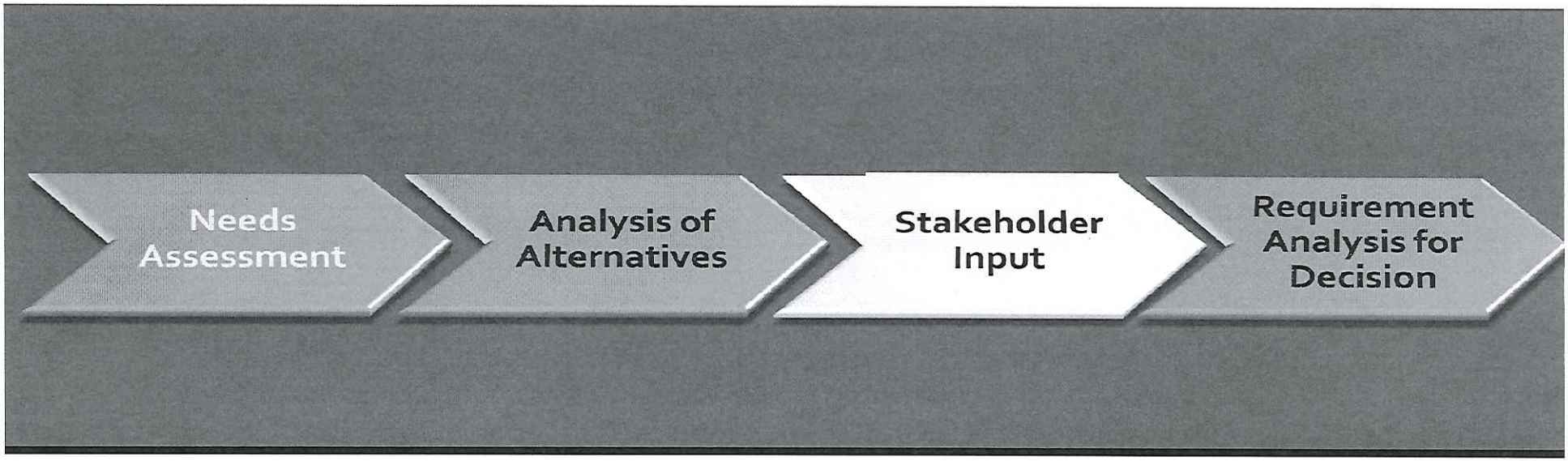
Alternatives To Fulfill Needs

Alternative Tank Sites

Primary Tank Sites

Validation Of Primary Tank Site

Mr. Tom Fitzgerald
Engineering Consultant
Wiley & Wilson



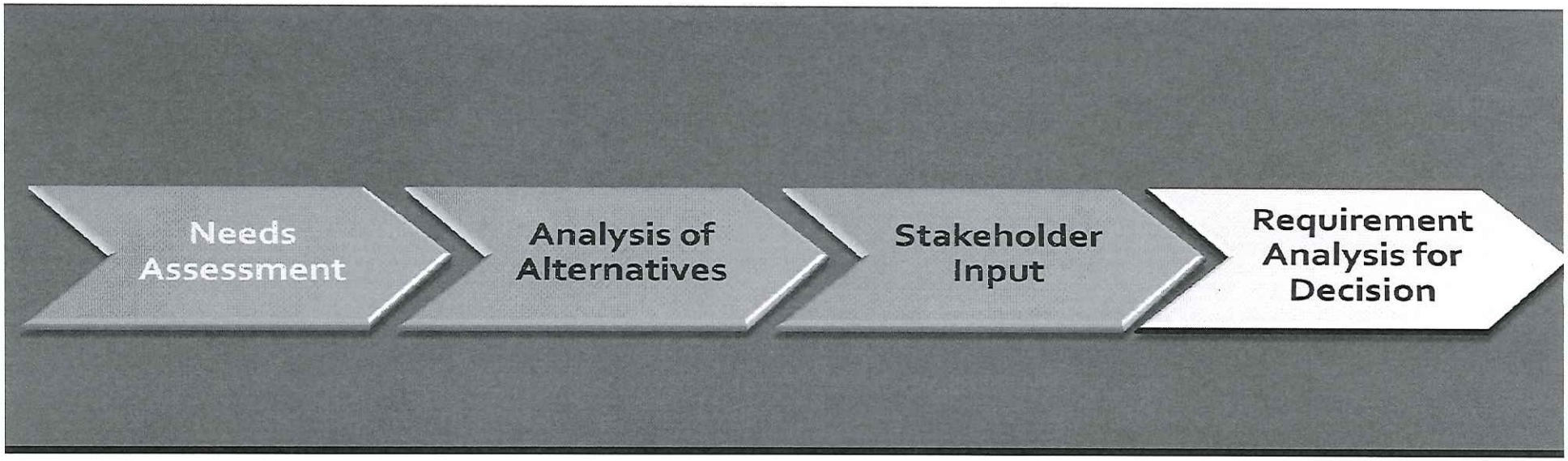
Landowners of Potential Sites

Landowner of Primary Site

Neighbors and Community at Large

Final Input

Ms. Mary-Hope Vass
Public Information Officer
City of Harrisonburg



Collection of Requirements

Cost/Feasibility/Benefit Analysis

Scope/Cost/Schedule

Mr. Mike Collins
Director of Public Utilities
City of Harrisonburg

Why do we need a new tank?

