



TOWN COUNCIL WORK SESSION

Monday, March 20, 2017 @ 7:00pm

Town Hall Conference Room

Town/Staff Related Issues:

1. Flea Market Request – Linda Andrick
2. Rt. 522 Corridor Water System Upgrade/Reliability Project – CHA Presentation
3. Criminal Justice Academy Special Use Permit – *Director of Planning/Zoning*
4. Donation of Radios to Parks & Recreation Department – *Town Manager*
5. Purchase Street Sweeper – *Director of Finance*
6. Continued FY 2017 – 2018 Budget Discussion – *Town Manager/Director of Finance*

Council/Mayor Related Items

7. Term Ending on BZA
8. Council Discussion/Goals (*time permitting*)

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Item No. __1__

Town of Front Royal, Virginia Work Session Agenda Form

Date: March 20, 2017

Agenda Item: Flea Market Request

Summary: The Town had a meeting on March 2nd with the operators of the Flea Market about their desire and intention of opening a farmer's market at the Flea Market located on Commerce Avenue. They are also requesting a change in operation to operate on Friday's as well.

Council Discussion: Council is requested to consider request and determine further direction/action.

Staff Evaluation: During the March 2nd meeting, staff explained the process to move the item through the approval process which starts with a letter of request to Council for consideration.

Budget/Funding: N/A

Legal Evaluation: The Town Attorney will be available to address any legal issues

Staff Recommendations: Staff recommends moving item to the planning commission for evaluation and recommendations

Town Manager Recommendation: Town Manager supports staff recommendation.

Council Recommendation:

☐ Additional Work Session ☐ Regular Meeting ☐ No Action

Consensus Poll on Action: ____ (Aye) ____ (Nay)

Work Session

Linda Andrich - Shade

3/2/17

Andrich's front Royal Flea Market

would like to bring before
Council for Special use permit
for farm use market.

Zoning change for Friday operation.

Linda Andrich - Shade

Chapter 175-4 Performance Standards

F. Farmer's Markets & Flea Markets: Where farmer's markets are permitted under the provisions of this Chapter, the following standards shall be required:

1. Adequate water and sanitary facilities shall be provided if found necessary based on the size, frequency and duration of the market.
2. A minimum twenty-five (25) foot setback shall be maintained from all property lines.
3. No adverse effect on adjoin properties, including but not limited to excessive or untimely noise or lighting, overflow parking, or visual problems potentially affecting property values or marketability, is found.
4. All tables, facilities and structures shall be maintained in a well-kept and attractive manner.
5. Any building and metal canopy frame associated with and attached or semi-detached from such building used for the storage or sale of goods and materials and as the market operator's office shall be constructed on a permanent foundation and meet appropriate building code regulations; provide that any such building and metal canopy frame in existence prior to July 1, 2001, shall not be required to be on a permanent foundation or meet building code regulations except as additions and enlargement are made thereon. No trailers or mobile home units shall be permitted.
6. All temporary structures or facilities, including but not limited to canopy frames except as provided in sub-section (e) above, table extensions and display shelving, shall be removed during the hours that the market is not in operation.
7. Operation of the market shall be confined to Saturday, Sunday, and Holidays, unless other dates are specifically approved by the Town Council in conjunction with the Special Permit. The hours of operation shall be posted on the property.
8. Open air markets shall only be conducted during the months of April through October. During the period from November 15 to March 15, all tables and other temporary fixtures shall be removed. Such fixtures may be stored on the site, provided they are located within a completely enclosed building or otherwise screened from public view, in accordance with Section 175-44(A). The provisions of this sub-section (h), shall not be applicable to any flea market in existence and operation as of July 1, 2001.

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Item No. __2__

Town of Front Royal, Virginia Work Session Agenda Form

Date: March 20, 2017

Agenda Item: 522 Corridor Water System Upgrade/Reliability Project

Summary: Information will be provided at the work session

Council Discussion: Council takes desired action

Staff Evaluation: CHA will be presenting

Budget/Funding: N/A

Legal Evaluation: Town Attorney will be available

Staff Recommendations: Staff will be available

Town Manager Recommendation: Town Manager will be available

Council Recommendation:

☐ Additional Work Session ☐ Regular Meeting ☐ No Action

Consensus Poll on Action: ____ (Aye) ____ (Nay)

Work Session

Route 522 Corridor Reliability Study

Project Summary

- Agreement with Dominion Power results in up to \$3.5 million dollars to help fund construction of the “Looping Project”.
- While the original “Looping Project” idea has been eliminated from consideration, the concept has been replaced with a new 12-inch waterline running parallel to the existing waterline along Route 522, as shown on the attached Figure 5.1
- CHA performed an evaluation of available options for increasing the reliability of the Route 522 Corridor water system. This report evaluated storage tank and parallel waterline options. The Executive Summary is included in this packet. The study recommends the installation of a parallel waterline
- Town Staff concur with recommendations of the CHA Report
- Dominion Power has indicated that “....of the options presented [in the CHA Report], only the New Parallel Waterline will meet this requirement.”
- Overall project cost is estimated at \$5.5 million (\$2.0 million contribution from the Town)
- Modeling based upon the Town GIS information does indicate a 3-12 psi pressure drop when Route 522 pump station capacity increases due to additional line capacity provided by parallel waterline. Pressure stays at acceptable levels, though pump control measures (short term) and/or waterline improvements (long term) within the Town distribution network would eliminate these concerns.

1.0 EXECUTIVE SUMMARY

The Town of Front Royal desires to increase the reliability of the northern portion of their water distribution system known as the Route 522 corridor (Corridor). This water system includes many large commercial and industrial users and is currently served by a single transmission main. If this main were to fail anywhere in the Corridor, the only water available north of the break would be that already stored in the 1.0 million gallon Fairgrounds Road tank. The goals of the project are to:

1. Maximize the volume of water supply available if water transmission main failure occurs;
2. Minimize the users affected during this scenario; and
3. Ensure all water quality regulations continue to be met.

Several alternatives along the Corridor were evaluated including:

1. Installing a waterline parallel to the existing line;
2. Connecting to an alternate portion of the Town's distribution system (Route 55 Pressure Zone Loop Connection);
3. Adding storage tank volume; and
4. Adding storage tank volume and upgrading the distribution pipe network.

These four alternatives were evaluated based effectiveness at meeting project goals, estimated project costs, and constructability. The current Corridor water demands were utilized in the evaluation as well as future demand projections based on Warren County's (County) evaluation of undeveloped land.

A parallel waterline would significantly increase the reliability of the water supply in the 522 Corridor. If a line break occurred at any location in the Corridor to either of the waterlines, the other line would be able provide all the necessary flow to all users along the Corridor. Figure 5.1 shows the proposed routing of this parallel line alternative, and divides the project up into three separate sections. The sum of the three new sections of waterline totals approximately 23,500 linear feet.

The total estimated project cost for a redundant waterline is \$5,470,800.

Table 5.1 - Alternative 1 – Parallel Waterline Preliminary Cost Estimate

Item	Quantity	Unit	Unit Cost	Total Cost
River Crossings (Bore and Jack)	780	LF	\$1,000	\$780,000
I-66 Crossing (Bore and Jack)	900	LF	\$600	\$540,000
522 Crossings (Bore and Jack)	400	LF	\$600	\$240,000
12-inch Ductile Iron Water Main	21,420	LF	\$88	\$1,884,960
Valves and Fittings	1	LS	\$80,000	\$80,000
Pavement Restoration	2,250	SY	\$50	\$112,500
			Construction Subtotal	\$3,637,460
Mobilization	3%	% of Sub	\$109,200	\$109,200
Contractor Overhead and Profit	12%	% of Sub	\$436,500	\$436,500
Construction Cost				\$4,183,200
Easement Acquisition	1	LS	\$50,000	\$50,000
Geotechnical and Survey	2%	% of Const	\$83,700	\$83,700
Contingency	10%	% of Const	\$418,400	\$418,400
Legal, Engineering and Permitting	15%	% of Const	\$627,500	\$627,500
Resident Project Representation	1,350	Hours	\$80	\$108,000
				\$5,470,800

**Town of Front Royal
Route 522 Corridor Water Distribution
System Reliability Upgrade Evaluation
Preliminary Engineering Report**

CHA Project Number: 31532

Prepared for:

Town of Front Royal, Virginia

Prepared by:



*1901 Innovation Drive, Suite 2100
Blacksburg, VA 24060*

January 2017

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1.0 EXECUTIVE SUMMARY

The Town of Front Royal desires to increase the reliability of the northern portion of their water distribution system known as the Route 522 corridor (Corridor). This water system includes many large commercial and industrial users and is currently served by a single transmission main. If this main were to fail anywhere in the Corridor, the only water available north of the break would be that already stored in the 1.0 million gallon Fairgrounds Road tank. The goals of the project are to:

1. Maximize the volume of water supply available if water transmission main failure occurs;
2. Minimize the users affected during this scenario; and
3. Ensure all water quality regulations continue to be met.

Several alternatives along the Corridor were evaluated including:

1. Installing a waterline parallel to the existing line;
2. Connecting to an alternate portion of the Town's distribution system (Route 55 Pressure Zone Loop Connection);
3. Adding storage tank volume; and
4. Adding storage tank volume and upgrading the distribution pipe network.

These four alternatives were evaluated based effectiveness at meeting project goals, estimated project costs, and constructability. The current Corridor water demands were utilized in the evaluation as well as future demand projections based on Warren County's (County) evaluation of undeveloped land.

A parallel waterline would significantly increase the reliability of the water supply in the 522 Corridor. If a line break occurred at any location in the Corridor to either of the waterlines, the other line would be able provide all the necessary flow to all users along the Corridor. Figure 5.1 shows the proposed routing of this parallel line alternative, and divides the project up into three separate sections. The sum of the three new sections of waterline totals approximately 23,500 linear feet.

The total estimated project cost for a redundant waterline is \$5,470,800.

2.0 INTRODUCTION

The Town of Front Royal (Town) provides water to residential, commercial, and industrial users within the Town and surrounding areas. The Town's water source is the South Fork Shenandoah River and the water is treated by the Town's water treatment plant. The plant has a rated capacity of 6 million gallons per day (MGD), but current demands are approximately 1.95 MGD.

A large portion of the Town's water demand comes from commercial and industrial facilities located along the Corridor. These facilities use the water for fire protection, process and cooling applications. The Corridor is served through a single transmission main made up of 10-inch, 12-inch, and 16-inch diameter pipe. This single waterline has been reliable, but a line break or failure anywhere along the Corridor would threaten water delivery to these major users, causing not just inconvenience and the potential health hazard of low pressure water, but also significant financial loss due to process interruption.

The Town desires to increase the reliability of its water distribution system along the 522 Corridor to limit the potential for the large facilities located in this area to be without water in the event of a single line break or other system failure.

3.0 PURPOSE AND SCOPE OF THIS REPORT

The purpose of this report is to:

1. Evaluate several different alternatives to increase the reliability of the distribution system in the 522 Corridor to determine which alternative can maximize the time the system can supply water locations most vulnerable to line breaks as well as ensure all water quality regulations continue to be met.
2. Identify and provide preliminary design information for infrastructure that will be required for the selected alternative, including additional water line, pump stations, and/or water storage tanks.

4.0 EXISTING CONDITIONS

Figure 4.1 shows the existing facilities owned by the Town. The Town of Front Royal owns and operates a water plant that has a capacity to treat 6 MGD, but due to water withdrawal permit limits for the South Fork Shenandoah River, the plant is limited to 4 MGD. From 2014-2015, the plant has produced an average of 1.95 MGD of finished water, with a maximum month production of 2.1 MGD.

The Town also operates four water pump stations in the water distribution system, the Guard Hill pump station and the Jamestown pump station perform the bulk of the pumping for the Town. The Loop Road and 4H pump stations are small pump stations designed to serve small areas. The 0.65 MGD Jamestown pump station fills the Jamestown/Route 55 tank and is the sole source of water to the Jamestown pressure zone which is roughly 300-feet higher than the main Town pressure zones. The Guard Hill pump station is sized at 2.1 MGD and all water entering the 522 Corridor passes through this pump station. The main storage tank in this pressure zone is the Fairgrounds Road Tank which has an overflow elevation of 785 feet. Currently, if the Fairgrounds Road Tank needs to be taken offline, the Guard Hill Tank can be used as an emergency backup. The Guard Hill Tank is a ground level storage tank that is fed by gravity from the clearwells at the water plant. This tank's overflow elevation is 18 feet lower than the Fairgrounds Road tank and is separated from the majority of the Corridor by thousands of feet of 12-inch line and a short section of 10-inch line under I-66. Thus, this tank can act as an emergency backup for the Fairgrounds Road Tank, but at reduced system pressures and inadequate fire flows.

The remainder of this report will focus on the 522 Corridor water system.

4.1 EXISTING WATER DEMAND

Based upon Town water meter billing from May 2015 to April 2016 demand in the Corridor averaged 0.42 MGD. The largest user is Dominion Power who uses an average of approximately 0.17 MGD which is about 40-percent of the total Corridor demand. The Fairgrounds Road Tank can store 1 million gallons, so in the event that a line break isolates the Corridor from the rest of the distribution system, the Fairgrounds Road Tank would be able to feed the Corridor north of the break for approximately 2 days at the current average water demand.

4.2 FUTURE WATER DEMAND

The Town provided CHA with an analysis of future water demand along the Corridor. The Corridor has significant available land that is expected to be developed by year 2076. Based on Warren County's land use plan, the majority of the available 1,393 acres are for industrial uses. The remainder of the raw land will be used for commercial, institutional, and residential uses. Table 4.1 below includes an estimate the future water demands for these four land uses.

Table 4.1 – Year 2076 Estimated Future Water Demand for Developable Land

Planning Area	Quantity	Estimated Demand Multiplier	Estimated Demand, GPD
Commercial	1,820,000 Building SF	200 gpd/1000 SF	364,000
Industrial	21,236,000 Building SF	100 gpd/1000 SF	2,124,000
Institutional	4,854,000 Building SF	150 gpd/1000 SF	728,100
Residential	204 Lots	(100 gpd x 3.2 person)*lot	65,300
Developable Land Total Estimated Demand			3,281,400

In addition to the above estimates, Dominion Power will continue to increase usage in the future, with a projected demand of 0.65 MGD, well above their existing consumption of 0.17 MGD. While we do not have a projected schedule for this increase in demand, we have assumed that the facility will reach its peak production in the next 20 years, with demand growing at approximately 7% per year.

In order to determine total future demands per decade for the next sixty years, the total estimated demand for developable land is assumed to increase at an average 4.5% growth rate until the full build-out is reached in year 2076. Table 4.2 below shows the total future demands for each decade accounting for the Dominion power demands, population increase, and the future development.

Table 4.2 – Estimated Total Future Water Demand

Year	Dominion Power Estimated Demand (MGD)	Residential and Developable Land Estimated Demand (MGD)	Total Estimated Demand (MGD)
2016	0.17	0.25	0.42
2026	0.33	0.39	0.72
2036	0.65	0.60	1.26
2046	0.65	0.94	1.59
2056	0.65	1.46	2.11
2066	0.65	2.27	2.92
2076	0.65	3.53	4.18

Based on the above information, demand in 2076 will be approximately 4.18 MGD. The existing Fairgrounds Road Tank's storage capacity of 1.0 MG would only be able to serve the 522 Corridor for approximately 5.7 hours at this future average demand, if the break happened to occur when the tank was completely full. The estimated demands, however, do not consider peak demands and fire flow situations. If a line break occurred during a future peak demand period, the time of supply would be drastically decreased.

5.0 EVALUATION OF ALTERNATIVES

5.1 OVERVIEW OF REDUNDANCY ALTERNATIVES

Four alternatives were evaluated to increase 522 Corridor water system reliability:

- Alternative 1: Parallel Waterline – This alternative includes the construction of a new water line running parallel to the existing Corridor’s transmission main to provide a second and redundant feed from the current Town connection into the existing Fairgrounds Road Tank.
- Alternative 2: Route 55 Pressure Zone Connection (Jamestown Loop Connection) – This option includes the construction of new water line that would connect into the Route 55 pressure zone at the existing 12-inch line that runs parallel to Toray Drive.
- Alternative 3: Additional Water Storage – This alternative includes a storage tank installed in the Corridor to provide storage in addition to the existing 1 million gallon Fairgrounds Road Tank.
- Alternative 4: Additional Water Storage with Network Improvements – This option includes an additional storage tank in the Corridor as well as several short sections of new waterline designed to create a waterline network in the northern portion of the existing distribution system.

