

PRELIMINARY ENGINEERING REPORT

FOR

JEFFERSON COUNTY PUBLIC SERVICE DISTRICT
WEST VIRGINIA INFRASTRUCTURE AND JOBS DEVELOPMENT COUNCIL

FLOWING SPRINGS WASTEWATER PROJECT

For

Jefferson County Public Service District
July 30, 2010

Prepared by:

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1. INTRODUCTION

Preface:

This document is a revision of the original preliminary engineering report developed for the 2005 Jefferson County Wastewater Project dated May 16, 2006. The revisions to this document include deletion of the Evitts Run treatment plant and collection system, updating of the environmental clearances and updating of the current situation related to this project. Much of the data presented in this PER has been reviewed and previously approved by the Council during the original submittal process. The District made an Infrastructure and Jobs Development Council application for funding of the project on March 20, 2006. That submission consisted of two applications, one for the Flowing Springs project and one for a project on Evitts Run. Since the applications called for removal of flows from the Charles Town wastewater treatment plant, the applications were sent to the consolidation committee for consideration.

The IJDC Consolidation Committee held two public hearings for the project. One hearing was in Charleston and the second hearing was in Jefferson County. The council decided to support the Flowing Springs project and directed the District to make a request to the WVDEP SRF program for financing.

The 2005 Jefferson County Public Service District Wastewater Facility Plan was revised, updated, refined and approved by the WVDEP Division of Water and Waste Management on August 24, 2009. That document provides detailed analysis of the project and environmental clearances from all the required agencies.

The District obtained financing commitment from the WVDEP SRF program and proceeded with having the project (collection system and wastewater treatment plant) designed. The economic model called for Capital Improvement Fees "CIF" to pay for the construction. After the plant and collection system was designed, a challenge to the use of CIF's for financing infrastructure was made in Berkeley County. Until that is resolved, no bonding will be available based on the use of CIF's to retire the debt service. This project is necessary and required to help stimulate the recovery of the economy in Jefferson County, therefore the District is proceeding with the project with the current users paying for the project through a rate increase. This has driven the cost to the users of the Jefferson County PSD system over 2% of the MHI (\$43,024-2000 Census). At the required rate of \$19.80 the "average" user at 4,000 gallons per month would be required to pay 2.21% of the MHI for sewage service. (2.49% for 4,500 gallons per month which is the current average usage by District customers) The District is asking for grant funding to lower the impact to its users to 2% of the MHI with a resulting rate of \$17.93 per 1,000 gallons for 4,000 gallons per month.

This document was originally developed to accompany the "West Virginia Infrastructure and Jobs Development Council Preliminary Application" after a facility plan titled "2005 Jefferson County Public Service District Wastewater Facility Plan" had been developed by the

Jefferson County Public Service District. That plan was presented to and debated by the citizens of Jefferson County in a series of public meetings. The solutions proposed herein have been approved by the District and the WVDEP. This application is a request for rate relief for the users of the Jefferson County Public Service system through grants from the Council. Selection of the project components has already been completed through the previous application and facility plan processes and the project design and documents have now been approved by the WVDEP SRF Engineering Section. No new data relating to alternative selection is presented withing this report.

A. Narrative:

The District has established* and defined a clear understanding of the problem facing users in its community, lack of sewage treatment capacity. The District is proceeding to construct a wastewater treatment plant to serve the developing areas of Jefferson County and alleviate the lack of sewage treatment capacity. This project will provide a 1.0 MGD treatment plant for the Flowing Springs drainage area. The City of Charles Town currently provides wastewater treatment for the District and the Corporation of Ranson. They have completed upgrading their plant to accept an additional 550,000 gallons of wastewater per day, after lack of sewage capacity compelled the Public Service Commission to issue a moratorium which stymied residential, commercial and industrial growth in the County.

As a result of insufficient wastewater treatment capacity being available in the community, several developers have begun to obtain permits to construct their own wastewater treatment plants. The economics of industry have made it necessary for the developers to either build a wastewater treatment plant or cease further development in Jefferson County. This wastewater treatment capacity shortage has been created by dramatic and historic increases in residential and commercial development pressure both inside and outside the designated growth areas of Jefferson County. The proposed facility is to serve a portion of the area designated for growth by the Jefferson County Planning and Zoning existing and proposed comprehensive plans.

*The District has commissioned the following studies over the last 10 years:

Flowing Springs Facility Plan	1997
Flowing Springs Facility Plan Addenda 1	1998
Flowing Springs Facility Plan (Revised)	1999
Willow Spring Public Service Corporation	2000
Wastewater Facility Plan	
Jefferson County Countywide Wastewater Study	2001
Jefferson County Countywide Water Needs Study	2002
Pump Station 4-5 Upgrade Wastewater Facility Plan	2002
Flowing Springs / Cattail Run Facility Plan	2003
Flowing Springs Facility Plan Addenda 2	2004 - 2005

Current Wastewater Treatment and Transmission Assets of the District and Plan of Action:

Wastewater Treatment:

The District has agreed to consider ownership of privately constructed projects which conform to the Districts construction specifications in lieu of these plants being owned and operated by the homeowners associations. Currently the District has agreed to ownership for three facilities. However, in the Flowing Springs development area, providing a centralized facility would be a better alternative to the placement of wastewater treatment plants whose location is driven by the ownership of properties. Large tracts of property have been bought by developers for subdivisions within this service area of the District. The possible environmental consequences of multiple wastewater treatment systems are reason for concern. Perpetual operation of the systems including how and who would operate the systems and achieving efficient removal of pollutants including nutrients could be problematic with the multiple systems. Therefore, for the Flowing Springs service areas, the District is proposing to develop a facility to serve all of the needs within that geographic sector of the county.

B.C. Partners, Inc. had offered and the District had agreed in principle to own and operate an MBR wastewater treatment plant on Flowing Springs Run. That plant was to serve the Breckenridge East Development. This facility would have initially been rated at 173,000 gallons per day and designed and constructed to be upgraded to operate at 250,000 gallon per day. The location of that facility was ideal to serve several additional developments within the Flowing Springs service area and is the site for the Districts proposed treatment plant. Another development (Beallair) has completed design and permitting of individual wastewater facility to serve their subdivision near this facility. The District has had discussions with the developers of Beallair and they have agreed in principal to not build the proposed treatment plants if the District can develop a centralized plant to provide for their wastewater treatment needs. During the discussions, the developers have been informed of a Public Service Commission approved \$7500 wastewater capital improvement fee per lot and the developers have agreed to pay it.

B.C. Partners, Inc. offered to permit the District to own and operate an MBR wastewater treatment plant on Flowing Springs Run. During the last ten years of conducting studies, it was determined that the most economic size of a wastewater treatment for these area would be 1.0 MGD. That is due to the savings that would be realized by not needing to upgrade the plant every few years. The original design for this plant was for it to serve the Breckenridge Development only. After discussions with the District, the developer has agreed that it would be best if the District constructed a 1.0 MGD facility on the site B.C. Partners had proposed to construct a 0.174 MGD plant. B.C. Partners will contribute to the construction of the Flowing springs facility by purchasing CIF's for its development.

Transmission Assets:

Most of the proposed Flowing Springs WWTP service area has been included in the October 2008 Jefferson County Zoning Ordinance for either residential or industrial development (3,615 Acres). An addition 1,267 acres of property immediately to the south of US Route 340 and the plant has been zoned as commercial. The Corporation of Ranson has annexed 1,088 acres (North Ranson Service Area) and intends to have the sewage generated within that service area treated at the Flowing Springs facility.