Asset Management . . . is a systematic process of operating, maintaining, upgrading and disposing of assets cost-effectively.

History of the Current Park View Tank

- Current tank was constructed in 1960 to serve the small Park View community and Eastern Mennonite College.

- Tank holds 75,000 gallons of water

- Park View area was annexed to the City in 1983

Needs Assessment

- The existing tank has been professionally inspected in 1993, 2006 and 2011.

- During these inspections minor repair needs have been identified to keep the tank operational.

- The City has installed a cathodic protection system to protect the tank from rust decay, but only slows the process.

Needs Assessment

- To continue to operate the tank beyond 2016 major repairs will be required.

- The tank must be stripped and repainted and several safety and structural issues addressed.

- Estimate from the 2011 inspection totaled $267,500 in repairs (Likely much higher).

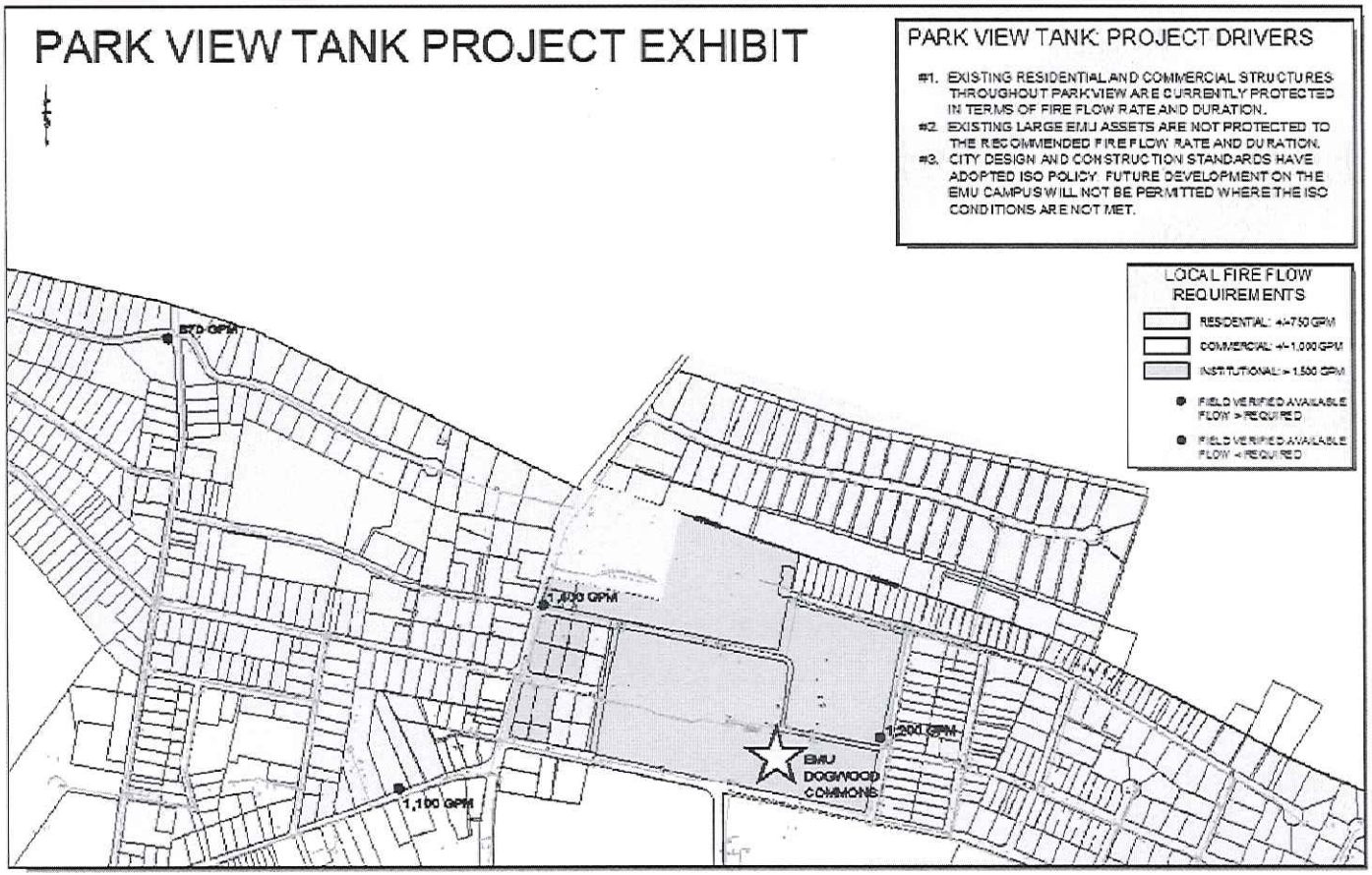
Pump Station Needs

- The existing pump station on Greystone Street was constructed with the tank in 1960.
- The pump station has a maximum output capacity of 300 gallons per minute
- The pumps are now obsolete and repairs are becoming increasingly more difficult.