5.2 ALTERNATIVE 1: NEW PARALLEL WATERLINE

A parallel waterline would significantly increase the reliability of the water supply in the 522 Corridor. If a line break occurred at any location in the Corridor to either of the waterlines, the other line would be able provide all the necessary flow to all users along the Corridor. This high degree of redundancy, however, has a significant cost associated with it, as it requires a large amount of new waterline and would include very difficult construction under the two forks of the Shenandoah River, as well as a long directional drilling under I-66. Figure 5.1 shows the proposed routing of this parallel line alternative, and divides the project up into three separate sections. The sum of the three new sections of waterline totals approximately 23,500 linear feet.

The proposed new 12-inch parallel waterline connects into the existing system at the end of the westerly waterline that terminates near W 16th St. The proposed line then turns east to cross the easterly waterline, and then turns north to run parallel up the east side of the Corridor. This first section of new waterline terminates at the end of the existing waterline along Kelly Drive near Dominion Power. Section 2 of the new waterline connects into the existing 12-inch waterline at the intersection of Rockland Road and Route 522 and runs parallel to Route 522 east of the existing line, and terminates at the existing 12-inch east/west waterline just south of Toray Drive. The third section of new 12-inch waterline connects into the line at the intersection of Baugh drive and the waterline just south of Toray Drive and then terminates at the end of the existing 16-inch waterline along Baugh Drive.

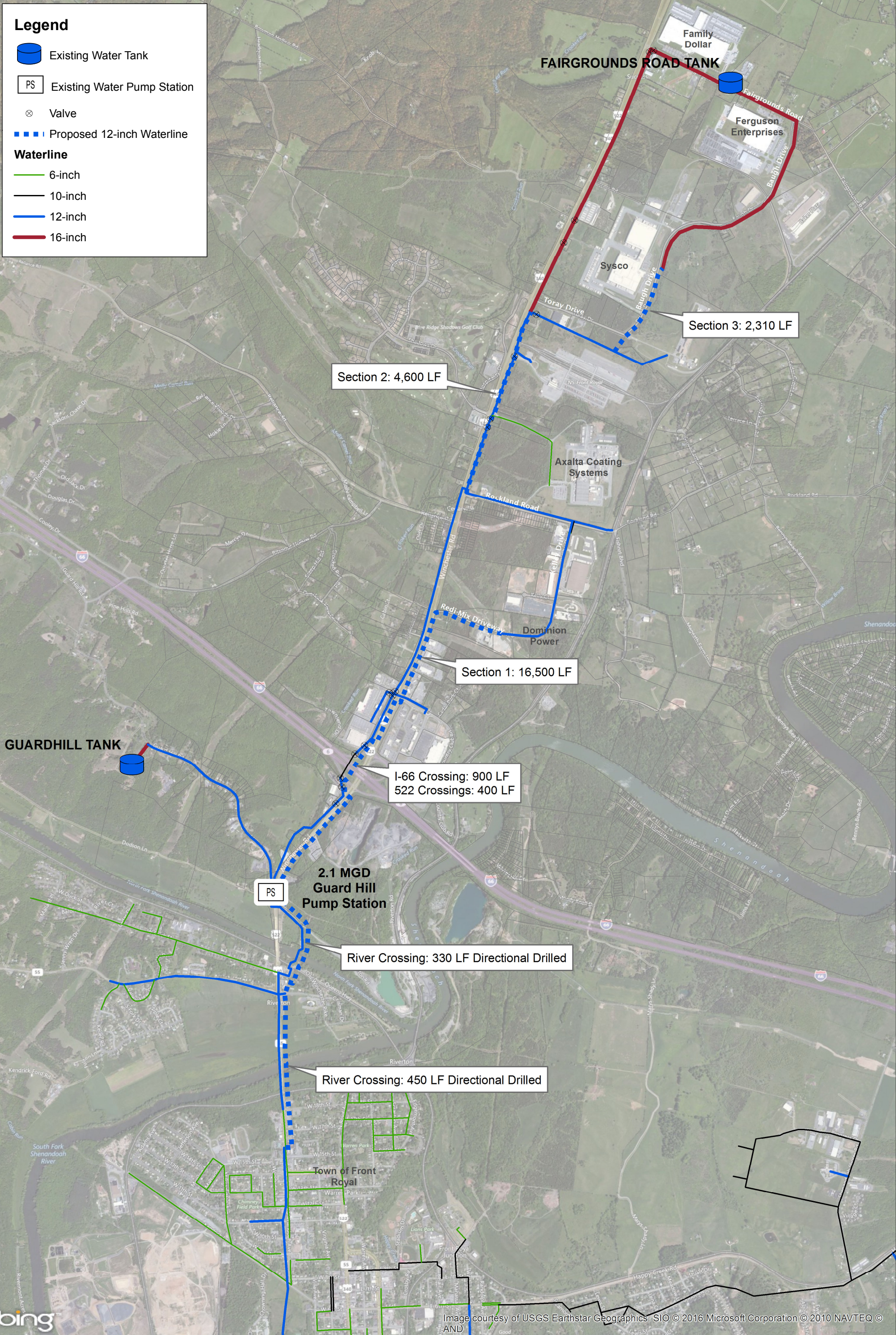
Table 5.1 below provides a cost estimate of the required borings, waterline, pavement restoration, and easement acquisitions required for this option.

Table 5.1 – Alternative 1: Parallel Waterline Preliminary Cost Estimate

Item	Quantity	Unit	Unit Cost	Total Cost
River Crossings (Directional Drilled)	780	LF	\$1,000	\$780,000
I-66 Crossing (Directionally Drilled)	900	LF	\$600	\$540,000
522 Crossings (Bore and Jack)	400	LF	\$600	\$240,000
12-inch Ductile Iron Water Main	21,420	LF	\$88	\$1,884,960
Valves and Fittings	1	LS	\$80,000	\$80,000
Pavement Restoration	2,250	SY	\$50	\$112,500
Construction Subtotal				\$3,637,460
Mobilization	3%	% of Sub	\$109,200	\$109,200
Contractor Overhead and Profit	12%	% of Sub	\$436,500	\$436,500
Construction Cost				\$4,183,200
Easement Acquisition	1	LS	\$50,000	\$50,000
Geotechnical and Survey	2%	% of Const	\$83,400	\$83,700
Contingency	10%	% of Const	\$416,700	\$418,400
Legal, Engineering and Permitting	15%	% of Const	\$627,500	\$627,500
Resident Project Representation	1350	Hours	\$80	\$108,000
Total Capital Cost				\$5,470,800

The opinion of probable cost to install a parallel waterline to the Corridor is approximately \$5.47 million.

V:\Projects\ANY\K4\31532\Data\GIS\PER Figures\Figure 5.1 - Alternative 1 - Parallel Waterline.mxd



5.3 ALTERNATIVE 2: CONNECT TO ROUTE 55 PRESSURE ZONE

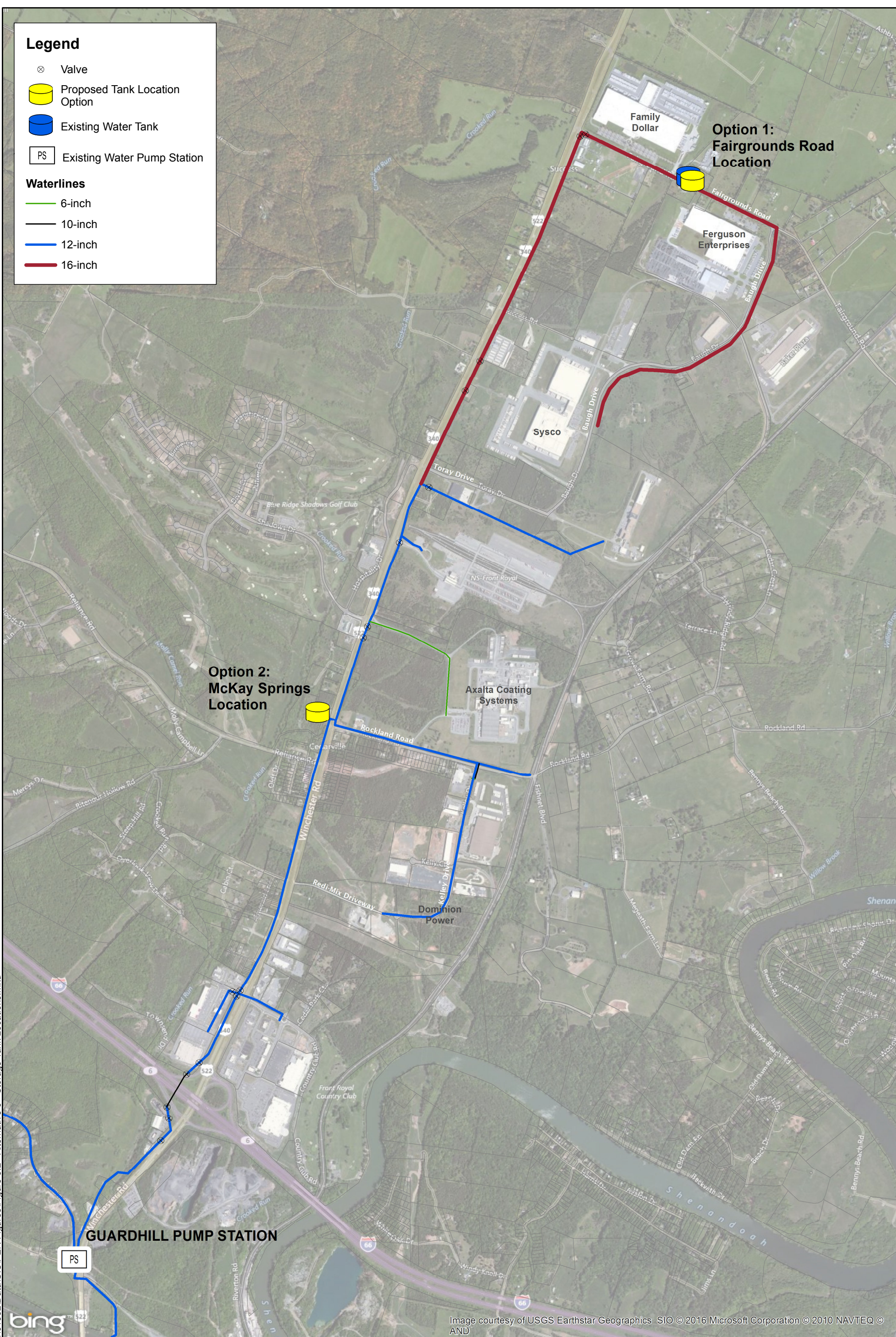
Another option for increasing reliability along the Corridor is to install a new 12-inch waterline connecting the Corridor into the area served by the Jamestown/Route 55 tank. This tank is served by the Jamestown pump station which creates a hydraulic grade approximately 300' higher than the 522 Corridor pressure zone. Under this scenario, the Corridor would be served through both the 522 Corridor pressure zone and the Route 55 pressure zone. A pressure reducing valve would regulate flow into the Corridor from the Jamestown system. In the event of a line break that would prevent the Guard Hill pump station from feeding the Fairgrounds Road Tank, the Corridor would continue to be fed from both sides of the break by either the Guard Hill pump station or the Route 55 tank/Jamestown pump station.

This option has been evaluated extensively by another consultant as part of separate project, so it has not been heavily detailed here. It is clear the project would require an upgrade to the Jamestown pump station and the nearby distribution system, one major river crossing, one crossing of I-64 and a very long length of new waterline. In addition, extensive easements would have to be negotiated, as there is no existing waterline or easement in place. The other consultant's work on this option found that the cost would be approximately \$9 million. Due to high construction costs, Alternative 2 will no longer be considered for the remainder of this report.

5.4 ALTERNATIVE 3: ADDITIONAL STORAGE

The third alternative to increase reliability in the system is to install an additional storage tank in the Corridor to increase the amount of storage available in the event of a line break. Figure 5.2 shows the proposed location alternatives for the proposed tank and pump station. These locations will be discussed more in Section 6.

Two types of storage tanks were evaluated: 1) Ground level storage tanks and 2) Elevated storage tanks.



5.4.1 Ground Storage Tank

If a ground storage tank was utilized to provide the additional storage for the Corridor, there would be several important considerations to take into account. First, because the topography would not allow a ground storage tank to be built at the necessary elevation, the storage tank would have to be filled by pressure from the existing waterlines, and then drained by pumping back into the higher pressure water system. This filling and draining system would require an altitude valve/pressure reducing valve to control the filling of the tank, and a pump station to pump the water back into the distribution system. From a cost standpoint, there would be two significant items: the storage tank and the pump station. The costs of constructing, operating and maintaining both systems needs to be considered for this option.

A ground storage tank has two important considerations that affect overall cost: 1) material, and 2) tank volume. Four materials typically used for ground storage tanks include pre-stressed concrete (AWWA D110 Type II, as manufactured by Crom Tank), glass-fused-to-steel (AWWA D103 as manufactured by Fusion or Aquastore), steel (AWWA D100), and pre-cast concrete (AWWA D115, as manufactured by Dutchland Tank) were evaluated.

Each of these tank materials have advantages and disadvantages:

1. The Crom-style concrete tank uses a thin concrete floor that can be subject to cracking, and the outer layers of shotcrete that are used may peel away over time, leaving a less visually appealing product.
2. A glass-fused-to-steel tank is typically long lasting, but if the tank gets damaged, it is difficult to repair.
3. A steel tank (the material used for all the Town's current water storage tanks) needs to be specially coated well during installation and recoated depending on the quality of the coating, increasing maintenance costs.
4. The pre-cast concrete tank is durable, and long lasting. The cost for this tank can be quite high, and there are only few manufacturer's that will make them. Dutchland's manufacturing facility is not far away from Front Royal, and so this may become a more attractive option.

Table 5.2 below tabulates the estimated equipment cost for a 1and 2 million gallon tank with each of these different materials. The cost includes the design and construction of the tank, the foundation, and all necessary tank appurtenances. These costs do not include contract costs, engineering site work, concrete strength testing, or groundwater control.

Table 5.2 – Ground Storage Tank Material and Volume Cost Analysis

Material	1 Million Gallon Tank	2 Million Gallon Tank
Pre-stressed Concrete	\$600,000	\$925,000
Glass-Fused-to-Steel	\$587,000	\$1,050,000
Steel	\$985,000	\$1,750,000
Pre-cast Concrete	\$647,300	\$1,026,600

The glass-fused-to-steel tank (Aquastore) is the least expensive tank material for a 1 million gallon tank, by a slim margin, while the pre-stressed concrete is the least expensive material for a 2 million gallon tank. A ground storage tank will require an associated pump station in order to feed into the Fairgrounds Road Tank. This will add to the total project cost of a ground storage tank. Comparing the characteristics of the tank materials with their costs, the glass-fused-to-steel tank is the least expensive option for a 1 million gallon tank.

The necessary pump station for a ground storage tank would be designed to provide the same pumping capability as the existing Guard Hill pump station (2.1 MGD). Table 5.3 includes a cost estimate for the pump station that would be associated with the ground storage tank. Table 5.4 provides a preliminary cost analysis of a 1 million gallon glass-fused-to-steel ground tank combined with the associated pump station.

Table 5.3 – Pump Station Cost Analysis

Item Description	Quantity	Unit	Unit Cost	Total Cost
1500 gpm End Suction Pump	2	LS	\$37,500	\$75,000
Piping and Valves	1	LS	\$25,000	\$25,000
Cla-Val Pump Control Valve	2	LS	\$25,000	\$50,000
12-inch Flanged Piping	10	LF	\$250	\$3,000
10-inch Flanged Piping	25	LS	\$200	\$5,000
Automatic Transfer Switch	1	LS	\$25,000	\$25,000
Surge Anticipation Valve	1	EA	\$12,000	\$12,000
522 Corridor PRV Vault	1	LS	\$60,000	\$60,000
100 hp VFD	2	EA	\$25,000	\$50,000
25'x25' Building	625	SF	\$250	\$156,000
Site Work	1	LS	\$50,000	\$50,000
Backup Generator	1	LS	\$80,000	\$80,000
			Subtotal	\$591,000
Electrical	% of Sub.	20%		\$119,000
Estimated Total Construction Cost				\$710,000

Table 5.4 – Alternative 3A: Ground Storage Tank Preliminary Cost Estimate

Item	Quantity	Unit	Unit Cost	Total Cost
1 MG Glass-Fused-To-Steel Ground Storage Tank	1	EA	\$587,000	\$587,000
Piping, Valves, and Accessories	1	LS	\$130,000	\$130,000
Pump Station	1	LS	\$710,000	\$710,000
Electrical and Instrumentation	1	LS	\$50,000	\$50,000
Construction Subtotal				\$1,477,000
Mobilization	3%	% of Sub	\$44,400	\$44,400
Contractor Overhead and Profit	12%	% of Sub	\$177,300	\$177,300
Construction Cost				\$1,698,700
Geotechnical and Survey	1	LS	\$20,000	\$20,000
Contingency	10%	% of Const	\$169,900	\$169,900
Legal, Engineering and Permitting	15%	% of Const	\$305,800	\$254,900
Resident Project Representation	650	Hours	\$80	\$52,000
Total Capital Cost				\$2,195,500

5.4.2 Elevated Storage Tank

As a means of avoiding the costs and maintenance associated with a pump station, an elevated tank was also considered. This tank would simply operate in parallel with the Fairgrounds Road tank, and could even share some of the same piping. Overall, this type of tank would reduce the required maintenance and would not change the operation of the distribution system.