Currently the District has an interceptor sewer in place along Flowing Springs Run. The interceptor was installed during the Walnut Grove project and is 18 inch diameter pipe which increases to 21 inch diameter near (800 feet from) the recently constructed Ranson Flowing Springs pump station and ends at the existing Breckenridge pump station. The need for this line was documented in the 1997 Flowing Springs Facility Plan. At that time a waste water treatment plant was to be constructed along the Shenandoah river within a few years. The wastewater treatment plant considered with the Flowing Springs project will replace the one proposed in 1997. The selection of the currently planned Flowing Springs plant site represents a compromise of public opinions expressed during the previous Flowing Springs / Cattail Run Study. The Flowing Springs/Cattail Run plant site selection was based solely on employing engineering selection criteria. A engineering selection process would have placed the plant next to the Shenandoah River. Social and cultural concerns expressed by various stakeholders caused the JCPSD to eliminate consideration of the Shenandoah plant site.

The existing gravity interceptor beginning at Flowing Springs Road runs along the main branch of Flowing Springs until it turns away and into the existing Breckenridge development.

This project will construct another interceptor along the unnamed Right Fork of Flowing Springs which extends through the Country Club Road area. The upper reaches of this branch will provide for gravity service from the area along Route 9 (North Ranson Service Area) near the existing District pump station 1-10.

The North Ranson Service Area consists of approximately 1,080 acres zoned for mixed use and commercial development. To date four developments have been proposed for the area, they are Tackley Mills, Jefferson Orchards, Blackford Farms and Locust Knoll. Together they represent 5,510 EDU's of flow. Discounting the developers preliminary estimates and using a conservative estimate of 2 single family dwellings per acre would place the number at 2,160 EDU's. Due to the current economic conditions, only preliminary submittals have been made to the City of Ranson for these developments. However, this project is designed to provide for the long term needs of the community. Once the economy improves, the transportation capacity provided by this project will be required. Until that time, the line will still serve the Districts need for transporting the sewage from their northern service area to the Flowing Springs WWTP, eliminate six pump stations, provide relief for the existing trunk line through Ranson that has had its available capacity consumed, and serve two new developments in the lower Flowing Springs

Service area.

After considering the future requirements of the area, the District is proposing to construct a 30 inch diameter gravity interceptor to accept the flows from its customers and those from the North Ranson Service area. This interceptor will flow from the Districts existing pump station 1-10 along the right fork of Flowing Springs to the existing Breckenridge pump station. From there a 36 inch diameter extension of the existing Flowing Springs interceptor along the main trunk of Flowing Springs will convey the sewage to the proposed Flowing Springs waste water treatment plant some 6,600 feet downstream of the Breckenridge pump station.

The Jefferson County Public Service District Wastewater Facility Plan established that there are 4,844 acres in the proposed Flowing Springs Run Plant Service Area which are expected to be developed. Allowing 2 single family dwelling per acre would generate 9,688 new households. Deducting the 2,130 units which are projected to be served by the proposed Flowing Springs wastewater treatment plant yields 7,558 EDU or a flow of 1,677,876 gallons per day which could be treated at a District Owned facility. The 7,558 EDU estimate includes portions of the North Ranson Flowing Springs annexation area.

This project is to provide sewage service for the Flowing Springs drainage basin downstream of the Ranson and the North Ranson Service Area. The existing Flowing Springs service area lies within the Districts territory near Charles Town and is characterized as the flow which currently flows to the Breckenridge pump station.

The District existing collection system consists of 35 miles of gravity sewer, 22 pump stations and 16 miles of force main.

The Jefferson County Public Service District, which was formed in 1983, is the implementing authority for this report. Its governing rules and regulations are based on those promulgated by West Virginia legislative bodies and the West Virginia Public Service Commission.

This project will provide a wastewater treatment plant and interceptor collection system for Flowing Springs in Jefferson County.

- B. An 11 inch by 17 inch map detailing the study area has been attached as page 6 of this report.

CHARLES TOWN QUADRANGLE
WEST VIRGINIA—VIRGINIA—MARYLAND
7.5 MINUTE SERIES (TOPOGRAPHIC)

ELIMINATE
PUMP STATION 1-10.

ELIMINATE
PUMP STATION 1-157
ELIMINATE
PUMP STATION 1-11

DECOMMISSION
PS 1-276

DECOMMISSION
PS 1-12

ABANDONED
FORCEMAIN

DECOMMISSION
PS 1-12A

16,360 LF - 30 INCH DIAMETER INTERCEPTOR
THIS PROJECT (11,374 EDU'S CAPACITY)

BEGIN NEW 36" DIAMETER INTERCEPTOR
AT BRECKENRIDGE PUMP STATION.
DECOMMISSION EXISTING PUMP STATION.

ELIMINATE BEALLAIR
PUMP STATION
R₂ PROPOSED 208 LF 8"

FLOWING SPRINGS WWTP
1.0 MGD MBR PLANT

6,145 LF - 36 INCH DIAMETER INTERCEPTOR
THIS PROJECT (19,836 EDU'S CAPACITY)

EXISTING 21 INCH
INTERCEPTOR (5,886 EDU'S
CAPACITY)