ISO – Fire Fighting Water

- The ISO (Insurance Services Office) establishes standards for the amount of water that should be available to fight a fire.
  - 750 gpm for residential dwellings
  - 1,000 gpm for many commercial structures
  - Upwards of 1,500 gpm for institutional structures

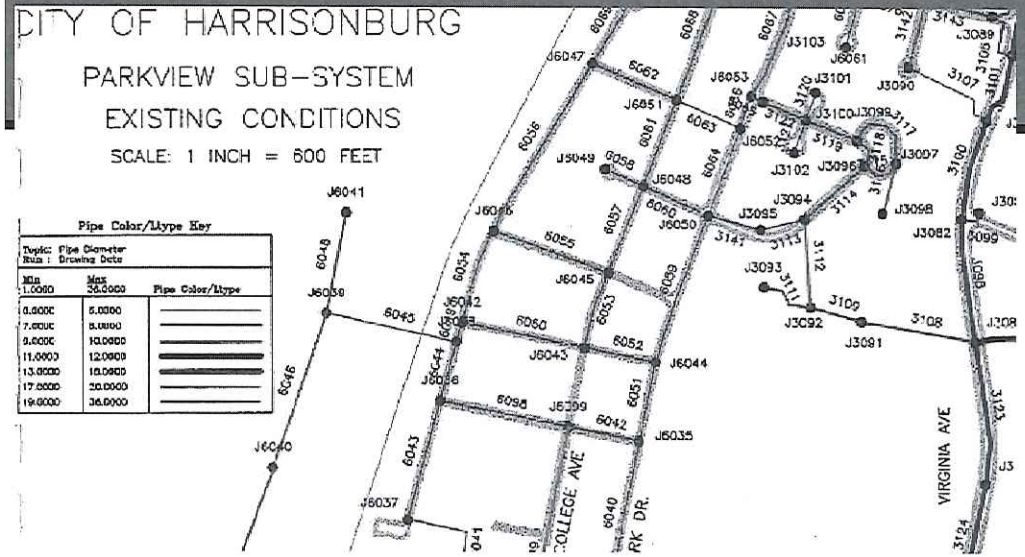
ISO – Needed Fire Flow



Why do we need these projects?

- The existing tank and pump station are nearing the end of their useful life
- The neighborhood has grown beyond what the system was designed for in 1960.
- Additional fire protection would benefit the neighborhood

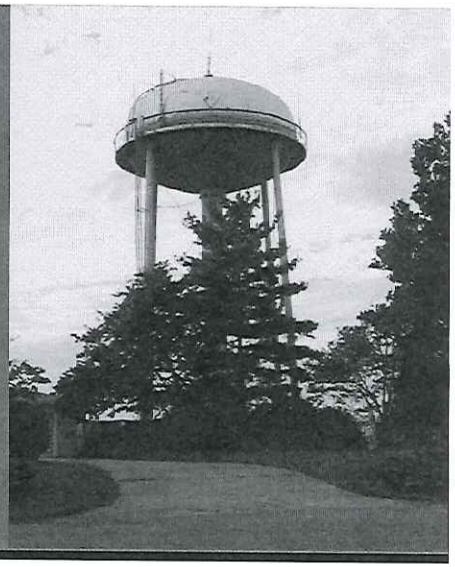
Alternatives to Fulfill Needs



1. Piping Upgrades
2. Pumping Upgrades
3. Ground Tanks
4. Elevated Tank
5. Optimization of all four

Table 1: Min. Required Fire Flow Storage and Alternative Tank Sizes – Park View Pressure Zone	
Fire Flow Demand	3,000 gpm; 540,000 gals/3 hrs)
Peak Park View Pumping Rate (Proposed)	1,300 gpm; 234,000 gal/3 hrs)
Fire Flow Demand from Storage (Proposed)	1,700 gpm; 306,000 gal/3 hrs)
Projected Average Day Demand – PVPZ[1]	450 gpm / 0.65 MGD
Alternative Tank Volumes[2]	**Turnover Time: Diurnal Storage Volume[3]**
300,000 gal	11hrs: 0 gal
400,000 gal	15 hrs: 94,000 gal
500,000 gal	19 hrs: 194,000 gal
750,000 gal	28 hrs: 444,000 gal