Budget quotations from several different manufacturers were obtained to determine the economic feasibility of this option. Siting of the tank is important as a cost consideration, because the tank must be built at an elevation that matches the required hydraulic grade line of 775'. Choosing a site at a lower elevation means that the tank must be taller. The existing location of the Fairgrounds Road tank was found to be the best suited for an elevated tank, meaning that the new proposed tank would essentially match this tank in height. Because it would be right next to the Fairgrounds Tank, quotes were obtained for a tank that is similar in nature, but a “composite” style was requested. This style tank would match the Fairgrounds Road tank visually, but would not provide the under-tank equipment storage and garage available at the existing tank. A comparison of the types of elevated storage tanks is included in Appendix A, along with quotes and information concerning all the different tanks evaluated.

This type of tank would be more expensive than the ground storage tank, even considering the construction cost of the pump station. A full breakdown of the costs of the elevated storage tank is included in Table 5.5.

Table 5.5 – Alternative 3B: Elevated Storage Tank Preliminary Cost Estimate

Item	Quantity	Unit	Unit Cost	Total Cost
1 MG Composite Elevated Storage Tank	1	EA	\$2,400,000	\$2,400,000
Site Work	1	LS	\$50,000	\$50,000
Piping, Valves, and Accessories	1	LS	\$70,000	\$100,000
Construction Subtotal				\$2,540,000
Mobilization	3%	% of Sub	\$75,600	\$76,200
Contractor Overhead and Profit	12%	% of Sub	\$302,400	\$304,800
Construction Cost				\$2,921,000
Geotechnical and Survey	1	LS	\$30,000	\$30,000
Contingency	10%	% of Const	\$289,800	\$292,100
Legal, Engineering and Permitting	15%	% of Const	\$521,700	\$438,200
Resident Project Representation	650	Hours	\$80	\$52,000
Total Capital Cost				\$3,733,300

5.4.3 Storage Tank Alternative Evaluation

A ground storage tank is a feasible and economical option to improve the reliability of the Corridor's distribution system. While an elevated storage tank would be easier to operate, the construction cost of the elevated storage tank is much higher. While the ground storage tank would be more costly to operate, the present worth of the operating expenses (maintenance and pumping costs) is less than \$250,000, not close to enough to make up the difference between the two tank types. Therefore, a ground storage tank with pump station should be chosen if this alternative is selected.

Using the existing 0.42 MGD average demand, a 1 million gallon storage tank in addition to the existing 1 million gallon Fairgrounds Road Tank would be able to serve the Corridor for approximately 4.5 days in the event of a line break. A 2 million gallon ground storage tank would be able to serve the Corridor for approximately 7 days. Using 2076 demand projections, an additional 1 million gallon storage tanks would allow water service to continue in the Corridor for approximately 12 hours, or an additional 2 million gallon tank for 18 hours.

One major drawback to using a storage tank is derived from the linear nature of the waterlines connecting the tanks with the main portion of the Town's system. Because of the single line serving the area, a line break necessarily splits one side of the distribution system from the other.

The side north of the break would be served by the Fairgrounds Road and proposed tanks, and users would experience normal pressures and fire flow availability, as long as the break did not result in a massive loss of water from the storage tank.

On the south side of any line break, the Guard Hill pump station would be required to run continuously to keep pressures at suitable levels for all users. This situation would require nearly constant attention from the operators, while wasting most of the water pumped, as one or two hydrants would need to be opened to allow the pumps to operate safely. During low usage hours, it might be possible to use the Guard Hill tank to provide flow the south side of the break, but at lower pressures and available fire flows. As demands in the area rise, using this tank will become less and less feasible.

Also, with the single nature of the water transmission line in place, a line break in any of the branch lines could eliminate a large individual user very easily. For example breaks on:

1. Fairgrounds road past the tank would eliminate water service to Ferguson Enterprises and Interbake Foods;
2. Toray Drive would eliminate water service to Toray Plastics;
3. Dupont's driveway would eliminate water service to Dupont; and
4. Rockland Road would eliminate water service to Dominion Power.

Overall, a storage tank would allow a minimum of 12 hours of response time during a line break or other emergency scenario, but all these scenarios would require significant effort for staff to operate the disabled distribution system, and in cases of a break along the above identified branch lines, disruptions in service would occur regardless of the amount of storage installed.

5.5 ALTERNATIVE 4: ADDITIONAL STORAGE WITH NETWORK DISTRIBUTION

This alternative uses the same ground storage tank and pump station layout and location options as Alternative 3 but also includes installing waterlines designed to allow looping in those portions of the Corridor where it is most feasible. The advantages to bolstering the Corridor's waterline network is that it would allow line breaks that occur within the networked area to be isolated without changing the nature of how the Fairgrounds Road tank and Guard Hill pump station operate and without disrupting service to the majority of users. Figure 5.3 shows the proposed waterline sections as well as two options for locating the ground storage tank for this alternative. The two storage tank locations will be discussed further in Section 6.

This alternative would include a ground storage tank, pump station, and approximately 8,740 feet of new 12-inch waterline. The proposed waterline network would be created by connecting into the existing system as follows:

1. Section 1 – 1,830 LF of new 12-inch waterline that connects the end of the 12-inch water line along Kelley Drive to the existing water line along the Corridor at the intersection of Cabin Court.
2. Section 2 – 4,600 LF of new 12-inch line that connects into the line along Rockland Road and runs parallel to the existing line that runs from Cabin Court to just south of Toray Drive
3. Section 3 – 2,310 LF of new 12-inch line that connects the end of the 16-inch line along Baugh Drive to the 12-inch waterline parallel to Toray Drive

By installing the above described waterlines, the Town would be nearly immune to single waterline breaks that occur anywhere north of the Redi-Mix driveway/Cabin Court road near the Dominion Power site. This upgrade to the water distribution system would not only reduce water system vulnerability, but it would increase fire flow delivery at most locations in the Corridor.

The Corridor would only be vulnerable to a single line break in that portion of the distribution system south of Cabin Court road, a 15,000-foot section of line that includes sections under I-64 and the two forks of the Shenandoah River. This section would be much more costly to parallel with a new line, reducing the cost/benefit ratio. However, if a line break occurred in this section, the same protocol would be required as explained above: the Guard Hill pump station would likely run continuously to provide adequate pressure and flow to the users between the pump station and the break. A hydrant or two would remain open to ensure the Guard Hill pump would not overheat. The Fairgrounds Road/Proposed tanks would supply users north of the break.

This alternative's cost estimate uses the same assumptions for the 1 million gallon glass-fused-to-steel ground storage tank and pump station as the cost estimate in Table 5.3 in Section 5.4. Table 5.5 below provides a preliminary cost analysis for a ground storage tank, associated pump station, and additional waterline.

V:\Projects\ANY\K4\31532\Data\GIS\PIPER Figures\Figure 5.3 - Alternative 4 - Storage Tank and Network Improvements.mxd

⊗

Valve

Proposed Tank Location
Option

Existing Water Tank

PS

Existing Water Pump Station

Proposed 12-inch Waterline

Waterline

6-inch

10-inch

12-inch

16-inch

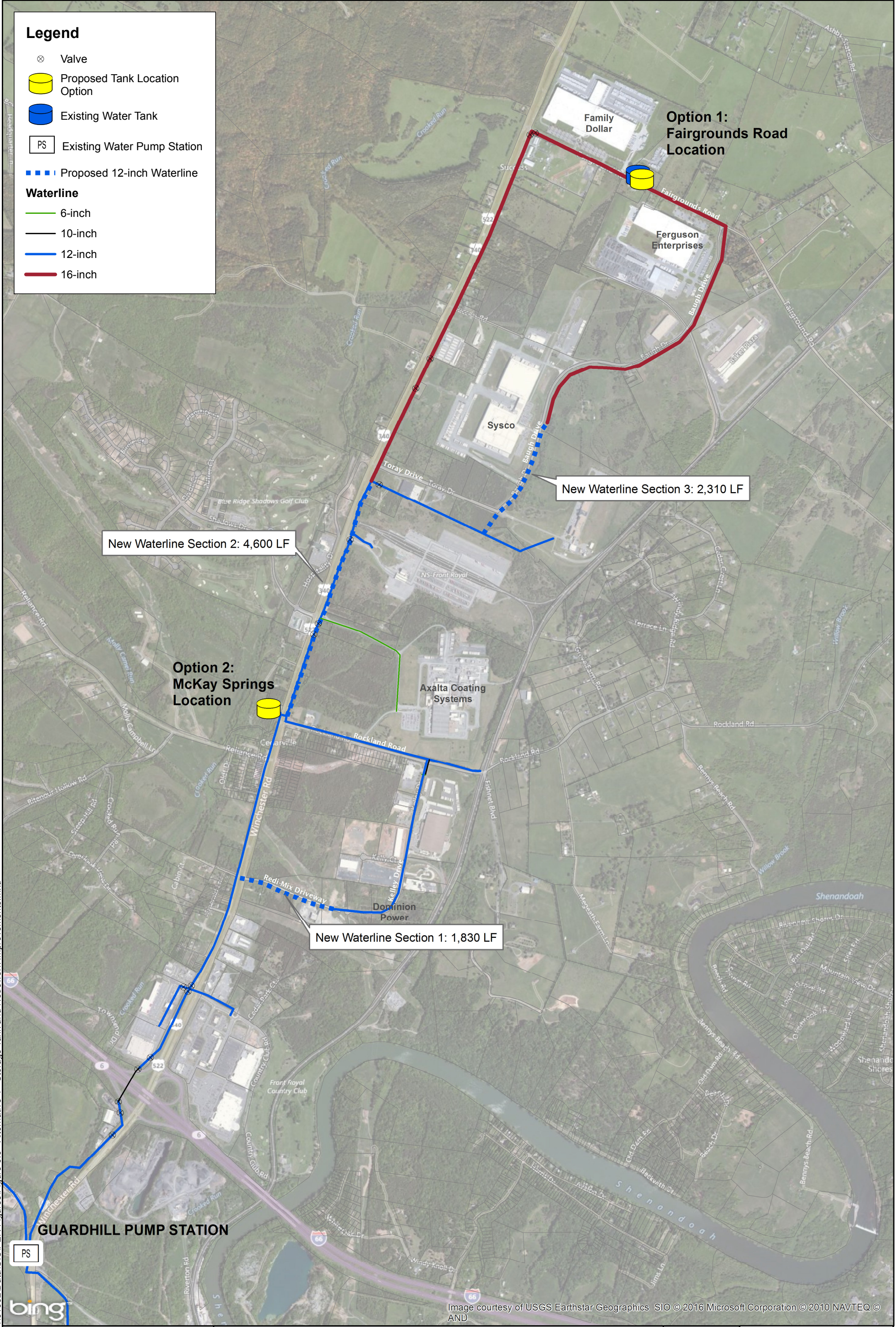


FIGURE 5.3
ALTERNATIVE 4 - ADDITIONAL STORAGE
TANK WITH NETWORK IMPROVEMENTS

Table 5.6 – Alternative 4: Ground Storage Tank and Waterline Preliminary Cost Estimate

Item	Quantity	Unit	Unit Cost	Total Cost
1 MG Glass-Fused-To-Steel Ground Storage Tank	1	EA	\$587,000	\$587,000
Piping, Valves, and Accessories	1	LS	\$130,000	\$130,000
Pump Station	1	LS	\$710,000	\$710,000
Electrical and Instrumentation	1	LS	\$50,000	\$50,000
Waterline Section 1				
12-in Ductile Iron Pipe	1,830	LF	\$88	\$161,040
Gate Valve	4	EA	\$8,600	\$34,400
1-in Air Release Valve	1	EA	\$4,000	\$4,000
Route 522 Road Crossing (Jack and Bore)	165	LF	\$600	\$99,000
Waterline Section 2				
12-in Ductile Iron Pipe	4,600	LF	\$88	\$404,800
Gate Valve	7	EA	\$8,600	\$60,200
1-in Air Release Valve	1	EA	\$4,000	\$4,000
Waterline Section 3				
12-in Ductile Iron Pipe	2,310	LF	\$88	\$203,280
Gate Valve	5	EA	\$8,600	\$43,000
1-in Air Release Valve	1	EA	\$4,000	\$4,000
Pavement Restoration	500	SY	\$50	\$25,000
Construction Subtotal				\$2,519,800
Mobilization	3%	% of Sub	\$75,600	\$75,600
Contractor Overhead and Profit	12%	% of Sub	\$302,400	\$302,400
Construction Cost				\$2,897,800
Easement Acquisition	1	LS	\$40,000	\$40,000
Geotechnical and Survey	1	LS	\$35,000	\$35,000
Contingency	10%	% of Const	\$291,800	\$289,800
Legal, Engineering and Permitting	15%	% of Const	\$525,300	\$434,700
Resident Project Representation	1,000	Hours	\$80	\$80,000
Total Capital Cost				\$3,777,300

The waterline in Alternative 4 adds approximately \$1.5 million to the total project cost of Alternative 3, but this option reduces the length of single waterline serving the Corridor by over 60%, while still providing 1 million gallons of storage volume. This project can be accomplished for roughly the same cost as 1 million gallons of elevated storage tank alone.

5.6 SUMMARY OF ALTERNATIVES AND RECOMMENDATION

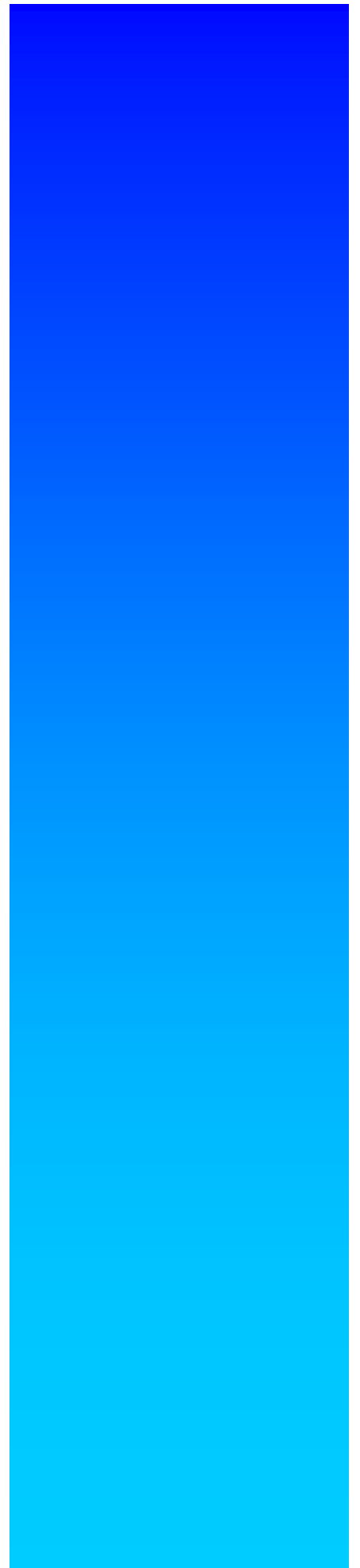
Alternative 1 - There are many advantages to Alternative 1-Parallel Waterline, including complete waterline redundancy, greater fire flows throughout the Corridor and increased Guard Hill pump station capacity. Almost all of the drawbacks are related to the construction of the line, the most notable being the two major river crossings. In the end, the parallel waterline option provides the most value for the Corridor.

Alternative 2 – Route 55 Pressure Zone Connection (Loop Connection) was previously evaluated by other consultants. This alternative was estimated to cost twice as much as the other alternatives, and provides no significant advantages beyond complete waterline redundancy. Based upon this, Alternative 2 is was eliminated from consideration.