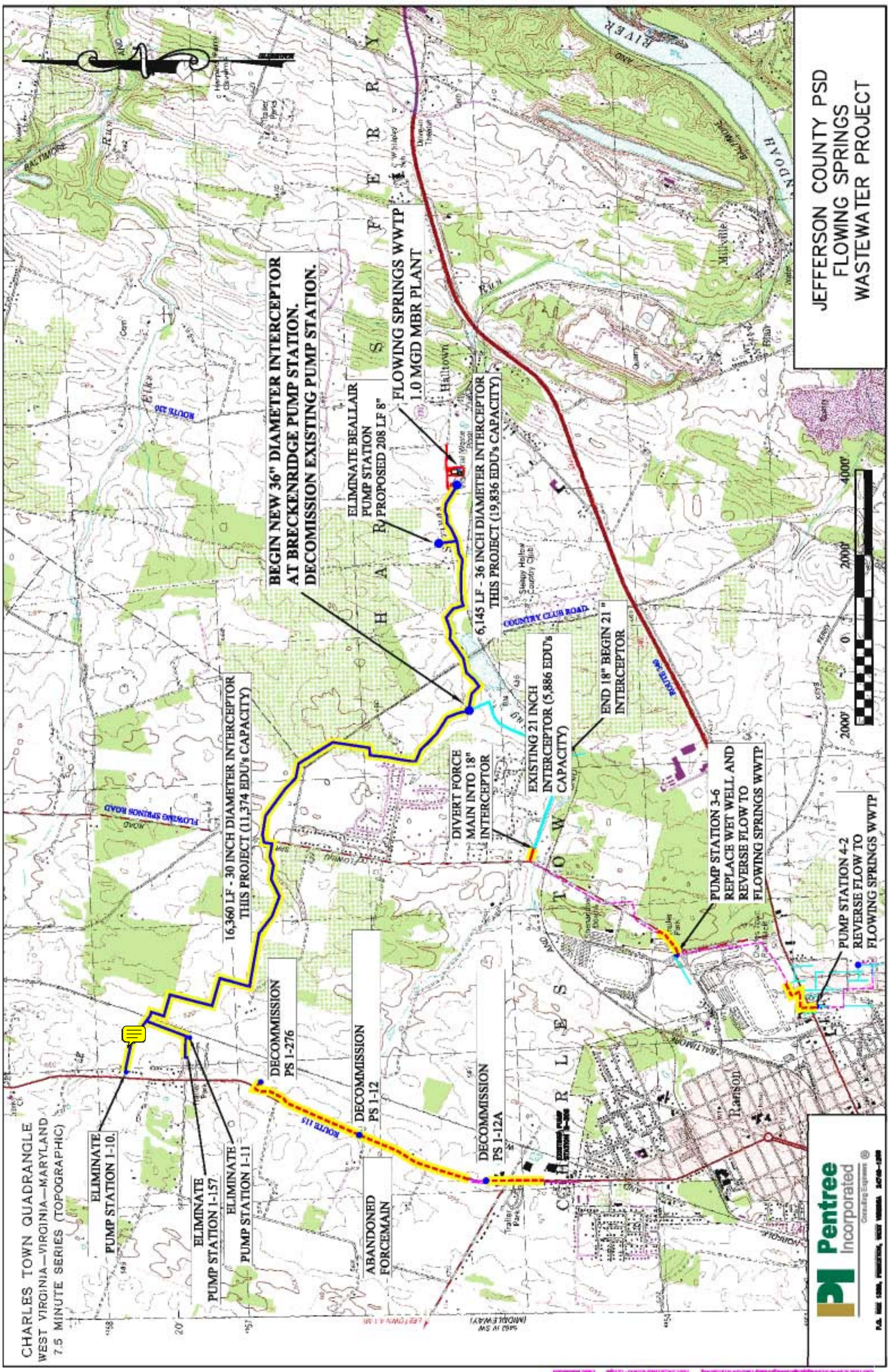
DIVERT FORCE
MAIN INTO 18"
INTERCEPTOR

END 18" BEGIN 21"
INTERCEPTOR

PUMP STATION 3-6
REPLACE WET WELL AND
REVERSE FLOW TO
FLOWING SPRINGS WWTP

PUMP STATION 4-2
REVERSE FLOW TO
FLOWING SPRINGS WWTP

JEFFERSON COUNTY PSD FLOWING SPRINGS WASTEWATER PROJECT



II. CURRENT SITUATION

A. SOURCES/DISCHARGE

Data from the Eastern Panhandle Regional Planning and Development Council (Region 9) reports the following housing unit figures for sewage disposal in Jefferson County:

Table 1

TYPE OF DISPOSAL	HOUSING UNITS	PERCENTAGE
Public Sewer	5,906	40.4%
Septic Tank or Cesspool	8,486	58.1%
Other Means	214	1.5%
TOTAL	14,606	100.0%

Flowing Springs currently receive effluent from sewage treatment plants. The stream most likely receives runoff from failed septic systems. This stream flows into the Shenandoah River.

Like other sewer service providers in the Eastern Panhandle, Charles Town has struggled with anticipating and providing for additional treatment capacity within its wastewater treatment plant as dictated by the rapidly growing development in the area. This has resulted in a increased shortfall of treatment capacity in Jefferson County. The City of Charles Town population has not grown as rapidly as the surrounding areas (Ranson and the Districts service area). The City of Charles Town has now begun to make upgrades at its wastewater treatment plant after realizing a shortfall in treatment capacity created a wastewater disposal crisis in the surrounding area. The Charles Town wastewater treatment plant most recent upgrade increased its capacity to 1.75 MGD. Charles Town planning documents show the new capacity will be assimilated rapidly.

B. CUSTOMERS

The tables on the following pages details the new customers which will be served by the Flowing Springs system. The annual growth values come from developers build out schedules and are suspected of being inflated given today's economic environment. The District is projecting 45 new users per year in its Rule 42 filing. Please note that 45 EDU's per year is a conservative projection used for financial analysis by the Public Service Commission modeling for the JCPSD Flowing Springs project. Historical and projected growth for the area is considerably higher. In addition, the District will divert approximately 1,434 existing EDU's from the Charles Town plant to the proposed plants which will help relieve some of the development pressure which the Charles Town plant is currently experiencing.

Table 2 - Proposed Development and Existing District Users in the Flowing Springs Drainage Shed

USER	DAY 1	END YEAR 1	END YEAR 2	END YEAR 3	END YEAR 4	END YEAR 5	END YEAR 6	END YEAR 7
Existing Users of Pump Station 3-7 (Breckenridge PS)	687							
Burr Industrial Park	294							
Jefferson Avenue Users	453							
Daniels Forest		25	25	25	25	25	25	25
Forest View		28	28	28	28	28	28	24
Aspen Green		20	20	20	20	20	20	20
Breckenridge East Subdivision		100	100	100	100	100	100	100
Briar Run		50	50	50	50			
Harvest Hills		30	100	100	100	86		
Burr/Bardane Industrial Park (200 EDU's)		50	50	50	50			
Locust Knoll (175 EDU Total)	0	25	25	25	25	25	25	25
Growth Projection Used for Project Financial Analysis	1434	45	45	45	45	45	45	45
Cumulative	1434	1,479	1,524	1,569	1,614	1,659	1,704	1,749
New Users to Contribute to Plant	0	45	90	135	180	225	270	315
Projected Water Usage @ 148 Gal/EDU/Day	212,232	218,892	225,552	232,212	238,872	245,532	252,192	258,852
Projected Flow to Plant @ 222 Gal/EDU/Day	318,348	328,338	338,328	348,318	358,308	368,298	378,288	388,278

There are 4,844 acres in the Flowing Springs drainage shed which are expected to be developed. Allowing 2 single family dwelling per acre would generate 9,688 new households. Deducting the 2,130 units from the table above yields 7,558 EDU or a flow of 1,677,876 gallons per day which could be treated at a District Owned facility. This includes the Ranson Flowing Springs annexation area.

The following table details the users of the proposed 30 inch gravity interceptor on the Right Fork of Flowing Springs. Please note that Harvest Hills, Burr Industrial Park Expansion and Locust Knoll were shown on the previous plant user listing. These are developer projections from Ranson and not currently permitted facilities. The Takley Mills development is currently in receivership.

Table 3 - Projected flows for the 30 inch interceptor

Source	EDU's	GPD
District Existing Route 9 Flow Requirements:		
Existing Flows to PS 1-10	403	92,690
Harvest Hills	416	95,680
Burr Industrial Park Expansion	200	46,000
Sub Total	1,019	234,370
North Ranson Developments Flow Requirements:		
Tackley Mills (Site Currently Zoned Mixed Use)	2,000	460,000
Jefferson Orchards (Site Currently Zoned Commercial)	2,000	460,000
Blackford Farms (Site Currently Zoned Mixed Use)	1,335	307,050
Locust Knoll (Site Currently Zoned Mixed Use)	175	40,250
Sub Total	5,510	1,267,300
Consolidated Need	6,529	1,501,670
33% Reserve	2,155	495,551
Design Capacity	8,684	1,997,221

C. DISTRIBUTION/COLLECTION

A gravity system from the Breckenridge Pump Station to the proposed Flowing Springs plant site and a gravity interceptor along the right fork of Flowing Springs are proposed for this project. Reversing the flow from two pump stations and force main extensions have been included to divert the flow from the existing District customer base to the new District owned plants. The withdrawal of these customers will provide the initial flow needed for the plants to operate while providing additional capacity at the Charles Town WWTP. The map included as page 6 of this report details the collection system proposed for this project.