Alternative Tank Sites



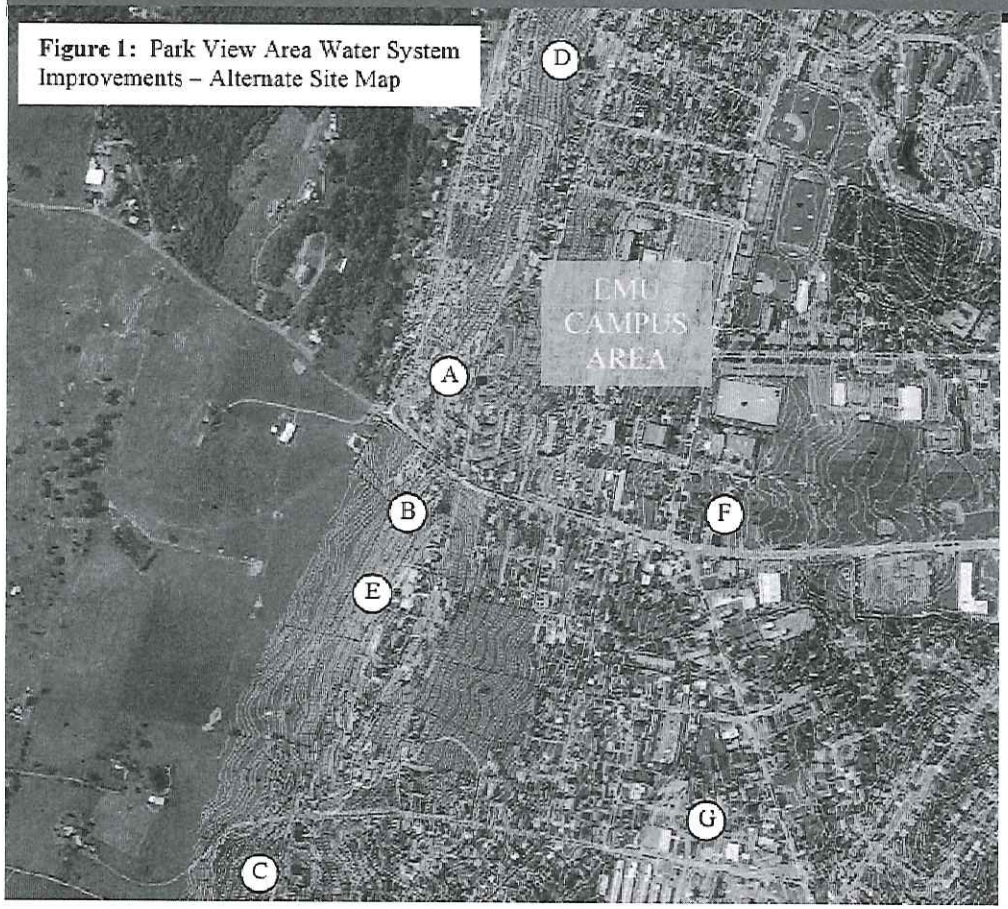
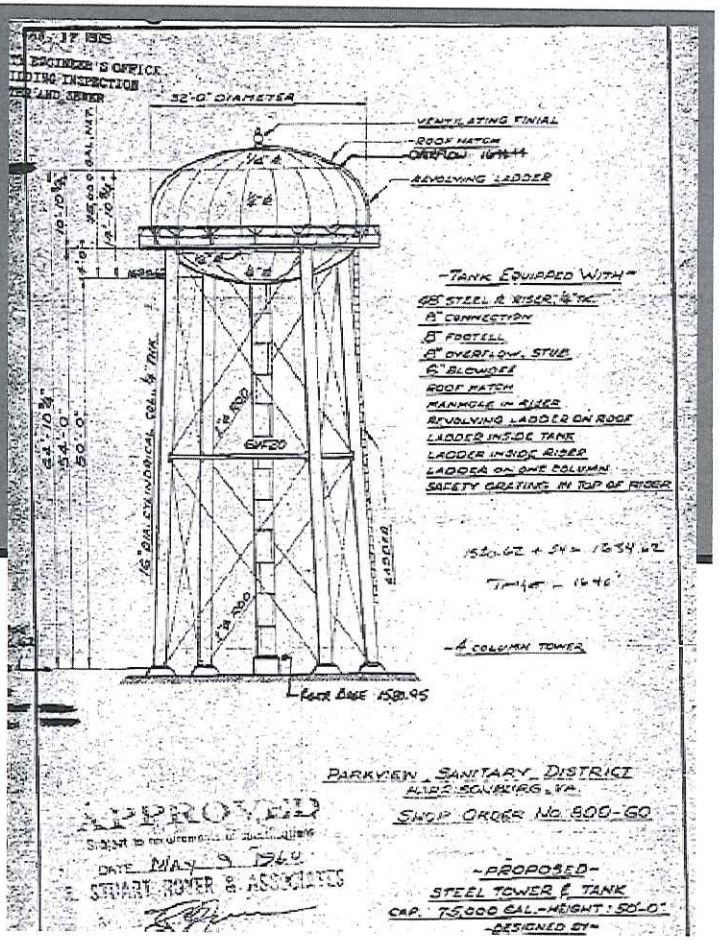


Figure 1: Park View Area Water System Improvements – Alternate Site Map

1. Ground Tanks
2. Elevated Tanks
3. Pump Stations
4. Pipeline Improvements

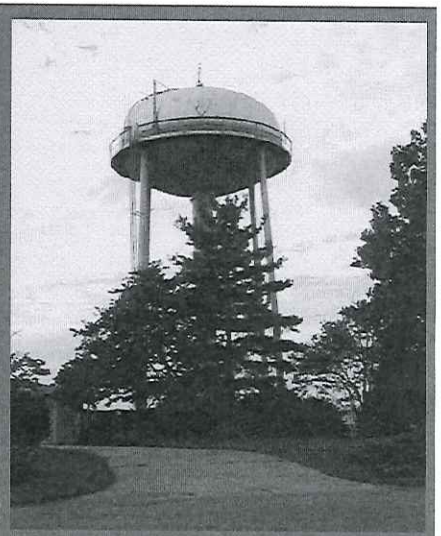
Primary Tank Sites

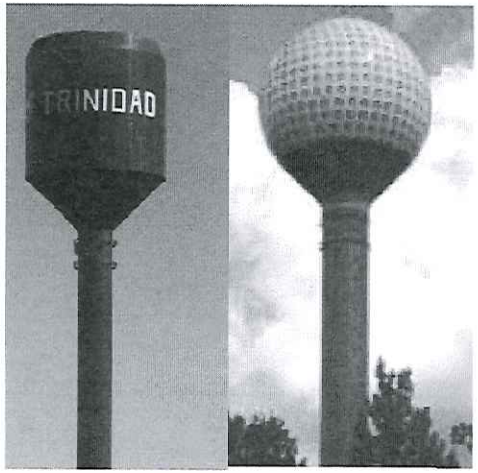
Figure 2: Park View Area Water System Improvements – Waterline Routings