Alternative 3- Additional Water Storage is the least expensive option and can be constructed for less than \$3 million; however, large water users in the Corridor would still be vulnerable to service disruptions in the event of a waterline break, even with full storage tanks.

Alternative 4 - Additional Water Storage with Network Improvements uses a combination of both waterline and tank storage to both reduce the likelihood that a single line break will take a significant portion of the Corridor out of service while also providing additional storage. In the event of a line break, Alternative 4 with the 1 million gallon storage tank along with the existing 1 million gallon Fairgrounds Road Tank can still only serve the Corridor for a short period of time. In addition, a new pump station will be required to utilize the new 1 million gallons of water.

CHA recommends that the Town choose Alternative 1 which includes the construction of a parallel waterline from the Town system to the Corridor. In addition, the 3 looping sections of waterline in the Industrial / Commercial area will increase redundancy as well. This alternative provides the most reliability to the Corridor at a cost of \$5.47 million.



3

Town of Front Royal, Virginia
Work Session Agenda Form

Date: March 20, 2017

Agenda Item: EDA's Special Exception Requests for Criminal Justice Academy Project
Director of Planning & Zoning

Summary: Attached with this cover page is a Staff Report with detailed information on the request, including the recommendations of the Planning Commission. Also attached is a copy of the application submittal from the applicant.

Council Discussion: This agenda item is scheduled for a work session review on February 6, 2017.

Staff Evaluation: As noted in the Staff Report, the Planning Commission recommended conditional approval of special exception requests 1 – 3, but did not recommend approval of special exception requests 4 and 5. This would allow the EDA to extend Progress Drive as designed, but with sidewalks and streetlights for the extended portion, as required by the Town Code.

Budget/Funding: n/a

Legal Evaluation: The Town Attorney will be available at the work session for questions.

Town Manager: The Town Manager will be available at the work session for questions.

Council Recommendations:

☐ Additional Work Session ☐ Regular Meeting ☐ No Action
Consensus Poll on Action: ____ (Aye) ____ (Nay)

Work Session



TOWN OF FRONT ROYAL
DEPARTMENT OF PLANNING & ZONING



STAFF REPORT FOR THE FEBRUARY 15, 2017 PLANNING COMMISSION MEETING
Updated for 3/20/17 Town Council Work Session

APPLICATION #:

FRSPU-000066-2016

APPLICANT:

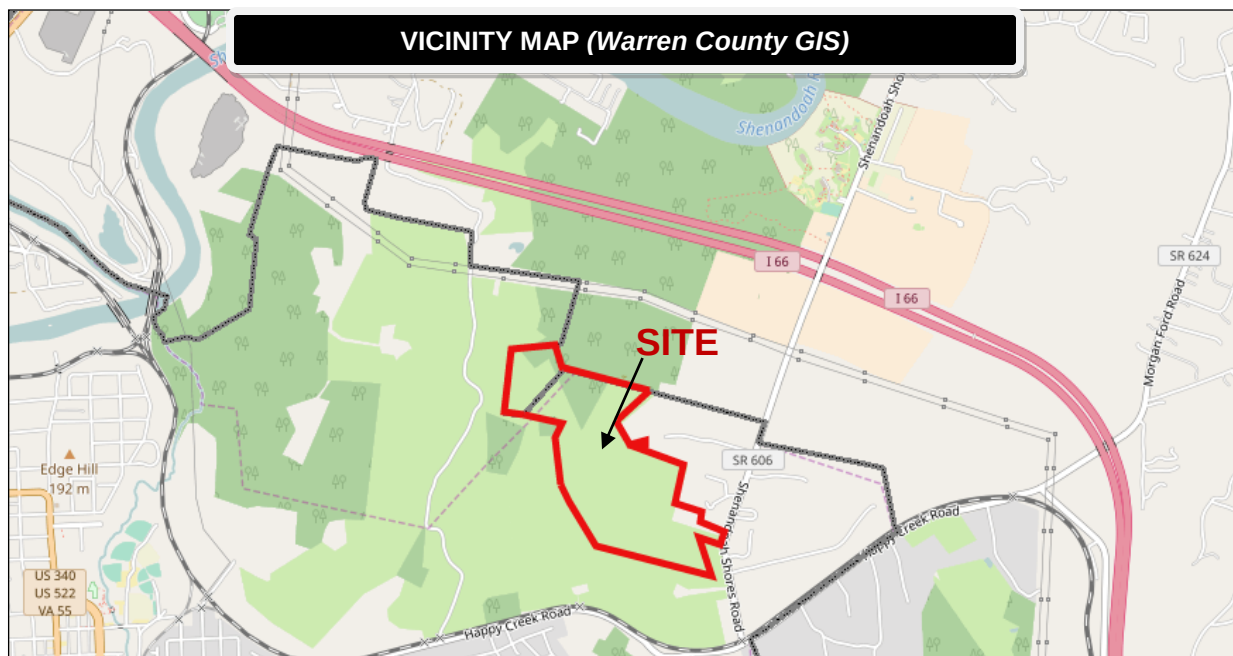
Pennoni Associates Inc.

APPLICATION SUMMARY:

The Applicant has submitted a request for a Special Exception (**Attachment 1**), on behalf of the property owner, the Economic Development Authority (EDA). The requested modifications are related to the intent to extend Progress Drive to accommodate the future development of a criminal justice academy on a new lot approximately 18 acres in land area.

GENERAL INFORMATION:

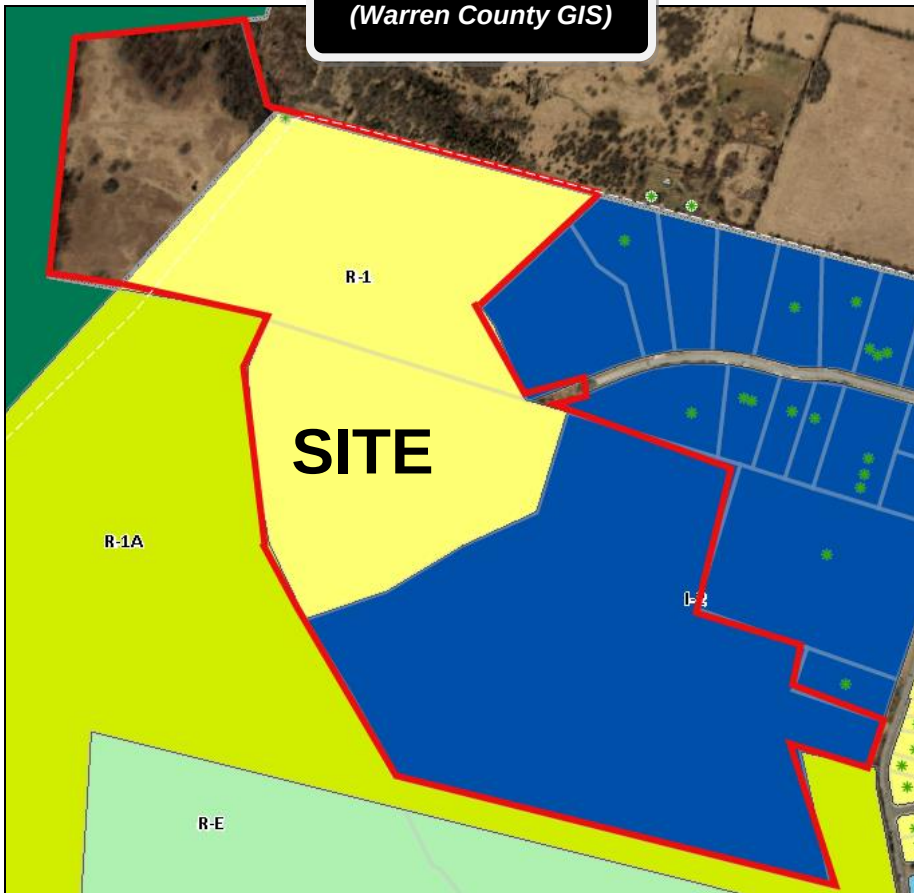
<i>Site Address</i>	No address currently.		
<i>Zoning District</i>	R-1, Residential District (I-2 for Adjacent EDA Property)		
<i>Overlay Districts</i>	Historic Area – NO	Floodway - NO	Entrance Corridor – NO
<i>Tax IDs</i>	20A221-1B		
<i>Location</i>	The subject property is located at the end of Progress Drive and adjoins the property of Front Royal Limited Partnership. Collectively, based on the Warren County GIS, the EDA owns approximately 149 contiguous acres at the location.		
<i>Existing Use</i>	Vacant lot		
<i>Proposed Use</i>	Street Extension and Subdivision for a future Criminal Justice Training Academy (public facility)		



AERIAL MAP
(Warren County GIS)



Zoning Map Overlay
(Warren County GIS)

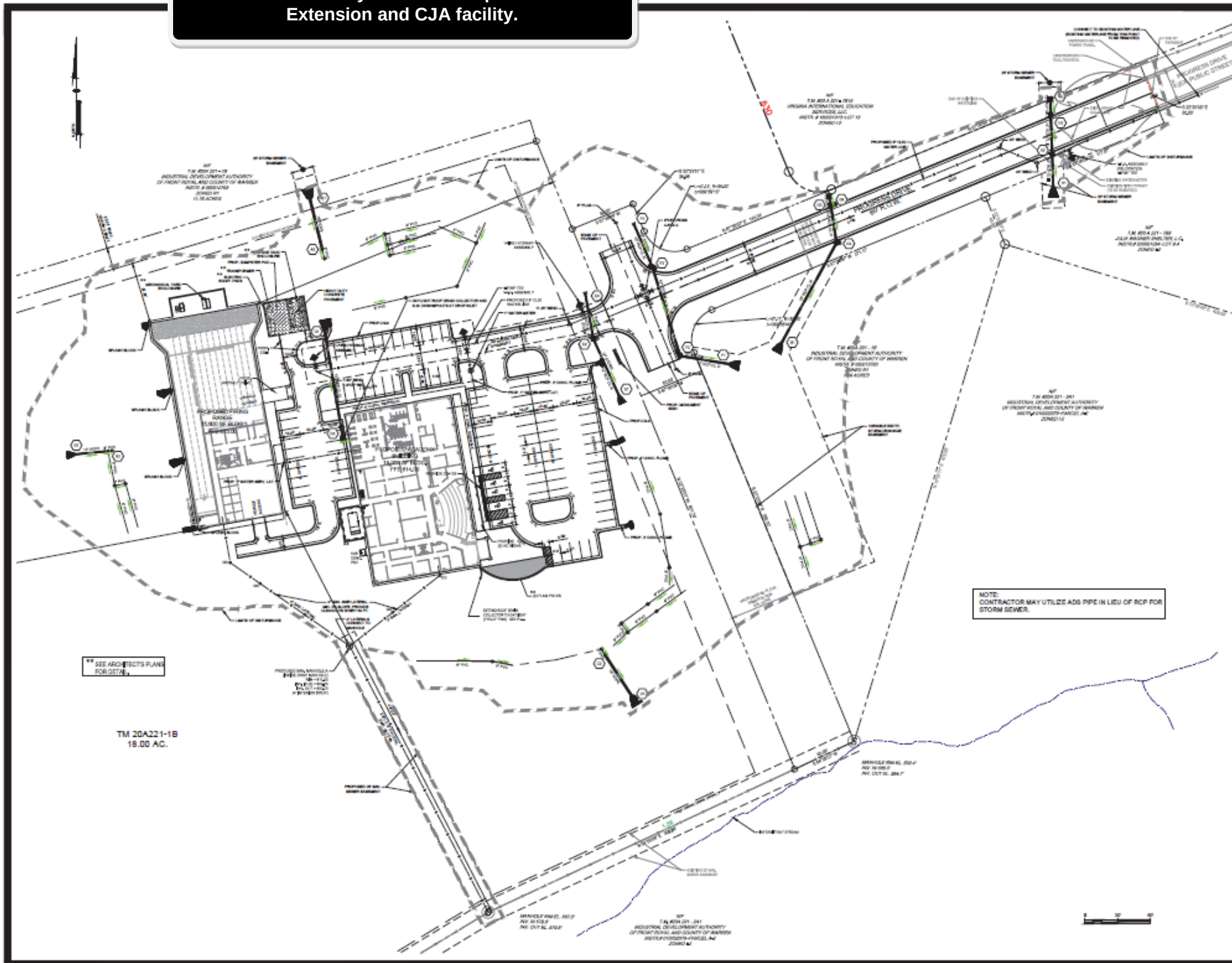


ZONING LEGEND

Color Legend:

Yellow = R-1
Blue = I-2
Olive = R-1A
Aqua = R-E
Green = A-1
No Color = County

Illustration of Layout of the Proposed Road Extension and CJA facility.

[illegible]

FRONT ROYAL WARREN COUNTY ECONOMIC
DEVELOPMENT AUTHORITY
FRONT ROYAL, VIRGINIA

[illegible]

SITE PLAN

**AERIAL MAP
(Bing Maps)**



ADDITIONAL INFORMATION:

Background

The Industrial Development Authority, going by the name of the Economic Development Authority, is proposing to construct a regional law enforcement training academy facility, referred to as a criminal justice academy, or more specifically, the Skyline Regional Criminal Justice Academy. Below is an article from the Northern Virginia Daily newspaper about the project.

"State board approves new criminal justice academy."

The Warren County Sheriff's Office reported on Friday that the state's Criminal Justice Services Board has approved the new Skyline Regional Criminal Justice Academy.

The academy will consist of 14 law enforcement agencies with 731 officers, including those in Clarke, Frederick and Warren counties and the City of Winchester. Many of those agencies have been part of the Middletown satellite facility of the Rappahannock Regional Criminal Justice Academy since 1999.

Warren County Sheriff Daniel T. McEathron said he met with the Virginia Department of Criminal Justice Services' board in Richmond on Thursday and heard comments about the proposed academy. Since he had already submitted documents about the academy, he said the board had few questions.

"We got a lot of good feedback," he said. "They were very receptive and welcomed us as the 11th regional academy in the

Commonwealth.”

McEathron said that 2015 reports listed Rappahannock as the largest regional academy in Virginia with more than 2,800 members. The same report lists that two academies had under 1,000 members: Piedmont Regional Criminal Justice Training Academy had just over 730 members and New River Criminal Justice Training Academy had just over 700 members.

Like the other regional criminal justice academies, McEathron said the new Skyline academy will receive state funding in accordance with its number of members. He said establishment of the Skyline academy will have no fiscal impact on the Rappahannock academy. The Skyline academy will have its own director, board and committees that have yet to be decided on by the member agencies.

“We’re going through some of those decisions now,” he said.

McEathron said member agencies of the new academy will spend the next year establishing its policy, bylaws and other foundations using other academies as blueprints. He said the Skyline academy would begin drawing up its own budget by October in preparation of the start of the 2017-2018 fiscal year – and the formal establishment of the academy – in July.

“We’ve had a great relationship with Rappahannock Regional Criminal Justice Academy, there’s no reason for us to leave any earlier than that,” he said. “We’re going to work another fiscal year with Rappahannock and they’ve been very cooperative in assisting us.”

In early March, the Front Royal-Warren County Economic Development Authority announced that it would be working with a private investor on an \$8 million new training academy building at Happy Creek Technology Park. The academy would be 15,300 square feet with a 14,000 square foot indoor firing range on an 18-acre plot at the end of Progress Drive.

Contact staff writer Rachel Mahoney at 540-465-5137 ext. 164, or rmahoney@nvdaily.com”

Analysis

FRSPU-000066-2016, is a Special Exception requested for the following sections of the Town Code:

- 148-820.H.- A request to extend Progress Drive above the maximum length of 800 feet for dead-end streets.
- 148-820.H.6 – A request for an alternative hammerhead turnaround in lieu of a standard cul-de-sac with a 40-foot radius.
- 148-820.D.6. – A request for the proposed extension of Progress Drive to be thirty (30) feet in width, matching the existing street width, but less than the minimum required street width of 36 feet.
- 148-850.A. – A request to not include street lights, matching the existing street.
- 148-850.D. – A request to not include sidewalks, matching the existing street.

Town Code 148-211, a portion of the Subdivision and Land Development Ordinance, includes the provisions for Special Exception requests. In summary, requests can be considered for four (4) reasons. This includes, 1) Circumstances of hardship or substantial injustice related to the regulations; 2) Projects advancing affordable housing; 3) Projects advancing TND principles; and 4) Projects advancing environmentally friendly design principles. The applicant's submission letter is attached that includes statements of justifications as to why the applicant believes the design standard modifications (special exceptions) are warranted. Based on the applicant's statements, it appears that the applicant is taking the position of #1, for reasons of hardship or substantial injustice. Below is the language of Section 148-211, followed by discussion of each of the applicants five (5) special exception requests, as listed above.