D. TREATMENT

The Chesapeake Bay Agreement:

The Flowing Springs project will protect the natural resources of Jefferson County and support West Virginia's commitment to respect downstream designated uses of the Potomac Basin and the Chesapeake Bay by providing state of the art wastewater management. All of Jefferson County drains to the Potomac River and the Chesapeake Bay. Over the years the Chesapeake Bay ecosystem has been impaired by excess nutrients and sediments from its tributaries. In June of 2002, Governor Wise signed the Memorandum of Understanding with other states which have streams which flow to the Chesapeake Bay. This agreement requires that the nutrients and sediments discharged from those states (from all sources) be decreased significantly (30 - 50%) by the year 2010. Jefferson County is drained by two major tributaries of the bay, the Potomac and Shenandoah Rivers. Discharges from septic systems and wastewater treatment plants contribute to the nutrient loading of the Chesapeake Bay. Septic systems contribute approximately 6% of the nitrogen from West Virginia to the Bay. Point source discharges such as sewage treatment plants contribute approximately 5% (*The Potential for Nutrient Loading from Septic Systems to Ground and Surface Water Resources and the Chesapeake Bay, USEPA #903-R-97-006, Report # CBP-/TRS 166/97*). Utilizing state of the art wastewater treatment technologies and methods will help to reduce the nutrient loading to an acceptable level for new projects, minimize the direct nutrient loadings and reduce the quantity of nutrient offsets needed to provide total compensation for any new growth served.

The USEPA issued nutrient load allocations for West Virginia. The WVDEP is in the process of developing recommended allocations of those nutrient loads among the principal sectors: stormwater, agricultural, and point sources. The WVDEP expects to hold a meeting in the Eastern Panhandle in August of 2010 to present its recommendation. It is expected that the draft Phase I implementation plan will be consistent with WVDEP's June 22, 2010 report to the Legislature, wherein WVDEP stated that it was inclined to recommend that only existing facilities of 400,000 gpd or larger would be subject to nutrient load discharge limits, but all facilities, regardless of size, would be subject to nutrient load limits when a facility is expanded.

Existing Treatment Plants:

The major treatment plants near the study area belong to the City of Charles Town (1.75 MGD), PNG Gaming at Ranson also known as Charles Town Races and Slots (0.225 MGD) and the Harpers Ferry-Bolivar PSD (0.3 MGD). The Charles Town Plant treats wastewater from Charles Town, Ranson and the Jefferson County P.S.D. including sources within the study area which will be diverted to the proposed treatment plant.

Charles Town Wastewater Treatment Plant Discussion:

The WVDEP has required the reduction of the nutrients from all the wastewater treatment plants discharging to the Chesapeake Bay tributaries by establishing a maximum concentration for total nitrogen and total phosphorus and requiring the plant operators to monitoring their discharges for these nutrients. The WVDEP has added language in the permits which has the plants tracking and reporting the nutrient loading to the streams in pounds per year. The WVDEP established a standard of 5 mg/l of total nitrogen and 0.5 mg/l of total phosphorus as a maximum concentration and established an annual maximum loading from plants calculated on these numbers and the existing permitted flow rate of the plants.

With this in mind, we now considered the Charles Town WWTP. The current expansion was completed prior to the WVDEP adopting this new standard. The WVDEP is requiring the existing Charles Town WWTP to upgrade its current discharge to meet Bay Standards. Charles Town has developed a compliance plan that will allow then to comply with the requirements of their nutrient load allocation from the WVDEP. The plan calls for the diversion of flows to the Flowing Springs WWTP. Without the diversion of flows, Charles Town will need to make large capital investments in its existing WWTP to comply with the Bay Standards.

The sewage disposal in the Charles Town/Ranson area has been reviewed by the District, Charles Town and Ranson to determine what the most cost efficient way to deal with sewage treatment and compliance with the Chesapeake Bay agreement for all users of the Charles Town, Corporation of Ranson and the Districts systems. As stated earlier, Charles Town has developed a plan for Bay Compliance and to provide for the growth within its service area. The Flowing Springs WWTP is an integral component of that plan. Charles Town proposed to construct a 0.5 MGD MBR at the Tusawilla treatment plant site and expand it to 1.0 MGD in the future. That along with the diversion of flows to the Flowing Springs facility will allow Charles Town to stay in compliance with the requirements of the Chesapeake Bay Agreement.

The Charles Town plan calls for development of new treatment plants which are drainage basin specific. This can eliminate costly pump station operation costs and provide compliance with the costly Chesapeake Bay agreement. The District has proposed development of two modern state of the art membrane bio-reactor (MBR) wastewater treatment plants, one on Flowing Springs and one on Evitts Run for the lower Evitts Run users. These plants can provide for the wastewater treatment needs of the community in a cost efficient manner. This project is for the collection and treatment of sewage in the Flowing Springs Basin and the North Ranson

Service Area and is in conformity with the 2009 Charles Town Strategic Plan on Nutrient Load Allocations.

Numerous meetings with the development community have been held by the District and the development community has stated that they do not want to be in the wastewater industry, but will if lack of capacity requires them to as evident by the design and permitting activity noted in Jefferson County by developers.

The Tackley Mills development proposed a 1.0 MGD MBR wastewater facility near the Burr Bardane Industrial park. That facility would have handled sewage flows from the development for the North Ranson Service Area although it was unable to obtain a NPDES permit due to the small streams in that area and their inability to assimilate the flows. The interceptor proposed for the Right Fork of Flowing Springs will allow for treatment of those flows. Expansion of the Flowing Springs WWTP will be required and space has been provided for doubling this facilities capacity.

PNG Gaming at Ranson also known as Charles Town Races and Slots developed a 0.225 MGD SBR WWTP for the flows generated at its facilities. Those loads were new loads from expansion of its business and is not available to the general public.

The existing Harpers Ferry Plant (0.3 MGD) would gain no new flow from this project. This 23 year old plant is in “fair condition” (response from Harpers Ferry/Bolivar PSD). Their expansion is limited by lack of land due to the Harpers Ferry National Historical Park. This plant, which discharges to the Shenandoah River, runs at about two-thirds of its capacity.

Sewage Treatment Alternatives Considered:

Treatment Technology:

The Flowing Springs - Addenda 2 Facility Plan contemplates that wastewater treatment will be accomplished utilizing membrane bioreactor treatment technology. The District is committed to operation of at least one other MBR unit and wants to standardize the treatment technology it utilizes to make it easier to exchange operators, standardize maintenance and reduce the inventory of spare parts they will need within their facilities. Both membrane bioreactor and a sequential batch reactor with tertiary filtration were the treatment systems considered. The tertiary filtration used in conjunction with the SBR technology filters the effluent to 10 Microns. The use of the membrane allows filtration down to 0.1 micrometers. Cryptosporidium and Giardia are parasites which are very resistant to disinfection. They do not pass through a 0.5 micrometer filter. They are commonly found in lakes or rivers especially when they are polluted with sewage and animal waste. They would be filtered out of the effluent using membrane technology. This technology also respects the important economic value of recreational and contact use of the Shenandoah River for rafting, wading and fishing along with the downstream uses for public drinking water supplies by other jurisdictions. The Flowing Springs WWTP will be one of the first in the State of West Virginia with a Chesapeake