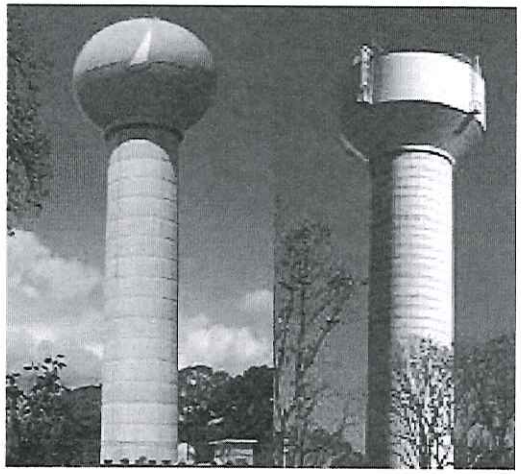
1. Piping Upgrades
2. Pumping Upgrades
3. Ground Tanks
4. Elevated Tank

Validation Of Primary Tank Site





Typical Pedestal Tank Configurations
(Photos Courtesy of Tank Builders, Inc. and Caldwell Tanks, Inc.)



Typical Composite Tank Configurations
(Photos Courtesy of Caldwell Tanks, Inc. and Chicago Bridge and Iron, Inc.)

1. Tank Size
2. Access Needs
3. Ancillary Costs
4. Basis of Design

Based on projected demand profile for this area it is recommended the City construct a minimum of a 500,000 gallon tank and upgrade the PVPS to peak capacity of 1,300 gpm to meet current and future system demands. This size tank is expected to require approximately 0.33 acres of land for construction of improvements, with typical pedestal footprint on the order of 30-feet in diameter. A 60-foot diameter, 500,000 gallon tank would be configured with an overflow height of 1663' and have an operating range of 23-feet while maintaining the minimum hydraulic grade of 1640' in the PVPZ, this configuration would increase the maximum operating pressure in the PVPZ by 8 psi over current conditions.

Public Information Goals

- To keep all stakeholders in the community informed
- Provide resources and information on the overall project
- Collect feedback and ideas from the community
- This is accomplished through various methods of outreach

Methods of Outreach

- Individual meetings with stakeholders
- Meetings within the community
- Website (**www.HarrisonburgVA.gov/Park-View-Water-Tank**)
- Online forum (**www.BeHeardHarrisonburg.org)**
- Public information session
- Press releases, media coverage

Be Heard Harrisonburg

www.BeHeardHarrisonburg.org

- Online forum available for residents to post comments about city projects

- Residents must go through a simple registration process

- Online conversation and idea collection process among community members and city officials

Ways to Provide Input on This Project

- Online forum (www.BeHeardHarrisonburg.org)
- Comment sheets available tonight
- Emailing a city staff member
- All comments will be due by the end of January 2014

Core Project Requirements

- Water pressure = Tank elevation
- Connectivity = Pump station and demand
- ISO = Volume
- Cost = Buildable and operable
- Opportunity and risk management
- Sustainable = Community value

Options for Community Input

- Type of water tank
- Color and style
- Graphics and text
- Architectural amenities
- Landscaping
- Access
- Ancillary uses
- Lighting

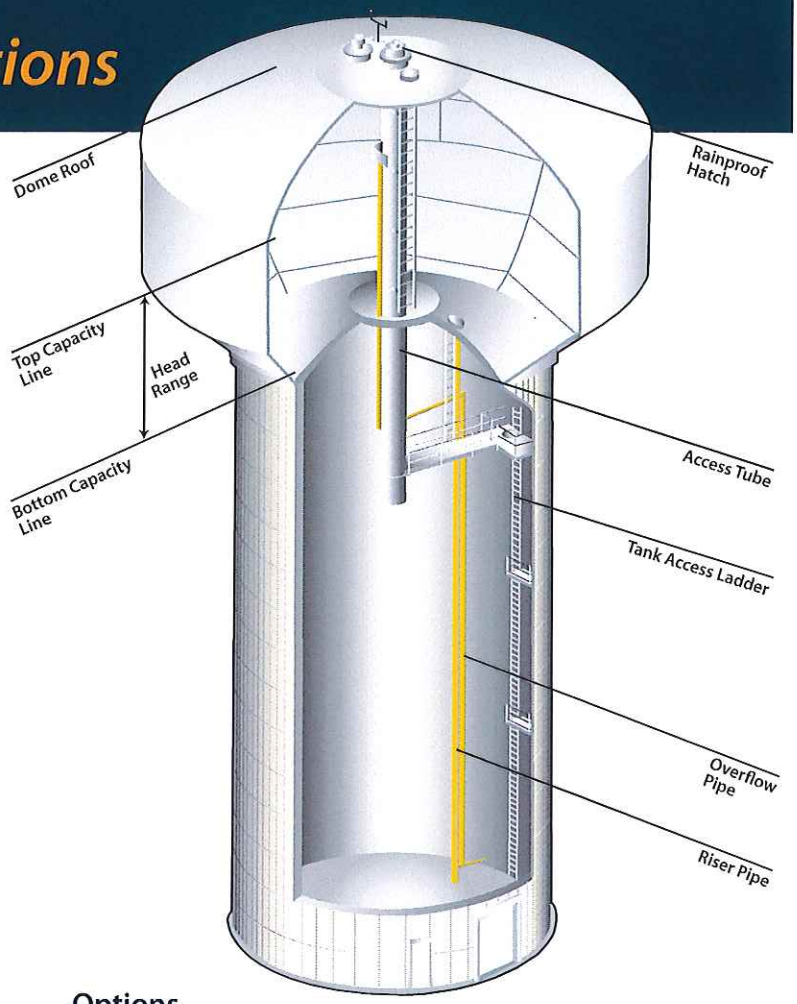
What are the next steps?