148-211 SPECIAL EXCEPTIONS

A. A special exception to the general regulations of this Chapter may be granted by Town Council, for either of the following circumstances:

1. When strict adherence to the general regulations would result in substantial injustice or hardship; provided that, the special exception would not diminish public health, safety or general welfare, including, but not limited to, consideration that adequate provisions are provided to ensure long-term maintenance of public and shared private facilities, and conformance with the goals and objectives of the Comprehensive Plan.

2. When it is demonstrated that use of alternative regulations for a particular development would better achieve at least one of the goals listed below; provided that, the special exception would not diminish public health, safety or general welfare, including, but not limited to, consideration that adequate provisions are provided to ensure long-term maintenance of public and shared private facilities, and conformance with the goals and objectives of the Comprehensive Plan.

a. Creation of affordable housing.

b. Design emphasis on the principles of traditional neighborhood design, including pedestrian-friendly roads, interconnection of new local streets with existing local streets, connectivity of pedestrian networks, and mixed-use neighborhoods.

c. Conservation or use of on-site natural features to protect water quality or open spaces.

B. Any request for an exception, shall be submitted to the Director, and shall include a signed and completed application form, any application fees, and any supporting documentation submitted by the applicant.

C. Prior to approval or denial of any request for an exception, the Planning Commission shall hold a public hearing, in accordance with Virginia Code § 15.2-2204, to review and provide recommendations to Town Council.

D. Prior to approval or denial of any exception to the design standards of this Chapter, Town Council shall hold a public hearing, in accordance with Virginia Code § 15.2-2204.

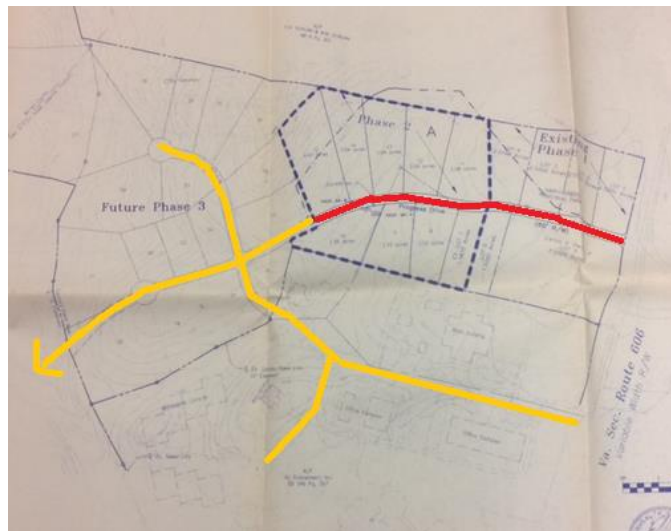
E. Town Council may impose such conditions or restrictions upon the premises benefited by an exception as may be necessary to comply with intent of this Chapter and to protect the public interest, safety and/or general welfare.

148-820.H.
Cul-de-sac
length

- (1) The applicant takes the position that Progress Drive needs to be extended beyond its current length (approximately 2000 feet) so that it can be ultimately intersected with another street and no longer be a dead-end street. The applicant also contends that not allowing the street to extend would be a hardship for the undeveloped land by preventing adequate access for future development.

Planning & Zoning Comments:

For background information purposes, in 1995, Progress drive was approved by the Town for an extension from its original design. This extension included a layout plan that showed a future connection through the HLI property, and a design that illustrated a future connection with the adjoining property to the west. Below is an illustration that shows Phase 1 and Phase 2 of Progress Drive in red. The orange lines represent the future road layout depicted on the plan for phase 2. Notice that a future road was shown through the HLI property to the south that would provide a second access point into the development area. The applicant contends that this road is not possible now due to the lack of right-of-way through the HLI property; and proposes the extension of the road through the EDA's property to the South that is presently planned to abut the planned East/West Connector Road.



Staff recommends that the applicant provide the Town with a deeded reserved right-of-way through the EDA's property to ensure that the roadway can be extended in the future. Such reserved right-of-way would need to apply to the ultimate location of the planned East-West Connector Road, or other public street approved by the Town. Staff also recommends that a deed restriction be placed on the EDA's property to require future development to extend the roadway to its ultimate intersection point with the planned East-West Connector Road, or other public street approved by the Town.

148-820.H.6
Hammerhead
turnaround

(2) The applicant proposes a hammerhead turnaround design to VDOT specifications in lieu of a standard cul-de-sac turnaround/temporary cul-de-sac turnaround. The applicant contends that the justification for this is to match the planned street design to allow for future extension without demolition of a cul-de-sac.

Planning & Zoning Comments:

Emergency Services (Warren County Fire Marshall) was consulted with and does not have any objections to the hammerhead turnaround design that is proposed.

The Town's Standards and Specifications includes a hammerhead turnaround detail that matches VDOT standards. However, such turnarounds are only recommended for low traffic residential streets. Given that there will be non-residential vehicular traffic, including large trucks, staff is of the opinion that the turnaround should be kept as a standard cul-de-sac, or temporary cul-de sac, turnaround. Furthermore, given the proposed entrance of the criminal justice academy, the turning around in a hammerhead would be a possible safety risk with oncoming traffic from the criminal justice academy.

Alternatively, a roundabout is a viable consideration as well and does not require reconstruction at a later date when the road is constructed.

148-820.D.6
Street width

(3) The applicant proposes to extend Progress Drive at its current street width of 30 feet. This is less than the minimum street width of 36 feet or 40 feet based on the vehicle trips of the street.

Planning & Zoning Comments:

With no street parking, Staff does not object to the extension of Progress Drive to match the existing street design. However, with a hammerhead design the hammerhead stubs should be designed to be 40 feet in width, so that the future road extensions will meet minimum Town Standards.

148-850.A&D
Street lights
and
sidewalks

(4&5) The applicant proposes to extend Progress Drive without street lights or sidewalks to match the current street design.

Planning & Zoning Comments:

Staff recommends sidewalks and street lights.

Review Process

This Special Exception application is the first step towards review of the criminal justice academy. Below is a general and summarized flow-list of the approval process, pursuant to the Town Code, for the proposed criminal justice academy, from top to bottom.

Special Exception Requests

[Planning Commission (2/15/17) and Town Council (TBD)]



Preliminary Plan for subdivision/street extension

[Planning Commission (2/15/17)]



Subdivision Plan, Final Plats and Bonding for subdivision/street extension (Planning Commission (TBD) and Town Council (TBD))



Site Development Plan for Criminal Justice Academy

[Planning Commission (Conditional review scheduled for 3/15/17 Planning Commission Meeting)]



Zoning Permits and other agency permits (building, right-of-way permits, stormwater, erosion and sediment control).

Conclusion

In summation, this application includes consideration of five (5) special exception requests, as elaborated on above, and listed below.

1. 148-820.H.- A request to extend Progress Drive above the maximum length of 800 feet for dead-end streets.
2. 148-820.H.6 – A request for an alternative hammerhead turnaround in lieu of a standard cul-de-sac with a 40-foot radius.
3. 148-820.D.6. – A request for the proposed extension of Progress Drive to be thirty (30) feet in width, matching the existing street width, but less than the minimum required street width of 36 feet.
4. 148-850.A. – A request to not include street lights, matching the existing street.
5. 148-850.D. – A request to not include sidewalks, matching the existing street.

On February 15th, the Planning Commission recommended conditional approval of special exceptions 1-3. The condition, as agreed upon at the meeting by the applicant, was that a right-of-way reservation be provided through the property to the south to allow the Town the ability to extend the road in the future if such extension is made a public project by the Town. In addition, the applicant would add a deed restriction to the property that would require future development of it to include extension of the road by the new development. The Planning Commission did not recommend approval of special exceptions 4 and 5, sidewalks and street lights.

January 25, 2017

Mr. Jeremy Camp
Director of Planning and Zoning
Town of Front Royal, Virginia
Town Hall
102 Ease Main Street
Front Royal, Virginia 22630

**RE: Happy Creek Industrial Park Subdivision; Skyline Criminal Justice Academy
Special Exception of the Subdivision Ordinance for the extension of Progress Drive**

Dear Jeremy:

Please accept this letter as a formal request for a Special Exception to the Subdivision Ordinance for the Skyline Criminal Justice Academy project in the Happy Creek Industrial Park. On behalf of the land owner of Tax Map #20A 221 – 1B, the Industrial Development Authority of Front Royal and County of Warren, we specifically request exceptions to Section 148-820 Street Design for the extension of existing Progress Drive to the proposed facility. The proposed extension of Progress Drive requires the Town Council approval for three exceptions to the Subdivision Ordinance: 1) *Section 148-820 H. Cul-de-sac and Dead-end Street. 4. Any dead-end street intended for access to an adjoining property or created as a result offstage development shall be provided with a temporary all weather turnaround within the subdivision. Such dead-end streets shall not exceed eight hundred (800) feet in length from the centerline of the nearest road intersection;* 2) *Section 148-820 H. Cul-de-sac and Dead-end Street. 6. All dead-end and cul-de-sac streets shall be provided at the closed end with a turnaround whose minimum radius shall be forty (40) feet;* 3) *Section 148-820 D. Construction of Public Streets and Alleys. 6. The minimum design standards of the following table shall be required for all Local Streets, Collector Streets, and Alleys;* 4) *Section 148-850 A. Streetlights;* and 5) *Section 148-850 D. Sidewalks.* More detailed description of the requested exceptions and their justification is outlined below.

- 1) *Section 148-820 H. Cul-de-sac and Dead-end Street. 4. Any dead-end street intended for access to an adjoining property or created as a result offstage development shall be provided with a temporary all weather turnaround within the subdivision. Such dead-end streets shall not exceed eight hundred (800) feet in length from the centerline of the nearest road intersection.* The Happy Creek Industrial Park – Phase 2 construction plans, prepared by G.W. Clifford & Associates in June of 1995, extended Progress Drive to its current length of over 2,000 linear feet. This existing dead end street is over 1,200 linear feet beyond the maximum allowable length of 800 linear feet. The future extension of Phase 3 of the development was planned for approximately another 1,300 linear feet of Progress Drive. In Phase 3 of the Progress Drive, construction of an intersection was planned for a roadway providing an inter-parcel connection to the property to the south (TM # 20A 221 – 2A1). The proposed development plans submitted concurrently with this request provide for this same intersection and the inter-parcel connection, but approximately 150' closer than previously planned to the centerline intersection of Progress Drive and Route 606. The proposed extension and development plans re-establish the inter-parcel connectivity that was lost when the development plans in the HLI tract to the south did not materialize and the construction of Progress Drive ceased prior to reaching a

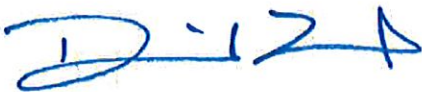
planned intersection. Consequently, not allowing the construction of the last segment of Progress Drive to the proposed intersection would cause a hardship resulting in the loss of access to the remainder of the industrial park and this site for future development. It is our opinion that the proposed development plans and this request are in accordance with previously approved plans and achieve the intended intersection for inter-parcel connectivity. The current plans are justified in allowing Progress Drive to be extended beyond the 800' maximum length for a dead-end street since this development plan re-establishes a north-south transportation corridor and the ability for future development to connect to Progress Drive.

- 2) *Section 148-820 H. Cul-de-sac and Dead-end Street. 6. All dead-end and cul-de-sac streets shall be provided at the closed end with a turnaround whose minimum radius shall be forty (40) feet.* The proposed hammerhead turnaround provided within the construction of the future roadway intersection, fully accommodates fire apparatus turnaround. The proposed dead-end configuration exceeds the minimum dimensions of a 120' hammerhead turnaround. Per *Section 148-820 A. General Standards 2.b. Streets that are designed for continuation to adjoining properties shall be designed and constructed to the property line with a temporary cul-de-sac turnaround, or other temporary turnaround approved by the Town.* This alternate turn-around option was presented to the Fire Marshall and was well received. With no objections to the proposal from the Fire Marshal, it is our opinion that justification for approval of this alternative turnaround resides in that this provides for the best entrance configuration for the proposed Skyline Criminal Justice Academy facility, fully constructs the future intersection pavement section to the curb returns, and avoids an unnecessary stage of temporary turnaround removal and construction of the intersection curb returns proposed with the current applications.
- 3, 4 & 5) *Section 148-820 D. Construction of Public Streets and Alleys. 6; Section 148-850 A. Streetlights; and Section 148-850 D. Sidewalks.* These sections of the Town Code require the construction of streetlights and sidewalks along public streets, and the minimum design standards required for all Local Streets, Collector Streets, and Alleys as found in the table of Section 148-820D.6. As with item 1) above, The Happy Creek Industrial Park – Phase 2 construction plans, prepared by G.W. Clifford & Associates in June of 1995, extended Progress Drive approximately 2,000 linear feet to its current terminus using an approved roadway section with a width of 30 feet and no sidewalks. In addition, in the 1990's the Town of Front Royal waived the requirement for streetlights by a Subdivision Variance for Progress Drive. The ordinance requires local streets to have a pavement width of 36 feet, streetlights, and sidewalks on both sides. To construct sidewalks, streetlights and a wider pavement section for the final segment of Progress Drive would place an undue burden on the final lot needing access to Progress Drive that the previous 15 lots were not required to construct. In addition, isolated sidewalks would not connect to any other walkways, and the pavement transitions would diminish even further the effectiveness of achieving the wider pavement width just prior to a stop condition. It is our opinion that it is justified that the existing 30-foot pavement section be continued for the final 500 feet to the proposed hammerhead turnaround and future inter-parcel roadway intersection. This waiver request does not apply to the future roadway intersecting with Progress Drive. It is proposed that the future inter-parcel roadway be designed in accordance with the current roadway design criteria as required by the Town Code at the time of its construction.

The 500-foot extension of Progress Drive as proposed, with the approval of the requested Special Exception of the Subdivision Ordinance, results in extending the existing roadway to the planned intersection of a future inter-parcel connector roadway. The width of Progress Drive would remain consistent with its existing 2,000

linear feet and the emergency vehicle turnaround would be provided for through the construction of the future intersection of Progress Drive and an un-named inter-parcel connecting roadway. The future inter-parcel connecting roadway would be subject to the current street design and street improvement standards of the Town Code. We believe that the special exceptions to Section 148-820 Street Design and Section 148-850 Street Improvements of the Town of Front Royal Subdivision Ordinance that we have requested are justified for the reasons stated above and are consistent with both the previously approved plans and the future transportation plans of the Town of Front Royal. Accordingly, we respectfully request consideration and approval of the requested Special Exception Application. Should you have any questions, please feel free to contact me at (540) 771-2087.

Sincerely,
PENNONI ASSOCIATES INC.