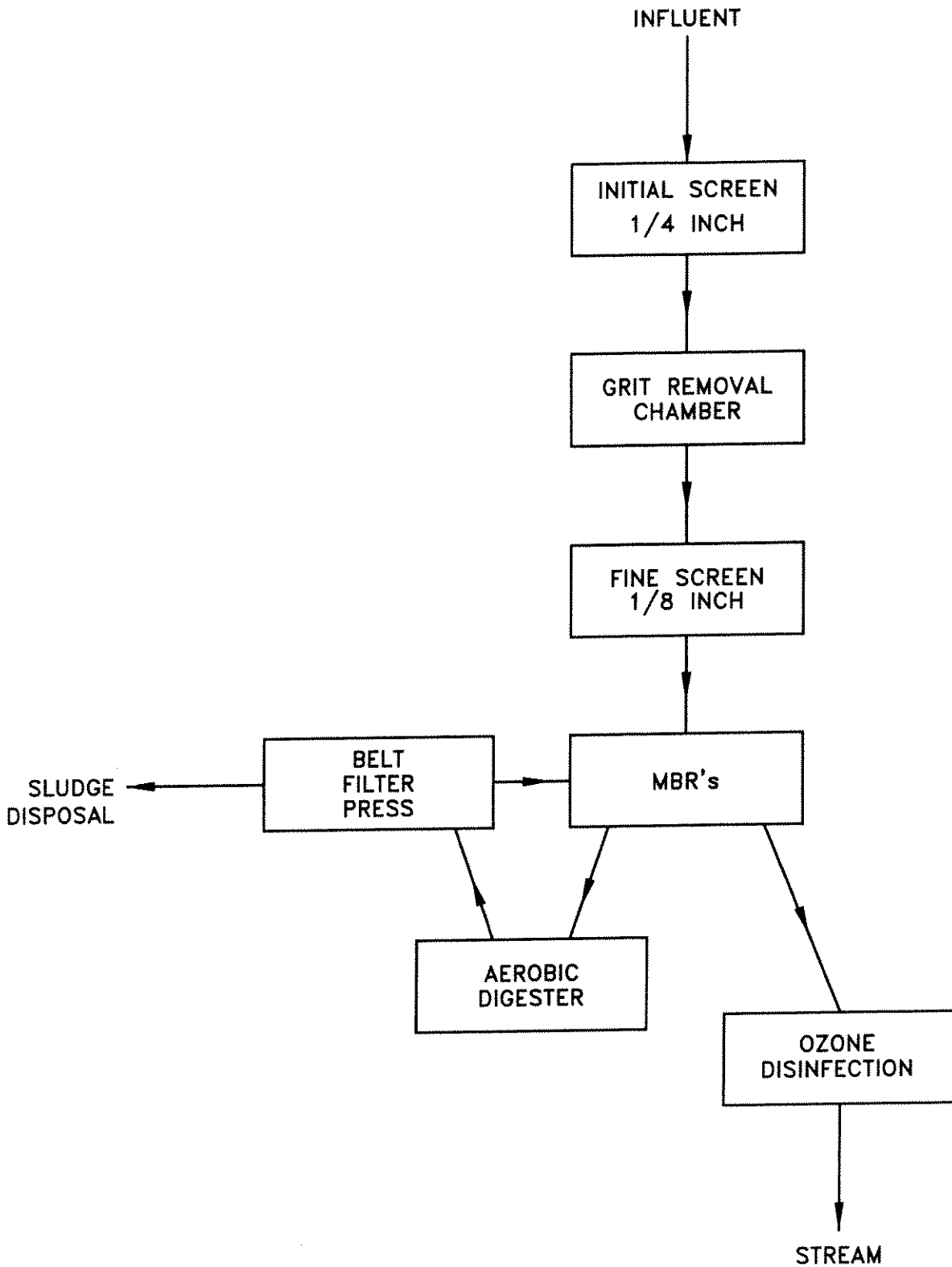
Bay compliant discharge. The plant design calls for no more than 3 parts per million of total nitrogen and no more than 0.1 parts per million of phosphorus. The design of the membrane technology plant will provide an effluent that surpasses the existing parameters for compliance with the Chesapeake Bay Agreement and sewage treatment in general. This will aid the District in maintaining compliance with the requirements of the NPDES permits for the plant and if more stringent standards are adopted .

Membrane Bioreactor (MBR) is an emerging technology for the wastewater treatment industry. The filtration of the wastewater concentrates the solids, thus reducing the required treatment vessel size. An increase of the bio mass in the MBR chamber helps reduce the solids handling requirements of the plant by extending the time the solids remain in the treatment process. The wastewater is subjected to a variety of treatment environments including anaerobic, multiple anoxic environments and aerobic utilizing an activated sludge biological process along with an integral solid-liquid separation by the filters. The ability to control and utilize the various treatment environments and their own particular biological processes allows this treatment process to meet the treatment and discharge requirements of the Chesapeake Bay Agreement. After extensive biological treatment in the anaerobic and anoxic environments, the treated wastewater is filtered out of this fluid in the aerobic (MBR Basin) environment by inducing a pressure gradient across the membrane through use of a suction pump attached to the inside of the filter cartridge. A significant advantage to the MBR technology is the effluent is of tertiary quality when it leaves the basin. This means that the treated wastewater has gone through a third step of treatment and has achieved a drastic reduction in solids. After treatment, the effluent will be disinfected utilizing ozone, a very strong oxidation agent which breaks down the cell walls of pathogenic microbes causing the cell walls to disintegrate. Ozone has been used in Europe for decades for disinfection but has not been used commonly in the United States. It is now beginning to be used for potable water treatment and for some wastewater treatment plants in the United States. Presently ozone is being utilized for treatment of recycled water at the Fresh Water Institute in Jefferson County. After the ozone disinfection, the treated wastewater will initially be discharged to Flowing Springs Run. The District has commissioned a water reuse study to determine how much of the effluent can be reused instead of discharged. A schematic of the MBR plant has been included later in this section.