- Submit comments to city staff by the end of January 2014
- Rationalize the comments received and confirm preferred design
- Presentations to Harrisonburg Planning Commission and City Council for approval
- Final decision on scope cost and schedule
- Complete the design of tank and pump station
- Construction is anticipated to begin in 2015!

Standard Features & Options

Standard Features

- One 36 in. wide by 84 in. high personnel door with flush threshold
- Crushed stone floor inside base
- Stainless steel riser pipe with expansion joint
- Stainless steel overflow pipe to grade with splash block
- Galvanized ladders and platforms in support structure
- Safety devices on ladders as required by state and federal regulations
- Galvanized walkway with handrails from top of support structure to access tube
- One 48 in. diameter access tube
- Painted ladder in access tube
- Painter's rings at top of support structure
- Tank drain
- One 24 in. wide by 36 in. high painter's ring hatch with louver
- One 30 in. tank bottom manhole with access ladder to walkway
- Two 30 in. diameter roof hatches
- One 24 in. diameter painter's ventilation roof hatch
- Minimum 1/4" thick steel roof plates
- Seal welding underside of roof
- Fail-safe roof vent
- Interior lighting in support structure and access tube



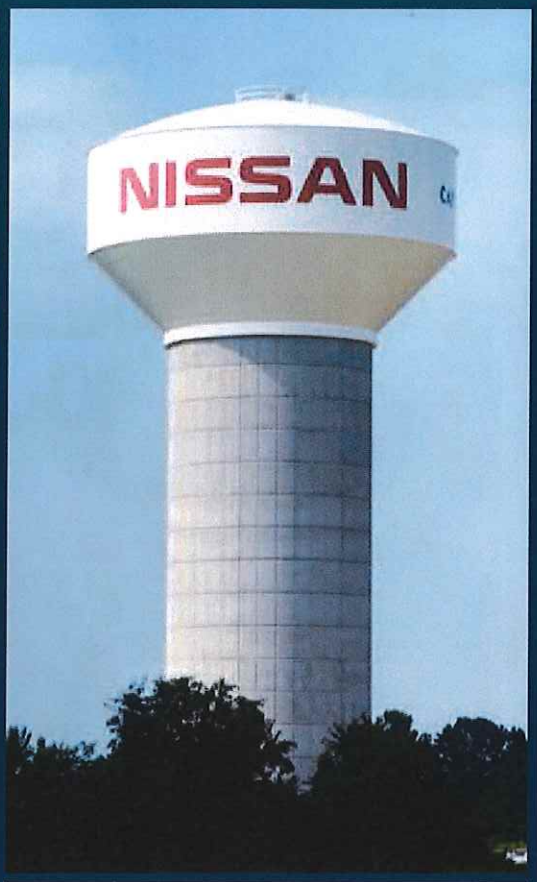
Options

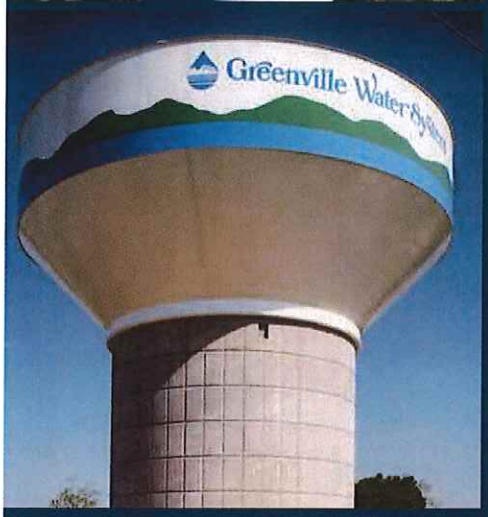
- Lettering, logos and decorative graphics
- Alternate style (as Waterspheroid)
- Architectural concrete support structure
- FreshMix™ circulation system
- Structural framing, multiple floors and ceilings inside the support structure
- Additional openings in support structure (e.g., windows)
- Double personnel door
- Overhead doors
- Valve vault inside base
- Concrete floor inside base
- Control room in support structure
- Dual risers
- Riser insulation and heat tracing
- Alternative ladder arrangements inside of support structure
- Upsized 60 in. diameter access tube
- Internal tank ladder on access tube
- Roof handrail
- External security or decorative lighting
- FAA lighting
- Instrumentation
- Telemetry
- Cathodic protection
- Lightning protection
- Antennae penetrations and supports