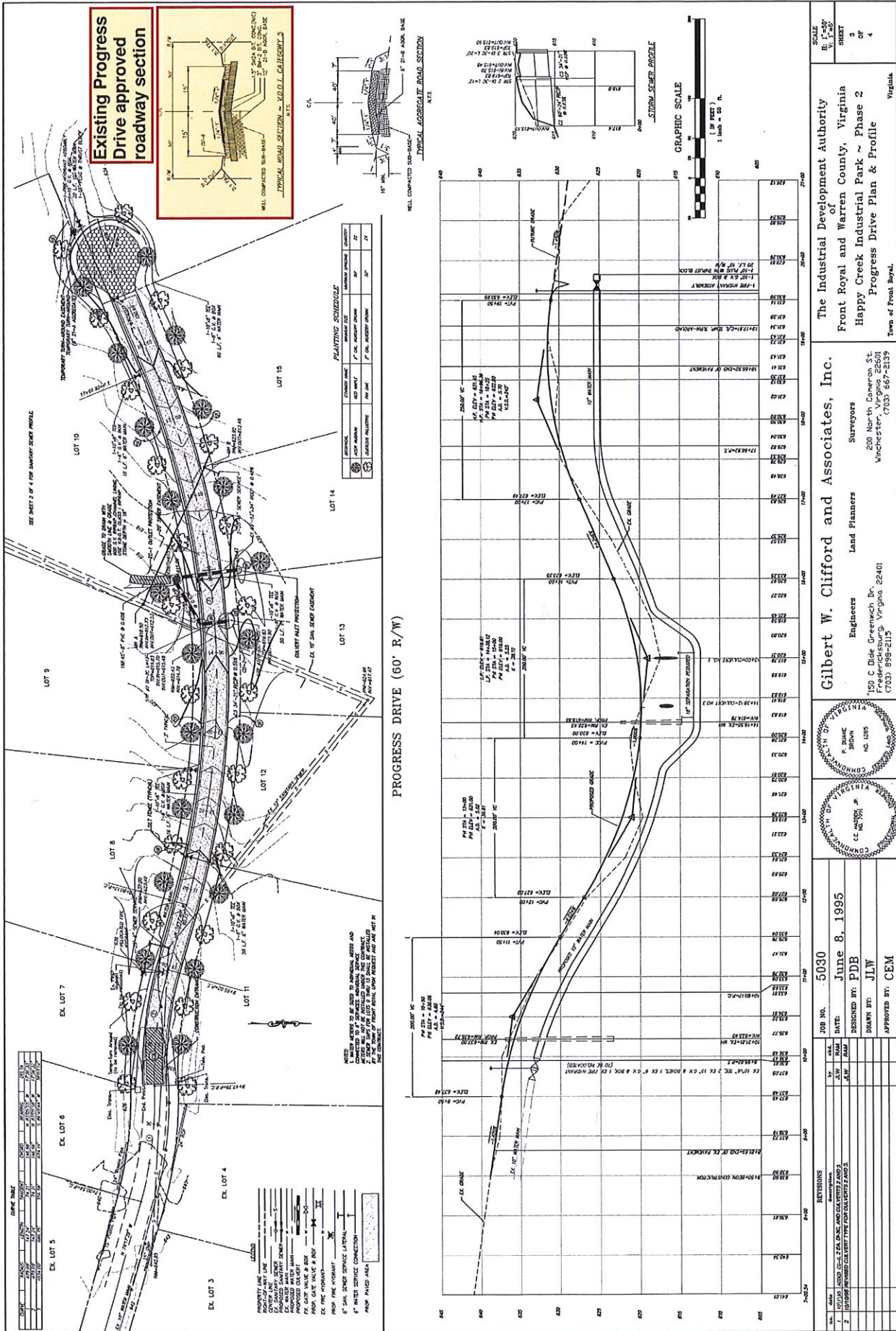
David L. Frank, PLA

Attachments:

- Attachment 1: Happy Creek Industrial Park – Phase 2; sheet 2 of 4
- Attachment 2: Skyline Criminal Justice academy; sheet C4 Overall Site Plan
- Attachment 3: Happy Creek Industrial Park – Phase 2; sheet 3 of 4

Cc: Jennifer McDonald, Executive Director - Front Royal – Warren County Economic Development Authority

Attachment 3



THE INDUSTRIAL DEVELOPMENT AUTHORITY
 Front Royal and Warren County, Virginia
 Happy Creek Industrial Park ~ Phase 2
 Progress Drive Plan & Profile

GILBERT W. CLIFFORD AND ASSOCIATES, INC.
 Engineers
 150 C. Ode Greenway Dr.
 Winchester, Virginia 22601
 (703) 598-2115

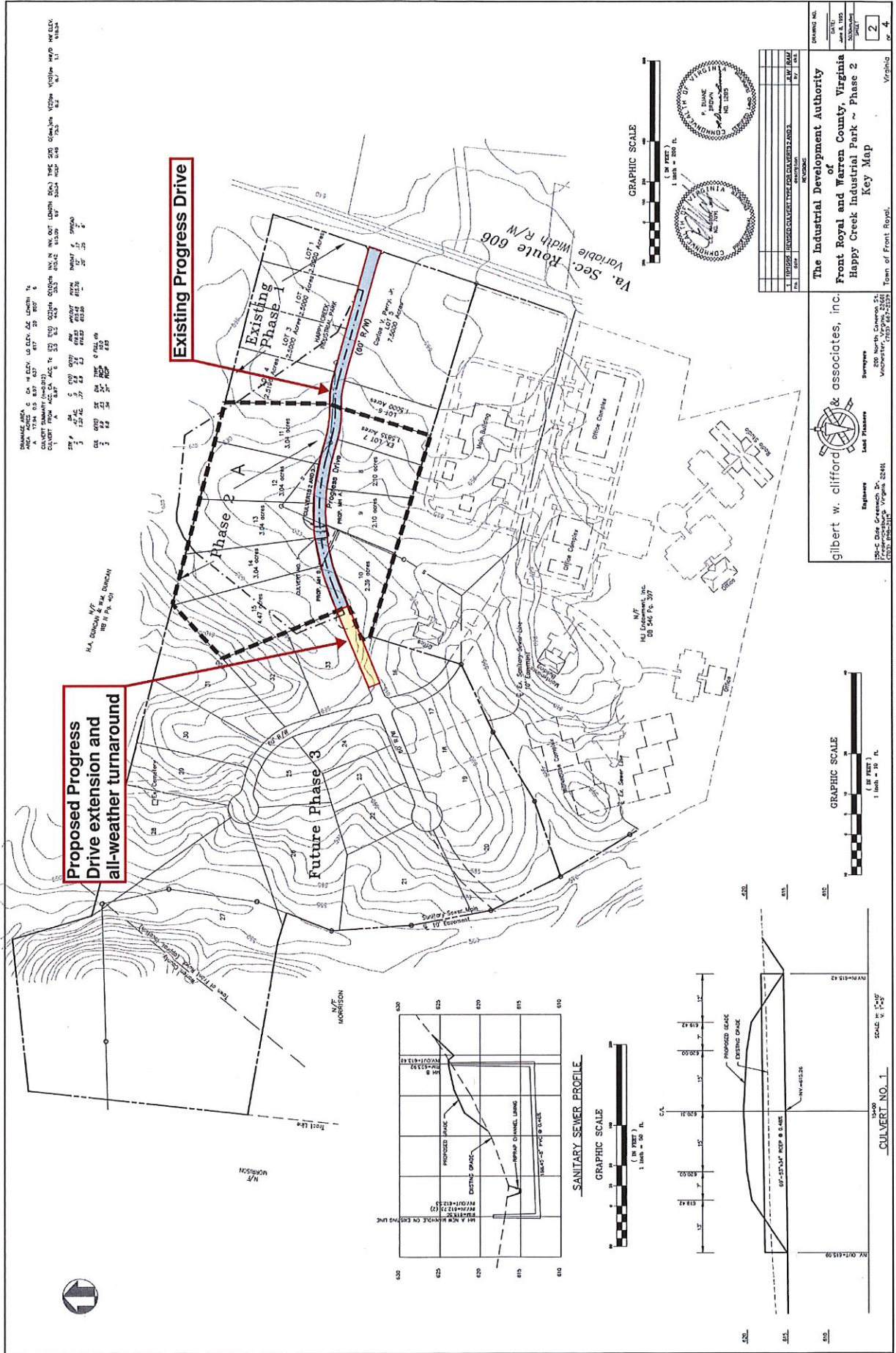
Surveyors
 200 North Cassen St.
 Winchester, Virginia 22601
 (703) 557-2139

Land Planners
 22401
 (703) 598-2115

JOB NO. 5030
DATE: June 8, 1995
DESIGNED BY: PDB
DRAWN BY: JLW
APPROVED BY: CEM

REVISIONS

NO.	DATE	BY	REVISION
1	06/08/95	PDB	ISSUED FOR CONSTRUCTION
2	06/08/95	PDB	ISSUED FOR CONSTRUCTION



FRSPU 66-2016

SPECIAL EXCEPTION APPLICATION

TOWN OF FRONT ROYAL ~102 East Main Street, Front Royal, Va. 22630 ~ Main: 540-635-4236 ~ Fax: 540-631-2727

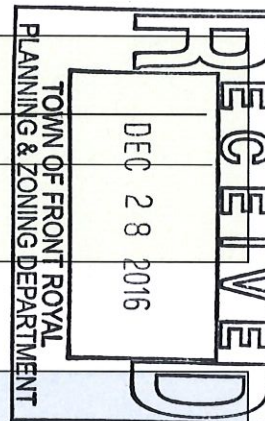
APPLICANT

PROPERTY OWNER (if different)

APPLICANT'S NAME: Pennoni Associates Inc.	PROPERTY OWNER'S NAME: Warren County EDA
ADDRESS: 117 E. Piccadilly Street, Suite 200 Winchester, Virginia 22601	OWNER'S ADDRESS: P.O. Box 445 Front Royal, Virginia 22630
PHONE NUMBER: (540) 667-2139	PHONE NUMBER: (540) 635-2182
EMAIL: dfrank@pennoni.com	EMAIL: mcdonald@wceda.com

SECTION A - Property Information

Tax Map No. <u>TM #20A221-1B</u>	Zoning District: <u>R-1</u>
Site Address: <u>New construction</u>	
☐ Entrance Corridor ☐ Historic District ☐ Floodplain	



SECTION B - Details of Request

Project Name. <u>Skyline Criminal Justice Academy - Happy Creek Industrial Park</u>
Special Exception Code Section(s): <u>Sections: 148-820.H.4; 148-820.H.6; & 148-820.D.6.</u>
General Describe of the request (please attached supporting information, such as plats, plans, details, etc.): <u>This request is for the extension of existing Progress Drive for the Skyline Criminal Justice Academy</u> <u>consistent with previously approved plans. A detailed letter outlining this request and supporting documents</u> <u>are attached to the application.</u>

SIGNATURE OF APPLICANT:	Date: <u>12/16/2016</u>
PRINT NAME OF APPLICANT: <u>David Frank</u>	
SIGNATURE OF PROPERTY OWNER:	Date: <u>12-28-2016</u>
PRINT NAME OF PROPERTY OWNER: <u>Jennifer McDonald</u>	

By the submission of this application, permission is hereby granted to Town Officials and employees to enter upon the subject property during reasonable hours for purposes related to the review of this application. The Applicant will be the designated contact person for this permit application. (APPLICATION FEE: \$250.00)

4



Town of Front Royal, Virginia Work Session Agenda Form

Date: March 20, 2017

Agenda Item: Donation of Radios to Warren County Parks & Recreation

Summary: Council has received a request from Junior Kisner of Warren County Parks and Recreation Department through Front Royal Police Captain Jason Ryman to donate 21 Kenwood TK-980 analog mobile radios to the Parks and Recreations Department to assist in maintaining contact with each other and providing an additional layer of safety for their personnel. The radios were replaced by digital mobile radios that the Police Department currently uses. Since the radios are over 10 years old their value is between \$50.00 - \$75.00 each (total \$1050.00 - \$1575.00)

Council Discussion: If approved, Council will do so in the next regular Council meeting

Staff Evaluation: None

Budget/Funding: Director of Finance will be available

Legal Evaluation: Town Attorney will be available

Staff Recommendations: Recommends the donation

Town Manager Recommendation: Town Manager will be available.

Council Recommendation:

☐ Additional Work Session ☐ Regular Meeting ☐ No Action

Consensus Poll on Action: ____ (Aye) ____ (Nay)

Work Session



TOWN OF FRONT ROYAL

POLICE DEPARTMENT
23 E. JACKSON STREET
FRONT ROYAL, VIRGINIA 22630-1560

Norman A. Shiflett

Chief of Police
(540) 635-2111
(540) 635-6160 (Fax)

Date: March 1, 2017

To: Major Bruce Hite *BH*
Joe Waltz; Interim Town Manager

From: Capt. Jason Ryman *JR*

Subject: Donation of Equipment

We currently have in our possession 21 Kenwood TK-980 mobile radios. They are the old analog radios that were replaced by the current digital mobiles. At this time, we have no use nor any intended use of the radios. In addition, they have been stored for now due to the costs involved in de-programming each radio (roughly \$35.00 each).

This week, Junior Kisner (Parks & Rec.) approached us about the radios and inquired what we intended to do with them. Kisner explained that none of the Parks & Rec vehicles (they also do facility maintenance for Warren County) have radios for contact with each other or in the event of an emergency. Kisner further agreed that if the radios could be donated to Parks & Rec., they would incur all costs for de-programming and installation to their vehicles.

Junior was instrumental in helping the town acquire the current SWAT Team truck. As a member of Front Royal Volunteer Fire and Rescue and with his knowledge of the workings of both local governments he spear-headed the effort to help the department obtain the truck at no cost.

As we have no use for the old radios, I respectfully request permission to donate the old police radios to the Warren County Parks & Recreation Department to assist their personnel in maintaining contact with each other and providing an added layer of safety for their personnel. The rank and file employees of Parks & Rec. have always been willing to help our officers when needed. This would be an excellent showing of our willingness to help them and our commitment to keeping everyone working within the town safe.

5

Town of Front Royal, Virginia Work Session Agenda Form

Date: March 20, 2017

Agenda Item: Purchase of New Street Sweeper

Summary: The Town's Streets Department is requesting to purchase a new street sweeper, in the amount of \$268,494.00, that will require the Town to obtain a loan in the amount of \$231,784.00.

Council Discussion: Council is requested to approve the purchase of a Johnson VT651 Sweeper in the amount of \$268,494.00 and for the Town to obtain an external loan in the amount of \$231,784.00.

Staff Evaluation: The current sweeper is used regularly, when temperatures permit. The current street sweeper used by the Town is 17 years old which far exceeds the 8-10 year replacement life of the sweeper. Repairs for the sweeper are becoming costly as replacement parts are becoming harder to find.

Further staff evaluation & sweeper details can be found on additional documents included.

Budget/Funding: Current fiscal year funding includes \$36,710.00 for payment on a street sweeper. An external loan would allow the Town to amortize the purchase of the sweeper over a period of 10 years with estimated payments of \$24,964.72 at an estimated interest rate of 2.15%.

Legal Evaluation: N/A

Staff Recommendations: Staff recommends approving the purchase of the new sweeper and approving the Town to obtain an external loan in the amount of \$231,784.00 for a period of 10 years with estimated payments of \$24,964.72.

Council does have the option of allowing an internal loan from fund balance. The Town currently has a few internal loans, given the low interest rate at this time it is preferable by staff to seek an external loan for this purchase.

Planning Commission Recommendation: N/A

Town Manager Recommendation: (The Town Manager will provide input on the issue and make his recommendations to council.)

Council Recommendation:

☐ Additional Worksession
 ☐ Regular Meeting
 ☐ No Action





TOWN OF FRONT ROYAL

Environmental Services
800 Crosby Rd.
P.O. BOX 1560
FRONT ROYAL, VIRGINIA 22630-1560

Stephen Scheulen
Supervisor of Streets & Concrete
(540) 635-7819
(540) 635-8973(Fax)
sscheulen@frontroyalva.com

The Streets Department is currently operating a Johnston 605 pure vacuum sweeper. The machine was purchased new in 2000. It has performed well and goes out everyday when temps are above freezing. It averages 150 miles a week, 8 hours a day. It currently has 15,889 hours on the unit.

The primary reason the Town is replacing the existing street sweeper are the following:

1. It is 17 years old which far exceeds the 8 to 10 year replacement age for this type of vehicle.
2. Reliability. With the age and hours on the machine, the risk of a major breakdown is significant. For example, an engine overhaul or new transmission.
3. Routine breakdowns. \$9,800 has been spent thus far this year in repairs and replacement parts with some repairs taking up to 5 days. Within the past 3 years records show an increase in repairs needed.
4. Cab and Chassis deteriorating parts. Cab and chassis manufactures will stop offering parts after ten years. Then there offered aftermarket and become increasingly harder to find. For example, the cab floor has been replaced twice and the last heater core offered by the manufacture was recently purchased.

The street sweeper is a high priority need of the Town for the following reasons:

1. Improves the safety conditions of the Town's streets by removing the unsafe accumulation of debris.
2. Improves the safety conditions of the Town's streets by reducing flooding caused by blocked drainage inlets with the removal of tree leaves and other debris.
3. Significantly improves the appearance of the Town's streets and residential areas.

We would like to replace the sweeper with a comparable unit. Knowing how long ours has lasted, a new Johnston VT651 would be a wise investment. One key feature to the Johnston is the stainless steel hopper with a lifetime warranty. After hundreds of loads it still shows little wear. Stainless is a standard on all Johnston sweepers. Other brands may offer it, but drives the cost up significantly. The new unit will be the same size and have all the capabilities as our current machine. While our old machine is a cabover design, the new unit will have a conventional Freightliner cab. The industry has moved to this type of cab and chassis which still offers the same turning radius and overall length.