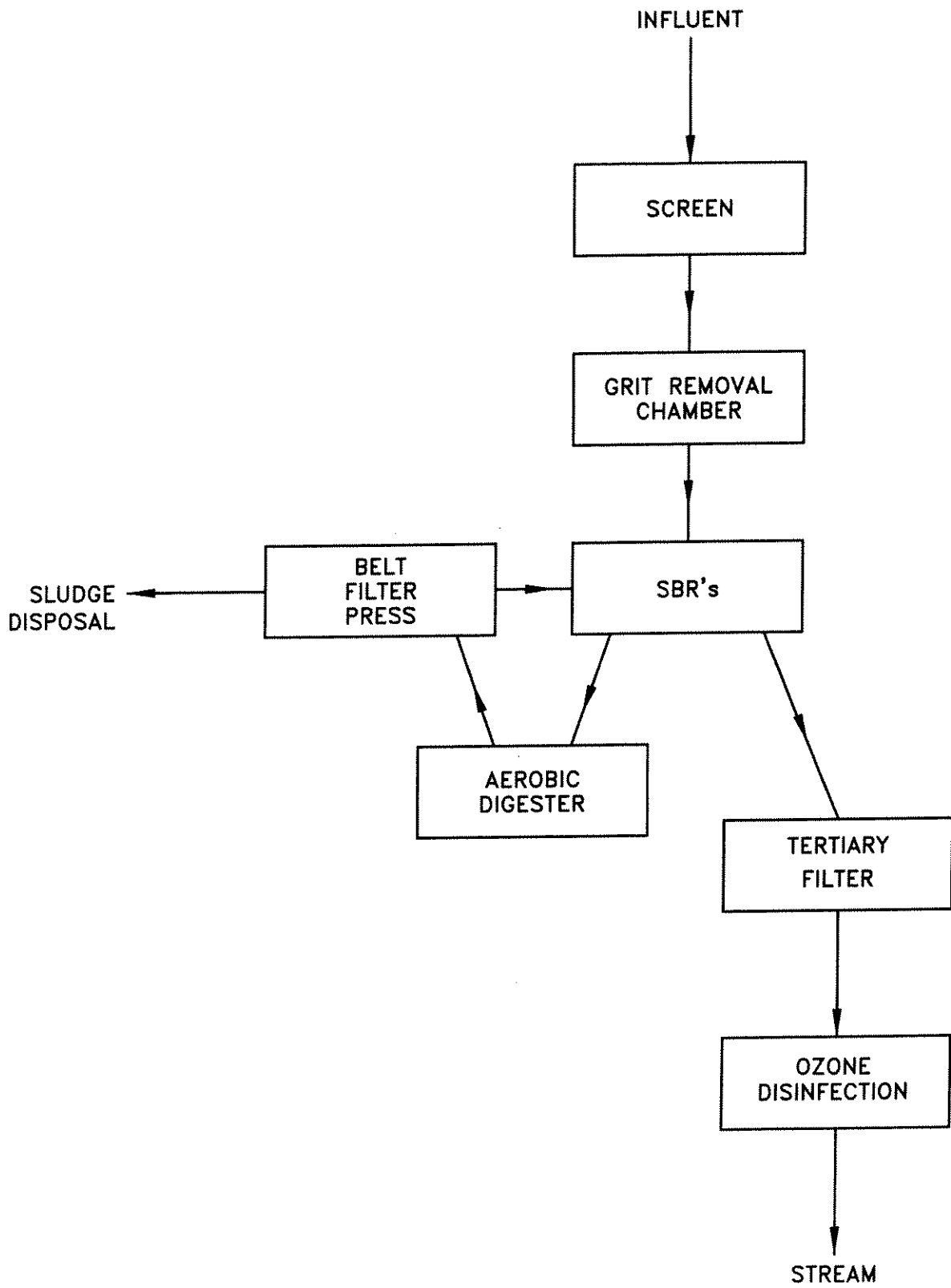
The Sequential Batch Reaction (SBR) system considered would have received the raw wastewater directly into the treatment basins much like other aerobic extended aeration systems except that the flow through the process is not continual, but in batches. One basin fills while the other treats flows previously received. The wastewater would go through a variety of environments (aerobic, anoxic, and near anaerobic) where BOD removal, nitrification, denitrification, total solids, % volatile solids and fecal coliform reduction, coagulation and clarification are all accomplished within one self-contained basin. To achieve the required nutrient reduction, larger than normal basins are used to maintain sufficient bio-mass within the treatment basins. To meet tertiary standards of treatment a rotating drum filter system is utilized in conjunction with a SBR treatment plant. After tertiary filtration, the effluent will be disinfected utilizing ozone. It should be noted that the SBR technology has a treatment limit. The effluent limit from a SBR with 10 micron filtration was determined to be 5 mg/l of nitrogen

and 0.5 mg/l of phosphorus for the SBR systems studied. If more stringent standards are adopted additional treatment circuits would be required. The NPDES permits currently being issued require that the plants meet a net zero impact. That means that other sources of nitrogen and phosphorus will need to be removed from the Bay for the plants to stay in compliance. The District is planning on constructing plants designed to discharge a maximum of 3 mg/l of nitrogen and 0.1 mg/l of phosphorus. These plants exhibit effluent which has been treated to the practical limits of existing technology. A schematic of the SBR plant has been included later in this section.

Other treatment technologies considered during earlier studies (Flowing Springs/Cattail Run) were lagoons in combination with wetlands, oxidation ditches and numerous onsite systems. The lagoons in combination with wetlands were considered but the cost of land made this option prohibitive. Oxidation ditch technology was considered, although it required a large footprint and presented problems with meeting the nitrogen removal requirement during winter operation. The onsite systems, septic tanks and recirculating sand filters were determined to not comply with the intent of the Chesapeake Bay Agreement due to nutrient transportation in the ground water to receiving streams and eventual discharge into the Bay.



**WASTEWATER TREATMENT FACILITY
MBR SCHEMATIC WITH ON SITE DIGESTER**



WASTEWATER TREATMENT FACILITY
SBR SCHEMATIC

Flowing Springs Plant Collection System:

A cursory Infiltration/Inflow (I/I) analysis of the existing collection system served by the Breckenridge pump station has been provided, based on pump station analysis. Analysis of the Districts operational records indicate that the Breckenridge pump station ran a mean of 10.79 hours per day for the period of July 1, 2004 through November 30, 2004. The following calculation determines the flow from that station based on the runtime records:

10.79 (hr/day) x 60 (min/hr) x 230 (gal/min) pump rated capacity = 148,902 (gal/day)
 Based on water usage records, an average of 137,592 gallons per day were expected to be pumped by this pump station.
 Infiltration / Inflow = Actual Flow - Projected Flow = 148,902 gallons per day - 137,592 gallons = 11,310 gallon per day

Table 4 - Known Collection System for Breckenridge Pump Station			
Diameter (inches)	Length (ft)	Length (Miles)	Allowable infiltration Gallons per day
8	38,812.00	7.35	11,761
10	461.00	0.09	175
18	2,775.00	0.53	1,892
21	2,837.00	0.54	2,257
Total			16,085

Allowable infiltration calculated at 200 gallons per inch diameter per mile length of pipe per day
 No allowance has been made for Sanitary Associates collection system as the extent of that system is unknown.

Based upon the size of the collection system, this analysis shows that the collection system is not exhibiting any appreciable infiltration or inflows. It should be noted that an increase in pump station run time does occur on days with heavy rainfall. This inflow could come from either the Districts collection system or the Sanitary associates collection system. Smoke testing should be performed to locate the source of the inflow(s) and eliminate it.

E. NEED FOR PROJECT

Various government groups have pointed out areas that would benefit from public sewage systems, generally due to septic tank problems. These generally include the Blue Ridge Mountain area, north and west of Shepherdstown, from Leetown to Middleway (to Happy Creek Subdivision), Route 340 By-Pass, Route 340 from Charles Town to Harpers Ferry, Kearneysville, Shenandoah Junction, Jefferson Village, Halltown, Millville and Summit Point.

The service area for the proposed plants has karst hydrology. The area is underlaid by limestone and dolomite formations. Groundwater use in Jefferson county accounts for between 41.5% to 46.5% of the domestic water. "The Jefferson County Comprehensive Plan" (page III-17) states that 58.5% of the residents of Jefferson County rely on surface water while the remaining 41.5% use groundwater.

An essential part of any thriving, growing community such as Jefferson County is reliable infrastructure. This project is necessary and required to help stimulate the recovery of the economy in Jefferson County. The citizens of West Virginia depend on governing agencies and utility owners to provide a safe environment in which to live and prosper. Over many years of service these entities have established guidelines and standards for the progression of social and economic development throughout the state.

The District has established and defined a clear understanding of the problem facing users in its community, lack of sewage treatment capacity. Economics dictated that a localized treatment plant be utilized for the most efficient use of monetary resources. The proposed site is currently zoned industrial and complies with the communities concern of keeping the facility away from the Harpers Ferry National Historical Park as well as other recreational, historical and cultural establishments.

This area of Flowing Springs is located within the planned growth corridor of Jefferson County. Numerous housing developments are being constructed within this area. The zoning and planning regulations which are now in place will help concentrate development to centralized areas served by this proposed system. This plant will also help relieve capacity issues at the Charles Town WWTP.