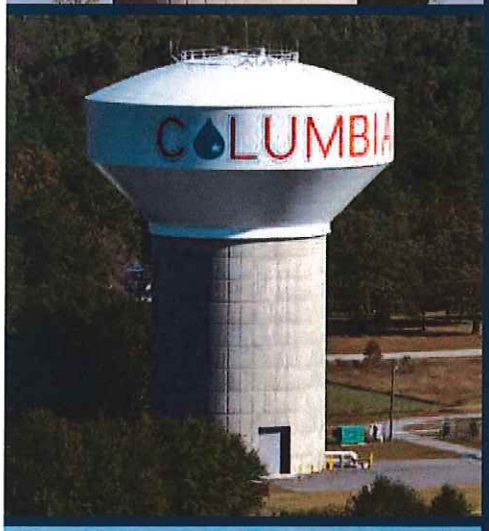
Standard Capacities and Dimensions

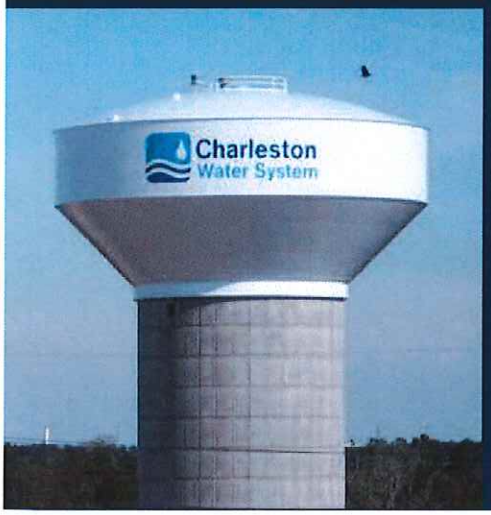
Capacity U.S. Gallons	Tank Diameter ft–in.	Head Range* ft–in.	Support Structure Diameter ft–in.
500,000	50 – 0	37 – 6	28 – 0
750,000	59 – 0	40 – 0	32 – 0
1,000,000	70 – 0	40 – 0	36 – 0
1,250,000	79 – 0	40 – 0	40 – 0
1,500,000	87 – 0	40 – 0	44 – 0
2,000,000	93 – 0	45 – 0	52 – 0
2,500,000	105 – 0	45 – 0	60 – 0
3,000,000	118 – 0	45 – 0	60 – 0
3,500,000	118 – 0	50 – 0	60 – 0

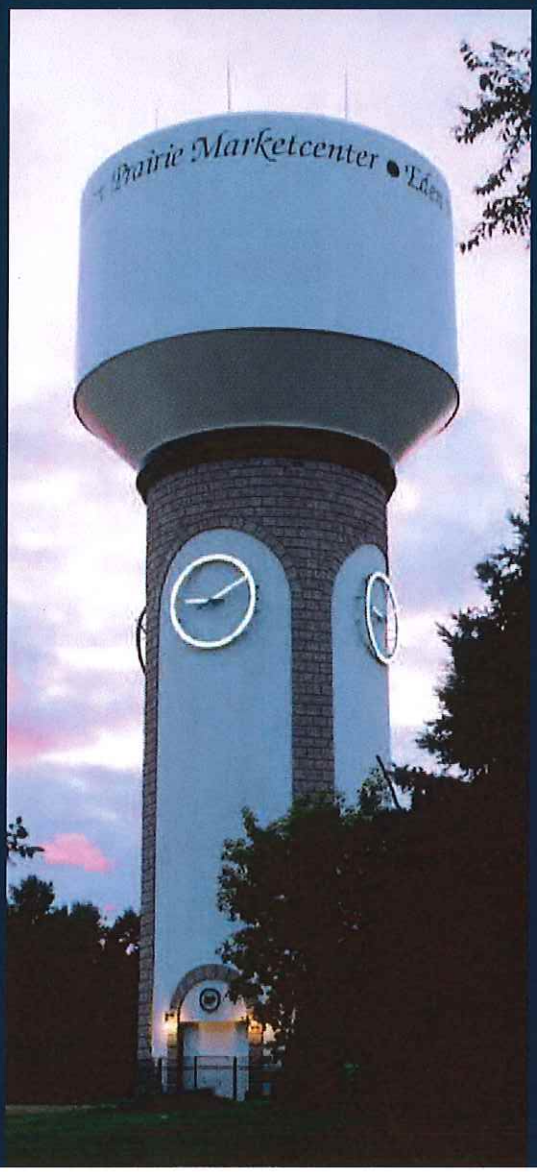
*CB&I has other head ranges available for each capacity tank. Please contact us if you need assistance.