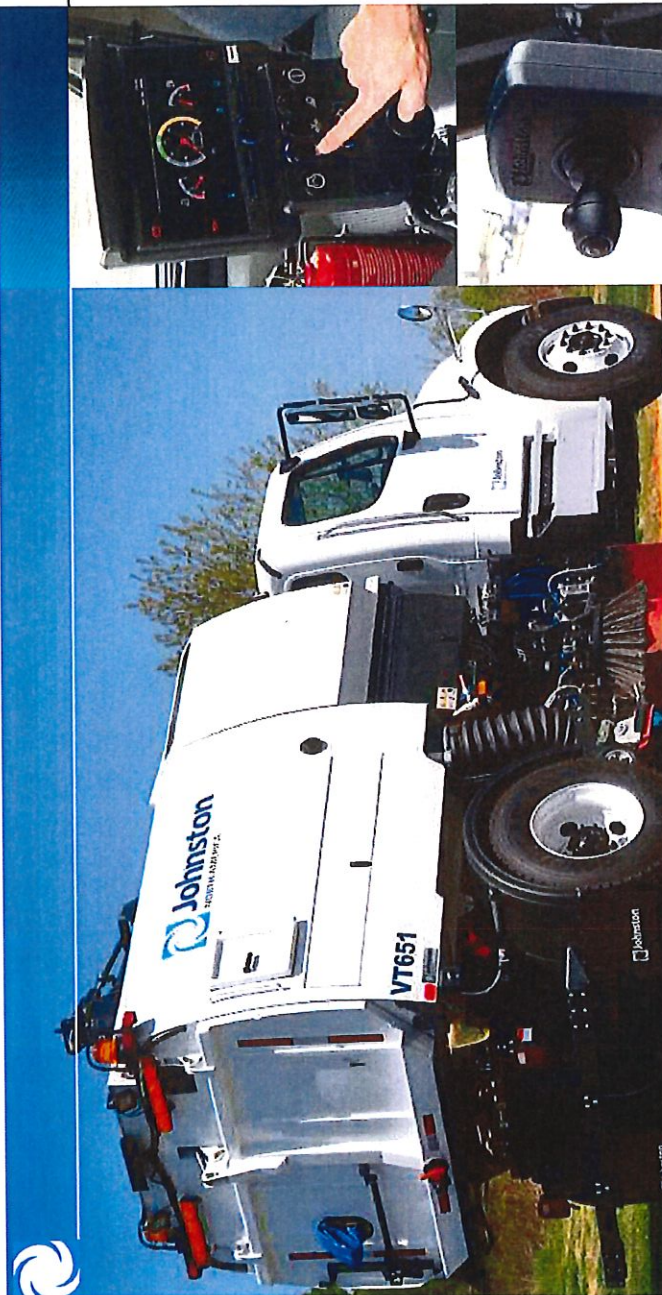
Johnston has been in business since 1904 and is credited for producing the first truck mounted sweeper. They have a North American headquarters in Mooresville, NC. They have expanded their dealer network with parts suppliers as close as Chantilly, VA. We have no problems with receiving replacement brooms or parts. Service and performance of the sweeper has been excellent and we anticipate the new Johnston sweeper to exceed our expectations.



The Johnston V Range

VT651 VS651

VT801 VS801



Operational Performance

The V Range has established itself as an industry standard by implementing over 50 years of continuous improvement, resulting in a vacuum sweeper that is the most cost-efficient and dependable while ensuring maximum performance is always achieved. Johnston Sweepers offers a wide choice of options and chassis models to suit specific operational requirements that will bring out the best performance in vacuum street sweeping.

- In-cab controls are ergonomically positioned to provide safe and easy operation while sweeping.
- Throttle control of the auxiliary engine is infinitely variable ensuring optimum operational and fuel efficiency with no performance compromised. With a 1500 rpm Eco-mode built into the V Range, fuel conservation is enhanced and noise levels are reduced.
- Pendant controls connected via a flexible cable allows the operator to safely tip the body and open rear door from inside or outside of cab, and on either side of cab at the same time.
- To extend brush life, the wide-sweep brush can also be adjusted using the pendant control.
- As standard, all Johnston V Range sweepers are fitted with a full-width body prop which automatically engages when the hopper is raised, with a choice of four tipping heights.
- The auxiliary engine and hydrostatic drive pump are accessed via a wide lightweight service ladder giving constant three-points of contact for the user.
- All V Range models have equipment lockers on both sides of the hopper for storage of hydraulic or Aluminum Catch Basin extension tubes.
- All critical controls – including valves, solenoids and auxiliary equipment for pneumatic, hydraulic and water systems are contained in a systems control locker on the right hand side of the vehicle. The ease of access to this equipment aids diagnostic checks and maintenance. Additionally, the V Range is also fitted with certified IP67 electrical connectors, an industry standard meaning the connectors are waterproof and dust-proof.
- As standard, the V Range sweeper features a Pressadrain water purging system so that when freezing weather conditions are anticipated, water is easily and conveniently drained by operating a simple in-cab switch.
- Water jets in the nozzles are self-cleaning using "pressure-loaded" pins to make certain all high wear components are saturated with lubricating water.

Johnston CANBUS System Advantage

The Johnston CANBUS system monitors sweeper performance and provides daily checks. The display incorporates an audible and visual raised hopper warning, fuel gauge, engine hour meter, tachometer and a water level gauge. In addition, data can be downloaded via a USB stick, recording various items of data for better cost control and easy analysis of sweeping operations.

Human/Machine Interface

- ECO mode
- Color Coded operating zones.
- Key operating fuel consumption displayed.
- Performance improvement through better ergonomics and intelligent functionality.
- New V Range has half the number of sweeping controls versus competitive units – ideal for the novice operator while retaining the ability for an experienced operator to quickly tune the machine.
- All sweeping controls moved to the door post – GB position controlled by joystick.
- Semi-automatic winterization - Pressadrain.
- Fuel & water gauges all in cab.
- Data Acquisition For Management**
 - Data Capture – if you can't measure it, you can't control it!
 - Easy analysis of key data by USB flash drive and upload into Excel – Hours swept, auxiliary rpm, fuel consumption, next/latest service, etc.
 - Easy comparison between machines and operators.
 - Ability to restrict the operation of the machine within given parameters.

Diagnostics

- Important warnings are indicated on the main screen and direct the operator to the source of a problem.
- A multitude of additional diagnostic data is provided by pressing F3. This can either allow the operator to diagnose the problem or provide accurate information to a service center.
- Ability to open hopper door and lift the hopper with auxiliary engine turned off.



The Johnston Standard

- Complete Stainless Steel Hopper
- We exclusively utilize Nirossta® Stainless Steel
- Better corrosion resistance than mild steel
- Abrasion resistance better than mild steel
- Abrasion resistance better than 304 stainless steel
- Complete Stainless Steel Water Tank
- Superior corrosion and abrasion resistance
- Lowest ownership costs and best warranties
- Only "Life-Time Warranty" in the industry

Nirossta® In My Body

Johnston is the only sweeper manufacturer to offer as standard, "Complete Hopper Constructed of Stainless Steel" – not lined. We don't use just any stainless steel. We exclusively utilize Nirossta® Stainless Steel – the very best for the application.

Johnston sweeper bodies provide 250-times better corrosion resistance than mild steel and our abrasion resistance is not only better than mild steel, but also better than 304 stainless steel. Our commitment to this level of excellence is what has gained us the commanding position in the vacuum sweeper marketplace.

Johnston is the only company to give a "Life-Time Warranty" with our stainless steel hoppers. We are the only manufacturer to offer a "Complete Stainless Steel Water Tank" in our vacuum sweepers. It too has the only "Life-Time Warranty" in the industry.

Johnston provides superior corrosion and abrasion resistance, low maintenance and increased productivity.

Johnston offers the best performing vacuum product on the market and the lowest ownership costs, and best warranties.





Productivity

The V Range provides the ideal balance between performance, environmental impact and low cost of ownership, with applications to suit a full range of sweeping environments - benefits that make the Johnston V Range the sweeper of choice worldwide.

Two drive options (VT and VS) provide outstanding vacuum performance. On the VT Range, JCB and John Deere auxiliary engines combined with the Johnston mechanical step-up gear box and fluid coupling, and the Johnston hydrostatic gear box drive on the VS model, provide the best efficiency ratios in the industry. The versatile VT Range powerpack with a range of 1200 rpm - 2000 rpm, can operate efficiently in municipal environments at a lower rpm, or for one pass heavy duty resurfacing operations, the engine provides full power to ensure a clean path is all that is left behind.

The V Range offers numerous sweep configurations from a nozzle with only 30-inch sweep path to a simultaneous sweep path of 144 inches.

A stainless steel water tank is integrated into the floor of the hopper body, which provides ideal weight distribution between axles, and weight transfer during sweeping.

Dust and debris are collected by pneumatically operated vacuum nozzles and wide diameter 10 inch nozzle trucking, maximizing velocity and allowing larger debris to pass easily into the hopper.

Debris is sucked in a direct route from the vacuum nozzle into the hopper, reducing wear and tear as well as maintenance. Once in the hopper, the Johnston cyclonic airflow helps separate the debris, and clean air is then released into the atmosphere.



Variable lateral entry Vairbrush option.

Powaboom option cleaning catch basin.

Supawash hand lance is action with 2200-psi water pump.

New standard engine cowling pound suppression.

Supawash front spray bar.

Accessible systems locker with LED service light.

New screen latching system for ease of use.



Johnston VT651: The Industry Leader

- Johnston's popular VT651 has a hopper volume of 8.5 yds³ and water tank capacity of 415 gallons. The VT651 is compatible with GVWR 33,000 lb chassis.
- A Johnston VT801 truck mounted sweeper comes with a high powered engine as standard and a hopper volume of 10.5 yds³. The water tank capacity is increased to 534 gallon and is well matched to a GVWR 35,000 lb chassis.

All Johnston V Range models are built with an angled hopper floor, enabling a total discharge angle of 55° (model dependent) to aid load discharge.

TOP
Rotaltt Brush Option

MIDDLE
PXT10 spray bar

BOTTOM
Self-cleaning nozzle spray jets.



Environmental Impact

Manufactured in a factory accredited to ISO 14001 for sustainability, Johnston is committed to providing the most environmentally sustainable equipment on the market for collecting all types of debris and litter.

Low fuel consumption is a key attribute in reducing carbon footprint and CO₂ emissions. With the mechanical drive systems running at maximum efficiency, the fuel consumption of the auxiliary engine is the lowest in its class with 0.87 gallons per hour at 1200 rpm.

The VT Range is now fitted with auxiliary engines supplied by JCB and John Deere, whose engines meet the highest standards for emissions and environmental impact.

Dust emissions are controlled to the highest standards, and PM10 atomizers suppress dust to meet EU/EN10 Standards in Europe, and in America, SCAQMD Rule 1186.

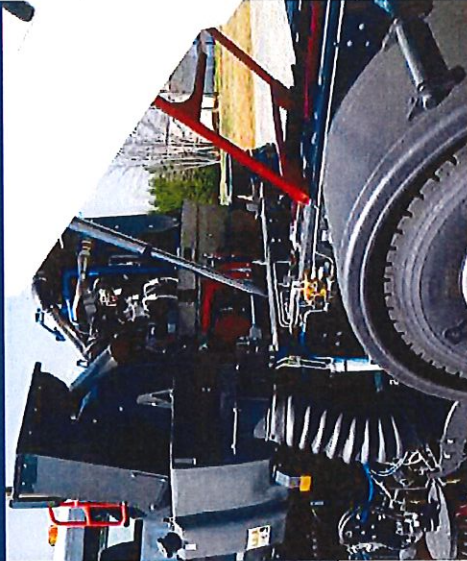
Water recirculation not only provides extended sweeping shifts but can also save 237.7 gallons of water per day over an 8 hour shift.

The V Range sweepers are equipped with noise suppression hoods, encapsulating the auxiliary engine and fan casing. Noise at the driver's ear is less than 65 dBA at maximum rpm (chassis dependant), creating a safer operating environment for both driver and pedestrians. The fully variable engine can be set to lower rpm's for night sweeping which reduces the noise levels by 50%.

The Johnston V Range is robustly constructed from quality materials and designed to provide years of continuous performance and reliable service. End of life disposal is enhanced by the V Range sweeper being almost 100% recyclable.

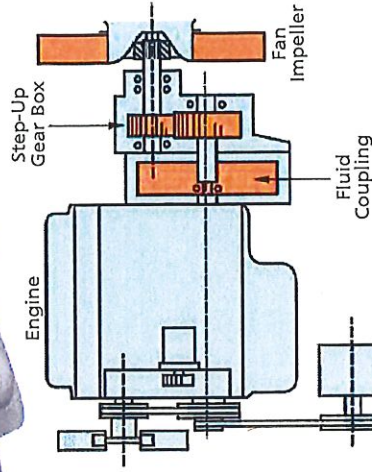
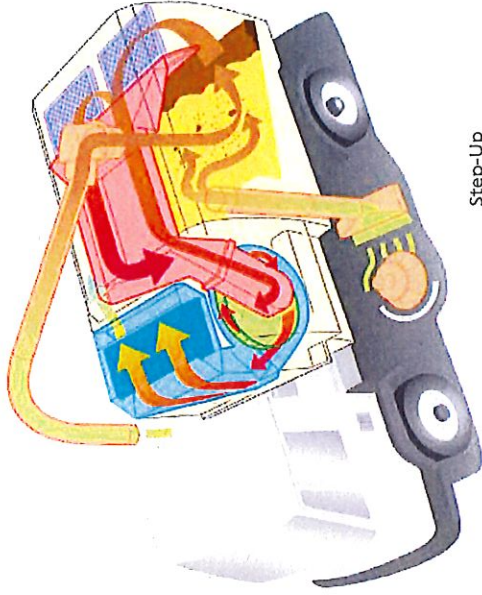
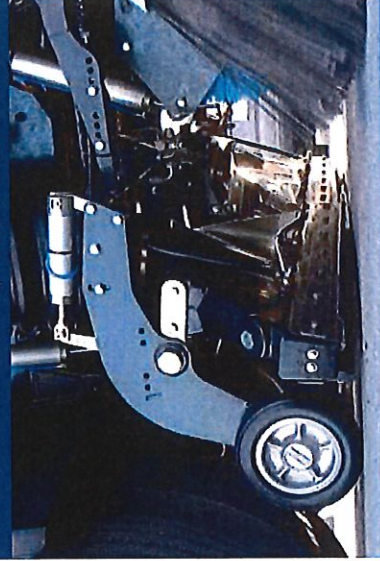
Blower Drive System

The V Range blower drive system carries a full 5-year comprehensive warranty. The gearbox ratio of 1:1.79 equates to a fan speed of 3550 rpm. Virtually maintenance-free; there are no belts to adjust on a daily basis or replace within a year of operation.



ABOVE
Stainless steel hydraulic lines, wear blower intakes, and new improved body safety prop automatically deploys.

BELOW
Optional full-width nozzle option between the axles.



Cost of Ownership

V Range sweepers operate at the lowest costs, with a large 50 gallon auxiliary fuel tank giving increased on-station time. In addition, maintenance costs are significantly reduced on the Johnston gearbox and fluid coupling, as no belts or high wearing components are required.

Johnston's VT Range provides the lowest emissions and running costs. The VT and VS models operate at low fuel consumption with both the chassis and auxiliary engines using a total of 1.33 gallon/hr at low rpm. In addition, suction sweeping requires fewer component parts, thus resulting in less wear and tear and reducing maintenance costs.

Designed to last in the toughest environments, the V Range hopper is manufactured from 4003 stainless steel, shot blasted with aluminium oxide prior to the application of a strontium based primer followed by a hard wearing top coat. In addition, all grey parts such as the sweepgear, powerpack and subframe are shot blasted and electro-magnetically powder painted in a durable two part epoxy paint finish. This ensures the sweeper continues to look as good as it performs, retaining a high residual value or longer in-service life.



Additional Features

Johnston provides a comprehensive choice of options all designed to maximize versatility and performance:

- **Supawash** • A high pressure water jet, enables the operator to clean street fixtures and pavements using either a fan or pencil jet spray. The lance and 50-ft hose stows away neatly when not in use. In addition, high pressure water jets on a spray bar are positioned on the front of the cab, and others placed behind the nozzle boxes to provide dust suppression when sweeping.
- **Hydraulic Catch Basin Cleaner** • An optional Hydraulic Catch Basin Cleaner mounted on the top of the hopper can be fitted to allow the emptying of drains to storm drains. If "Powaboom" is selected, hydraulic controls are fitted to make the operation easier, while the top-mounted position provides greater access to both sides of the sweeper, and also shields the driver from oncoming traffic.
- **Wide Sweep Nozzles** • Twin 48-inch vacuum nozzles that deliver 96 inches of pure vacuum sweep path.
- **Rear mounted Littasnatch** • 18-ft long lightweight suction tube for collection of debris on pavements and areas out of reach of the sweeper brushes.
- **Rotatilt** • Controlled from inside the cab, this option allows the gutter broom to tilt and sweep irregular and contoured curbs, and gutters.
- **Weed Ripping Brush** • A heavy duty brush with thick metal tines that effectively clears vegetation that is growing and established in gutters.