Flowing Springs Facility:

There are 4,844 acres in the proposed Flowing Springs Run Plant Service Area which are expected to be developed. Allowing 2 single family dwelling per acre would generate 9,688 new households. Deducting the 1,749 units from the table on page 4 of this report yields 7,939 EDU or a flow of 1,762,458 gallons per day which could be treated at a District Owned facility. This includes the North Ranson Service area. The Table on page 8 details 1,434 existing EDU's (Residential and Commercial) and 315 new users from developments who have contacted the District and requested service over the next 7 years. The projection has been lowered from the developers projections due to the current economic slow down of the economy.

F. EXISTING PERMITS / CERTIFICATES

NPDES - WV008436 (Modification applied for to include the Flowing Springs WWTP and proposed collection system)

III. FUTURE SITUATION

The following are the projections made in 2006. With the economic slow down of the last few years these growth projections may vary from what is actually obtained from this years (2010) census. Once the economy recovers, the growth is expected to return to long term trends do to the projects close proximity to Washington DC metropolitan area.

A. POPULATION PROJECTIONS

Historic trends for Jefferson County have documented a growth rate of 1.67 percent increase per year based on the 1980, 1990 and 2000 censuses. A population projection for the year 2026 predicts 61,212 as shown in the calculations below.

Arithmetic Projection:

Where k_a is determined for two time intervals, 1980-1990 and 1990-2000:

$$k_{a1} = (35,926 - 30,302) / 10 = 562 \quad (1.57 \text{ percent increase per year})$$

$$k_{a2} = (42,190 - 35,926) / 10 = 626 \quad (1.74 \text{ percent increase per year})$$

$$\text{Average } k_a = (562 + 626) / 2 = 594$$

Determine the 2026 population by arithmetic projection:

$$P = P_{1990} + k_a(2026-2000)$$

$$P = 42,190 + (594 \times 26) = \mathbf{57,634 \text{ people}}$$

Geometric Projection:

Determine the geometric-growth constant for 1980-2000:

$$k_g = (\ln 42,190 - \ln 30,302) / 20 = 0.0165$$

Determine the 2026 population by geometric projection:

$$\begin{aligned} \ln P &= \ln 42,190 + k_g(26) \\ &= 10.6499 + 0.0165(26) \end{aligned}$$

P = 64,790 people

Average:

Since two methods of population projection are used, the average of the two will govern for this report:

$$\text{Average} = (57,634 + 64,790) / 2 = \mathbf{61,212 \text{ people in the year 2026.}}$$

The “Jefferson County Comprehensive Plan,” by the county’s Planning Commission, includes various population predictions for the year 2020. The three methods predict 48,968 (Series M), 50,671 (Series A) and 63,101 (Planning Commission staff) with an average of 54,247 people. Utilizing the same projection method as shown on the previous page, a projection of 56,406 people for the year 2020 is predicted and falls within the range of predictions in the County’s Comprehensive Plan. It is over ten percent lower than the prediction of 63,101 made by the Planning Commission’s staff. It should be noted that the Comprehensive Plan’s predictions were made several years ago whereas this study’s are made based upon year 2000 census figures.

Jefferson County has been issuing approximately 300 to 350 building permits per year for new houses. Using 325 new residences per year with 2.54 people per house, there should be approximately 58,700 residents in year 2020. This figure is within five percent of this plan’s method estimate of 56,406.

Based on these figures, the county’s population will grow approximately 33.7% over the next twenty years. Over the same time range (2000 to 2020), the “Jefferson County Comprehensive Plan” predicts increases of 18.1% to 43.0% (with the Planning Commission’s staff predicting 43.0%).

Some residents and officials believe the county’s population may grow quicker than the historical trends predict. Planning for such a growth surge is challenging and perhaps impossible since the specifics (locations and population numbers) can never be fully known in advance.

Based on the current 2.54 people per household, there will be approximately 58,757 people in 23,133 homes in the year 2023 (assuming that all residents live in single family homes for planning purposes).

For financial analysis of this project, 45 new EDU’s per has been used.

B. FLOW PROJECTIONS

The table on page 8 detail the projected users of the proposed treatment plants and the sequential generated flows. Based on the economic analysis projection of 45 new EDU's per year the following tables predicts the peak flows for the plant.

Table 5 - Proposed Flowing Springs WWTP						
Year	Population Served by Plant at 2.54 per EDU	Projected Flow (GPD)	Projected Average Flow (GPM)	Peak Factor	Projected Average Peak Flow (GPM)	Peak Discharge at 2.0 Average Flow (GPM)
1	3,642	318,348	221	3.37	745	442
2	3,757	328,338	228	3.36	766	456
3	3,871	338,328	235	3.35	786	470
4	3,985	348,318	242	3.33	807	484
5	2,955	258,308	179	3.45	618	359
6	4,214	368,298	256	3.31	847	512
7	4,328	378,288	263	3.30	868	525
8	4,442	388,278	270	3.29	888	539
9	4,557	398,268	277	3.28	908	553
10	4,671	408,258	284	3.27	928	567

Peak factor calculated as per 1997 Edition of the 10 States Standard

C. WASTE-LOAD ALLOCATIONS

A copy of the Wasteload allocation has been included in Section 9 of this report. The receiving stream for this project is Flowing Springs of the Shenandoah River. The District has previously obtained wasteload allocations for this stream and currently holds a wasteload allocation for one location on Flowing Springs. The wasteload does not need to be renewed since the NPDES permit application has been submitted to the WVDEP.

Sludge Disposal:

Sludge disposal will be handled in accordance with the terms and conditions of the NPDES permit; therefore it will be handled in a manner that will not cause a negative environmental impact. The sludge from this wastewater treatment plant will either be landfilled or land applied in an area where its nutrients will not impact the Chesapeake Bay.

The Jefferson County P.S.D. officials may have sites appropriated to dispose of the dried sludge for agricultural applications. These applications will be for soil conditioning and/or land reclamation. The conditioned land will be sown in a grass mixture and cycled over a period of not less than two (2) years before farm application. Care will be taken to ensure that the land area does not have direct run off into any streams. This is to allow natural physical, chemical and biological breakdown of the sludge to occur. All land application will be coordinated with the West Virginia Soil Conservation Service. Currently land application may still be an option for sludge disposal, however, Chesapeake Bay requirements will most likely eliminate that option.

The Districts financial analysis assumes that land application of the sewage sludge within the Chesapeake Bay drainage area will not be possible. If that is the case the sludge will be disposed in a licensed solid waste landfill in accordance with the applicable regulations governing the receiving landfill. A budget of \$50.00 per ton has been utilized.

It is possible that the sludge may be shipped out of the Chesapeake Bay drainage basin and land applied. A theoretical example would be allowing \$0.15 per ton-mile for transportation of the sludge would allow shipping the sludge up to 333 miles for application, provided the recipient will obtain and dispose of the sludge at no cost. No confirmed sludge application sites have been identified by this study.

D. PERMITS / CERTIFICATES REQUIRED

1. NPDES permit for collection modify existing NPDES Permit for operation of a sewage collection system applied for and application complete. Waiting for public notice to be published by the WVDEP.
2. PSC tariff and rate approvals and certificate of convenience and necessity (Public Hearing scheduled for September 1, 2010).
3. Highway encroachment and crossing permits from the WVDT applied for.
4. Public Lands permits for stream crossings
5. Army Corps of Engineers Permits for stream crossings (General Permit Attached)
6. Railroad Boring (crossing) Permit (Attached)
7. Erosion and Sediment Control Permit for Jefferson County

IV. ALTERNATIVES

Existing treatment plants and collection systems have also been taken into account. As of this writing the existing municipal wastewater treatment plants within Jefferson County are feeling the pressure of development and are near their treatment capacity. Implementation of this study will provide desperately needed relief to the receiving streams and groundwater now being adversely affected within the county.