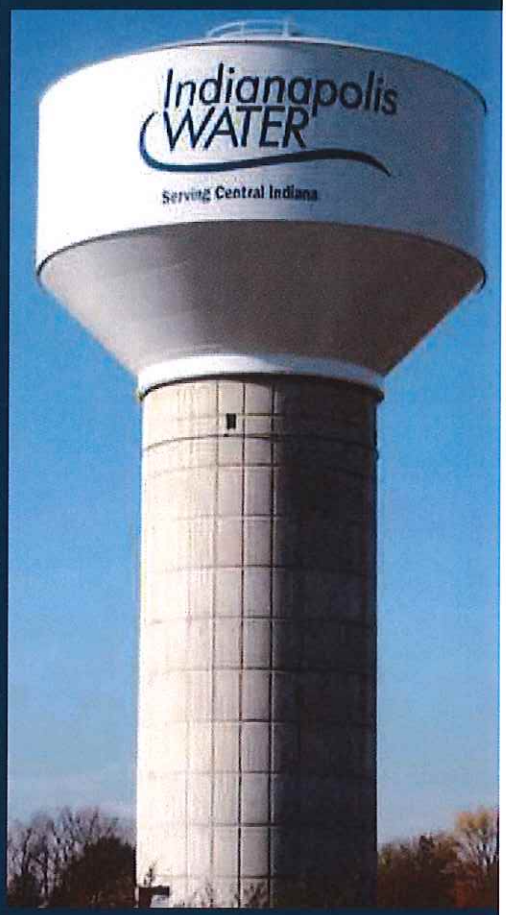












Above: Brownsburg, IN – 1,000,000 gallons

Top left: Alabaster, AL – 1,500,000 gallons

Top middle: Canton, MS – 1,500,000 gallons

2nd left: Fountain Inn, SC – 2,000,000 gallons

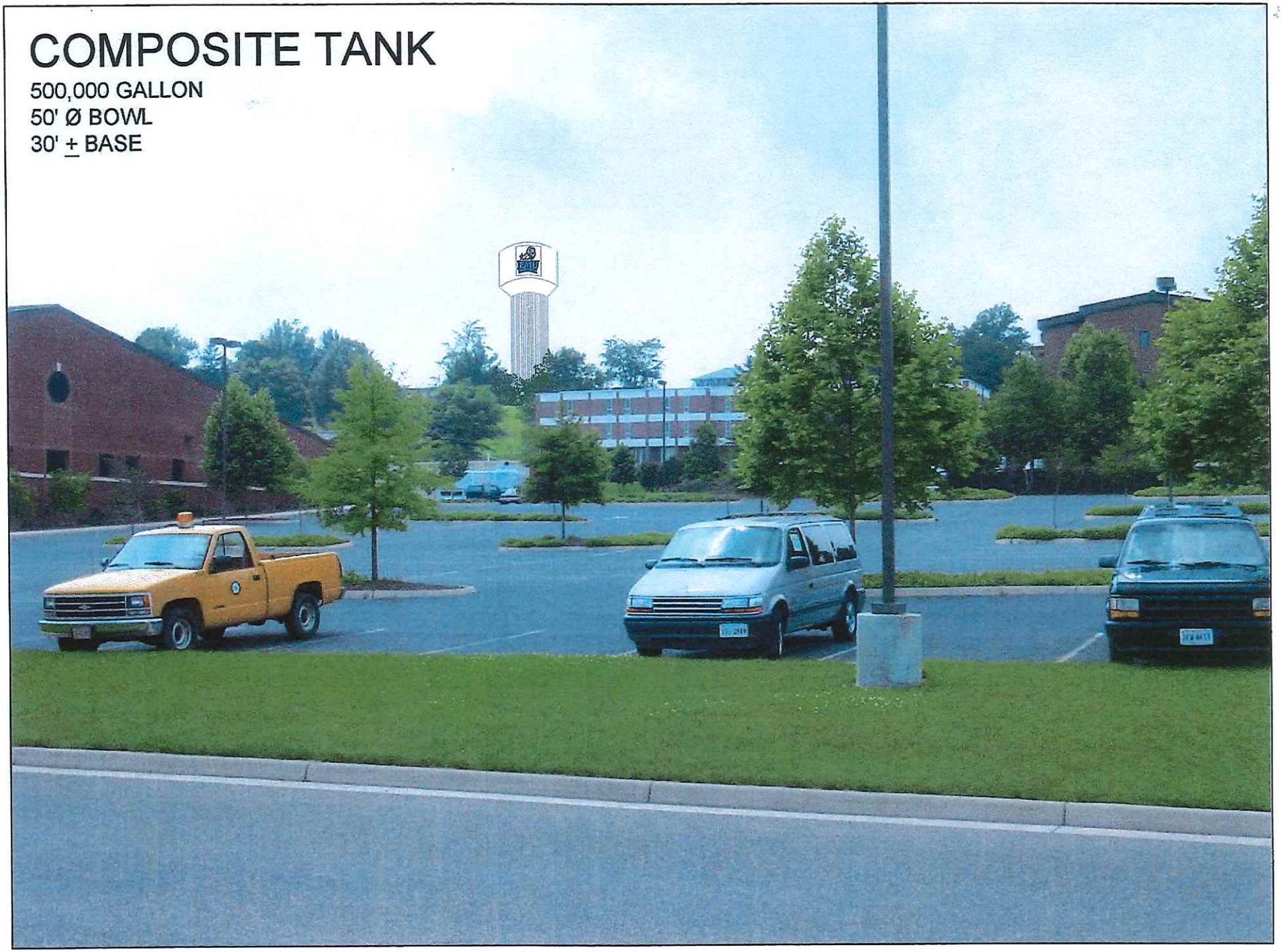
3rd left: Colombia, SC – 2,000,000 gallons

Bottom left: West Point, GA – 1,000,000 gallons

Bottom middle: Eden Prairie, MN – 2,000,000 gallons

COMPOSITE TANK

500,000 GALLON
50' Ø BOWL
30' ± BASE




Mount Clinton Pike and Route 42