Johnston North America Inc.

606 A&B Performance Road

Mooreville, NC 28115

Tel: 704.658.1333

Fax: 704.658.1377

E-mail: info@johnstonnorthamerica.com

johnstonnorthamerica.com

ENDLESS SWEEPING SOLUTIONS

Johnston North America makes Street Sweeping SIMPLE, RELIABLE and PRODUCTIVE



ES351 - MECHANICAL CHASSIS MOUNTED SWEEPER

A proven Single Engine Design that blends a superior collection of features which provides ownership advantages such as the tightest turning radius in the industry and a Stainless Steel Hopper with a Lifetime Warranty.



VT651/801 - PURE VACUUM

The street sweeper the industry benchmarks sweeper performance by that integrates exceptional versatility with unmatched features that include a high performance fuel efficient Fan Drive System – NO BELTS, CANbus technology to ensure maximum performance and exclusive “one pass” sweeping.



RT655 - REGENERATIVE AIR SWEEPER

A highly regarded heavy duty full size regenerative air sweeper that incorporates best in class features that delivers an optimum sweep performance along with Superior Fuel Efficiency to achieve the lowest cost of ownership in its class.



C201 - COMPACT SWEEPER

Innovatively Designed Compact Sweeper for tight confined spaces that include unparalleled features that include Advanced CANbus Technology to deliver remarkable sweep performance along with lowest cost of ownership in its class.

THE STAINLESS STEEL COMPANY
ONLY Sweeper Manufacturer to offer
“Entire Debris Hopper” Constructed of
Stainless Steel as a standard with a
Lifetime Warranty.



105 Motorsports Road, Mooresville, NC 28115
Tel: 704.658.1333 | Web: johnstonnorthamerica.com



Valley

July 11, 2016

End User

P/O #

Front Royal

STANDARD SWEEPER EQUIPMENT for VT651

Prices effective January 2016

Standard Factory Warranty: 2 years or 2,000 Hours

Roof Mounted Noise Attenuator	L.E.D Indicators on All Solenoid Plugs
Completely Covered & Sealed Auxiliary Engine Compartment	Step-Up Gear Box Driven Vacuum Fan via Fluid Coupler
10" Inside Diameter Vacuum Hose with Straight Inlet Design	Coolant/Oil Pressure Shutdown System
Electrical Over Hydraulic Hopper Lift System	Maxigap: In-Cab Vacuum Nozzle Tilt System
Molded Composite 50 Gallon Auxiliary Engine Fuel Tank w/ Locking Cap	28" Diameter Trailing Arm Design Gutter Brooms with LED Work Lights
8.5 Cubic Yard Stainless Steel Hopper with Lifetime warranty	16" x 50" Wide sweep Broom
55 degree Dump Angle of hopper	"Unhanded" Suction Nozzle & Gutter Broom Assemblies
Two (2) Hopper Drain Ports on Rear Door: 1- 3" Drain Hose and 1- 2" Ball Valve	In-Cab Dual Gutter Broom Speed Control
Two (2) Side Mounted Hopper Access Doors; LH & RH	In-Cab Gutter Broom Down Pressure Control
Two (2) Lockable Built-In Hopper Side Storage Lockers: LH & RH	Master Sweep Control Switch to Start/Stop All Sweeping Functions
415 Gallon Stainless Steel Water Tank w/ Lifetime Warranty	20 Gallon Hydraulic Oil Tank
Remote Ground Level Drains: Engine, Hydraulic, Gearbox Oil & Coolant	Catwalk 60" x 12"
Four (4) Gutter Broom Water Spray Jets Per Side	125 Micron Suction & 25 Micron Return Hydraulic Filters
Bumper Mounted Wide sweep Water Spray Bar with Four (4) Spray Jets	Hopper and Water Tank Interconnect
Four (4) Internal Water Spray Jets at each Vacuum Nozzle	Automatic Safety Body Prop with Hands Free Release
Remote Grease Zerk for Wide Sweep Pivot	Turbo III Precleaner for Auxiliary Engine
Handheld Pendant Wide Sweep Broom Down Pressure Control	25' Hydrant Hose with Coupling & Wrench
Inside or Outside Cab Handheld Pendant Dump Controls	Centralized Weatherproof Systems Locker with Strip LED Light
Electrical Wiring Color and Number Coded	25 ft. Wash-down Hose
Dust Proof Electrical Wiring - IP65 Standards	Two (2) Rear Mounted LED Strokes with Limb Guards
Water Proof Electrical Wiring - IP67 Standards	Body Paint Two Part Epoxy Factory White
In Cab integrated sweeper controls with data capture and to monitor performance	Engine Pack & Sweep Gear Powder Coated Gray
	1 each Sweeper Ops Manual & Parts & Service CD - English

QTY	ID Number	DESCRIPTION	2016 List Price	2016 List Extended
0	VT651-S	Single Gutter Broom without Pneumatic Flaps	\$135,625	\$0
0	VT651-D	Dual Gutter Brooms with Pneumatic Flaps	\$139,625	\$139,625
0	K31766-DS	John Deere Tier III B 4045HF285 115 HP @ 2200 RPM Engine (US EPA Flex Engine)	\$2,785	\$2,785
0	JCB-LP74	JCB Ecomax 74 HP (55kW) @ 2,200 RPM Turbocharged Tier 4 Final Diesel Engine.	\$0	\$0
0	JCB-HP125	JCB Ecomax Tier 4 Final 125HP 93kW @2200 RPM Requires EN690 (or equivalent) Ultra-low Sulphur fuels.	\$12,000	\$0
0	K30025	Gutter Broom In-Cab Tilt Control - Dual	\$3,675	\$0
0	K30218	Gutter Broom In-Cab Tilt Control - Single	\$1,830	\$1,830
0	K30653	Gutter Broom Lateral In-Cab Control - (Dual) available on Dual Sweep VTs only	\$1,400	\$1,400
0	K30652	Gutter Broom Lateral In-Cab Control - (Single) available on Single Sweep VTs only	\$700	\$0
0	K30022	Simultaneous Sweep	\$1,075	\$1,075
0	K30257	Widesweep Broom <u>Powascrub</u> - Added down pressure for SEVERE application. NOTE: Risk of Significant reduction in broom life	\$1,150	\$0
0	K30257D	Dual Gutter Broom <u>Powathrust</u> - Added down pressure for SEVERE application. NOTE: Risk of Significant reduction in broom life.	\$2,100	\$0
0	K30257S	Single Gutter Broom <u>Powathrust</u> - Added down pressure for SEVERE application. NOTE: Risk of Significant reduction in broom life.	\$1,050	\$0
0	K30018	Bonded Intake Ducts, Tubes and Heavy Duty Wearplates - Rubberized (Dual)	\$2,425	\$2,425
0	K30240	Bonded Intake Ducts, Tubes and Heavy Duty Wearplates - Rubberized (Single)	\$1,240	\$0
0	K30027PF	Pneumatic Intake Flap for Single Gutter Broom	\$1,950	\$0
0	K39907	Additional Full Width Wide Mouth Nozzles (Requires HP Engine & Simultaneous Sweep Options)	\$14,000	\$0
0	K39906	Additional Widesweep Spray Bar Mounted in Front of Widesweep Broom	\$765	\$765
0	K39901	Screen Vibrator - Pneumatic	\$1,500	\$1,500
0	K49904	Hopper Body Flush Out (2 nozzles)	\$1,100	\$0
0	SS6730	(2) Stainless Steel Hopper Screens ILOS	\$1,900	\$1,900
0	K30024	Catch Basin, Powaboom 8" Diameter includes: Aluminum - 4 ft. Crown and 6 ft. Extension	\$7,300	\$0
0	K39911	Four (4) Foot Aluminum Crown extension (One is Std. with Powaboom option)	\$400	\$0

QTY	ID Number	DESCRIPTION	2016 List Price	2016 List Extended
0	K39912	Six (6) Foot Aluminum extension (One is Std. with Powaboom option)	\$465	\$0
0	K39913	Four (4) Foot Aluminum extension (ILOS crown (4) foot with Powaboom option)	\$550	\$0
0	K39912	Six (6) Foot Aluminum Crown extension (ILOS Six (6) foot with Powaboom option)	\$260	\$0
0	K39914	Extension Rack Rear door or mid-mounted; holds 2 extensions (Includes option subframe)	\$2,130	\$0
0	K30481	Spring Mounted Rear Littasnach	\$3,900	\$0
0	K30019	Water Recirculating Water System	\$9,015	\$0
0	K30519	Supawash, 8 gpm, 1500 psi Handlance only	\$6,900	\$0
0	K30145	Supawash, 8 gpm, 1500 psi with Handlance, Front Mounted Spray Bar, & Nozzle Mounted Spray Bar	\$9,000	\$9,000
0	K39908	Supawash, 8 gpm, 1500 psi with Handlance, Front Mounted Spray Bar, Nozzle Mounted Spray Bar, & Curb Nozzle	\$9,600	\$0
0	K31088	Rear Door Drain Valve - 4" diameter	\$930	\$0
0	K39999	Additional Stainless Steel Water Tank 185 Gallons - Adds 12 inches to WB Consult factory prior to placing order.	\$7,750	\$0
0	K30368	PM-10 Dual, available on Dual Sweep VTs. Adds 9 Extra Spray Nozzles Per Side	\$3,700	\$0
0	K30369	PM-10 Single, available on Single Sweep VTs. Adds 9 Extra Spray Nozzles	\$2,000	\$0
0	K37689SS	Stainless Steel Engine Cowling ILO Standard	\$3,700	\$0
0	K30186	Split Arrow Stick, LED	\$1,300	\$1,300
0	K39914 SF	Option Subframe (required for Rear Door rack and Arrowboard Installation)	\$500	\$0
0	K12228	Fire Extinguisher 5 Pound	\$300	\$0
0	K30483	Strobe, Amber (Cab Mounted) LED with Limb Guard	\$750	\$0
0	K30151	Engine/Cowl Mounted Worklight LED	\$335	\$0
0	K30153	Work Lights Set of two (Rear mounted) LED	\$625	\$625
0	JNA001	Camera Single Rear Vision Displayed on JVM	\$1,315	\$0
0	JSL002	Cameras Dual Rear & Side Displayed on JVM	\$2,200	\$0
0	JSL003	Cameras: Triple Rear & Both Sides Displayed on JVM	\$2,500	\$2,500

QTY	ID Number	DESCRIPTION	2016 List Price	2016 List Extended
0	TM00001	Extra - Johnston Technical Manual - Paper Copy	\$400	\$0
0	TM00001	Extra Johnston Operator's Manual - Paper Copy	\$150	\$0
0	JNA100CD	Extra Johnston CD Manuals - Includes Operators, Parts, Service and Technical	\$300	\$300
	K37633	Set of Spare Keys for Sweeper: Fuel Cap, Systems Locker or Side Lockers	\$150	\$150
0	K37635	Custom Paint Color: Sweeper Body and or Chassis. Dealer must provide a 3x5 paint sample and the RAL or PPG paint code.	\$3,125	\$3,125
Sweeper Body Options Subtotal				\$170,305

DISCOUNTS

0			
0			

QTY	SPECIAL BODY OPTIONS AND MODIFICATIONS	Price
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
Subtotal		\$0

Standard Chassis Equipment

AM/FM/WB Radio CD, A/C, Dual Air Suspension Seats, Remote & Heated Mirrors, Back Up Alarm, Dualization, and Allison 2500 RDS Transmission, 2 group 31 batteries 2250 CCA, 160 amp Alternator, Battery disconnect, Right hand exhaust, power windows and locks. Two speed rear axle.

		2016 List Price	2016 List Extended
0	2017 Freightliner M2 Conventional Chassis, Cummins ISB 6.7 200 HP Engine with EPA 2013 Emissions.	\$100,000	\$80,000
0	2017 International, 4300 M7, Conventional Chassis, Cummins ISB 6.7 200 HP Engine with EPA 2013 Emissions.	\$102,000	\$0
0	2017 Autocar Cab Over, AMCD, Cummins ISB 6.7 200 HP Engine with EPA 2013 Emissions.	\$120,250	\$0
0	2017 Peterbilt Cab Over, 220, PACAR PX-7 220 HP Engine with EPA 2013 Emissions	\$121,250	\$0
0	Dealer supplied chassis. Consult Factory Prior to Placing order. Does not include dualization- dealer responsible.	\$6,250	\$0
Please Note: The chassis being supplied by a customer or dealer must comply with all JNA requirements or the chassis will be modified at dealer's expense.			

QTY	SPECIAL CHASSIS OPTIONS AND MODIFICATIONS	Price
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0		\$0
0	FREIGHT	\$0
Total with Body, Chassis and Dealer Discounts		\$250,305

Purchase Order

- Dealer shall bear responsibility for the accuracy of the order. JNA will build and invoice to match this signed confirmation. Please reconcile ALL pricing and build specifications.
- Any request to add options or modify after signing this order confirmation will result in a 10% surcharge of the dealer net option price.
- Add-on "in field" options are an additional 10% of dealer net price.

Print Name

Signature

Date



VML/VACo - Equipment Leasing Program

Front Royal, Virginia

Lease Purchase Financing for Street Sweeper

Preliminary

	<u>Date</u>	<u>Principal</u>	<u>Rate</u>	<u>Interest</u>	<u>Payment</u>	<u>Balance</u>
0	7/15/2017	-		-	-	235,500.00
1	1/15/2018	22,433.10	2.15%	2,531.63	24,964.72	213,066.90
2	7/15/2018	22,674.25	2.15%	2,290.47	24,964.72	190,392.65
3	1/15/2019	22,918.00	2.15%	2,046.72	24,964.72	167,474.65
4	7/15/2019	23,164.37	2.15%	1,800.35	24,964.72	144,310.28
5	1/15/2020	23,413.39	2.15%	1,551.34	24,964.72	120,896.89
6	7/15/2020	23,665.08	2.15%	1,299.64	24,964.72	97,231.81
7	1/15/2021	23,919.48	2.15%	1,045.24	24,964.72	73,312.33
8	7/15/2021	24,176.61	2.15%	788.11	24,964.72	49,135.72
9	1/15/2022	24,436.51	2.15%	528.21	24,964.72	24,699.21
10	7/15/2022	<u>24,699.21</u>	2.15%	<u>265.52</u>	<u>24,964.72</u>	-
		235,500.00		14,147.22	249,647.22	

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Town of Front Royal, Virginia Work Session Agenda Form

Date: March 20, 2017

Agenda Item: Continued Discussion of FY2018 Tax Rate

Summary: Discussion of FY2018 tax rate including Town's current position on projects from prior real estate tax increase & other major projects/debt services.

Council Discussion: Council is requested to discuss setting of the FY2018 tax rate

Staff Evaluation: Additional Information to be provided.

Budget/Funding: Additional information to be provided.

Legal Evaluation: Town Attorney will be present to answer questions.

Staff Recommendations: Staff recommendation is to raise the real estate tax rate to \$0.135 per \$100, allow personal property tax to remain at \$0.64 per \$100, and to equalize the personal property tax relief.

Planning Commission Recommendation: N/A

Town Manager Recommendation: (The Town Manager will provide input on the issue and make his recommendations to council.)

Council Recommendation:

☐ Additional Work Session ☐ Regular Meeting ☐ No Action



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Town of Front Royal, Virginia Work Session Agenda Form

Date: March 20, 2016

Agenda Item: Board of Zoning Appeals Term Expires

Summary: R. Wayne Sealock's term on the Board of Zoning Appeals (BZA) ends May 1, 2017. He has advised staff that he would like to be considered for recommendation. BZA candidates are recommended by Town Council and considered by the Judge of the Warren County Circuit Court for appointment. This is a five-year term.

Council Discussion: Council is to direct staff

Staff Evaluation: None

Budget/Funding: None

Legal Evaluation: Town Attorney will be available

Staff Recommendations: Staff will be available

Town Manager Recommendation: Town Manager will be available

Council Recommendation:

☐ Additional Work Session ☐ Regular Meeting ☐ No Action

Consensus Poll on Action: ____ (Aye) ____ (Nay)

Work Session

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