The Charles Town plant just completed upgrades to raise its capacity to 1.75 MGD. Present and proposed developments will continue to draw upon its resources. Charles Town recognizes that the plant will need to be upgraded to handle future flows and comply with the Chesapeake Bay requirements.

The existing Harpers Ferry Plant (0.3 MGD) would gain no new flow. This 23 year old plant is in "fair condition" (response from Harpers Ferry/Bolivar PSD). Their expansion is limited by lack of land due to the Harpers Ferry National Historical Park. This plant, which discharges to the Shenandoah River, runs at about two-thirds of its capacity.

Alternatives Available for the Flowing Springs Service Area:

During the 2005 Jefferson County Public Service District Flowing Springs Addenda 2 Facility Plan the District investigated pumping the sewage generated in the Flowing Springs Service area to Charles Town. Fourteen alternatives were considered during that study. Two of them were establishing a SBR wastewater treatment plant on Flowing Springs and pumping sewage to Charles Town for treatment in a SBR wastewater treatment technology plant. They were identified in the Study as:

Alternative 4 - Quarry Site SBR - Sequential Batch Reactor with a maximum discharge of 5 mg/l total nitrogen and 0.5 mg/l phosphorus at a flow of 0.5 MGD. This will be a new plant with solids handling systems. The collection system associated with this project will serve those subdivisions and 189 existing households in the Flowing Springs drainage area near the Breckenridge Subdivision including the Halltown area. The total project cost was \$14,894,519 (2006 dollars).

That said, the cost for new treatment capacity would be essentially the same at either site. The cost of transportation of the sewage to the Charles Town wastewater treatment plant, upgrading the plant to recover the lost capacity by not diverting flows to the Flowing Springs WWTP and then upgrading the plant to handle the new flows along with the cost of the pump station and force main would need to be paid for by those new users. It should be noted that Evitts Run is approaching its limits to accept sewage effluent. The District was asked to and did participate in a study and design to construct a \$3.0 million dollar effluent line from the Charles Town WWTP to the Shenandoah river due to the streams limited ability to assimilate the flow. The construction of this line has not been required yet, however, it may be required in the future

as a condition of expansion of the CTWWTP. This is another issue that will need to be addressed as a part of any future Charles Town WWTP expansion.

Transportation to Charles Town WWTP:

The same study estimated that it would cost \$3,500,000 (construction cost only no ROW or Soft Costs) to construct a new pump station and 30,600 foot long force main to the Charles Town WWTP. The debt service for the pump station (\$125,930 / yr @ ½ %-30 year bond) and additional O&M would increase the cost for sewage treatment at Charles Town WWTP. In addition, when pumping sewage such long distances, it makes the sewage harder to treat as it tends to become septic inside the force mains.

An alternative to constructing a new pump station would be to upgrade the existing Breckenridge pump station and pump the sewage to the Corporation of Ranson Flowing Springs pump station that they recently constructed. That pump station pumps the sewage from the Ranson Flowing Springs development area to the gravity interceptor along Evitts Run. That pipe is a 24 inch sewer. The gravity system will require upgrading (increasing size) in the near future as more developments utilize it. The Corporation of Ranson intends to send 957,000 gallons per day over the next 20 years to that line. A 24 inch gravity sewer at minimum grade can convey 2,872 gallons per minute or 1,181,622 gallons per day with the 3.5 peak factor normally required for interceptor sewers by the WVDEP regulations. Replacement of this line will be expensive and no estimates are offered here.

Alternative to Constructing a new District Pump Station:

The District has entered into an agreement with the Corporation of Ranson to provide a minimum flow of 100,000 gallons per day of sewage to the Ranson Flowing Springs pump station for a period of up to 5 years or until the development which the pump station has been constructed to serve reaches 100,000 gallons per day. The lack of capacity at the Charles Town WWTP has limited the ability of development within the Corporation of Ranson and if the existing District flow is not diverted it will again. Therefore, this plan offers an alternative to long term pumping of the sewage to the Charles Town WWTP by providing a viable alternative wastewater treatment plant which can be fed through gravity and or shorter forcemains to the gravity interceptor.

The Ranson Pump Station Agreement calls for a \$4,375.00 per EDU “Transportation Impact Fee”. This fee will be collected by the District and given to Ranson. The fees collected on behalf of Ranson could be returned to the District provided the District has an alternative transportation system up and running prior to Ranson initiation of the expansion of the pump station. The agreement also calls for the District to make monthly O&M payments to Ranson for the Districts share of the operation of the pump station based upon metered flows. Additional Wastewater Capital Improvement Fees for the City of Charles Town now at \$5,500.00. Utilizing the Corporation of Ranson pump station would cost \$3,110,625 for the “Transportation Impact Fee and Charles Town Capacity Impact fee” for the 315 projected new users in the lower

Flowing Springs basin over the next 7 years and additional capacity impact fees would be expected from Charles Town for complying with the requirements of the Chesapeake Bay requirements since its current CIF assumes that the District will divert its flows from the Charles Town WWTP.

If the District is to continue to pump the sewage generated in the Lower Flowing Springs basin to the Charles Town wastewater treatment plant, a new pump station will be required or the District will need to invest in upgrades of the Corporation of Ranson Flowing Spring pump station. Using the \$4,375 per EDU “Transportation Impact Fee” as a gauge of the cost of upgrading the pump station, the District would need to contribute some \$3,005,625 to cover the cost of transportation the existing 687 users in the Lower Flowing Springs basin. This is due to the limitations of the existing pump station (Breckenridge) system that has been used on a temporary basis since the Walnut Grove project in 1997. That system was only meant to be a temporary system until the proposed Flowing Springs WWTP was constructed. Now 13 years later, the temporary pump station is heavily loaded and its flows are diverted from the District owned system to the Corporation of Ranson Flowing Springs pump station. This is a temporary arrangement until the developments within the upper Flowing Springs basin within the Corporation of Ranson Flowing Springs expansion area can contribute sufficient sewage (100,000 GPD) to properly operate the pump station. The District has upgraded the Breckenridge pump station to 600 gallons per minute to help alleviate problems it was having due to heavy loading but this is only a temporary fix. At 600 gallons per minute, the pump station can properly handle no more than 1,112 EDU’s while maintaining a 3.5 peak factor.

Pumping an additional 1.0 MGD (4,500 EDU’s) to CTWWTP would cost \$19,687,500 at \$4375 per EDU. Granted the cost should be less but the Gravity Interceptor to the CTWWTP would need to be upgraded so this cost is reasonable.

To summarize:

315 new users to CTWWTP	\$3,110,625
Upgrade Effluent Line	\$3,000,000
Existing users to CTWWTP with new pump station	\$3,005,625
Upgrade CTWWTP	\$14,894,519
Transport 1.0 MGD new flows to CTWWTP	\$19,687,500
Total	\$43,698,269
 Flowing Springs Project	 \$26,630,486

And the existing CTWWTP would still need to be upgraded to comply with the requirements of the Chesapeake Bay Requirements.

V. PLAN SECTION AND PUBLIC PARTICIPATION

The plan to construct a WWTP at the Breckenridge site was made after numerous public meetings had been held by the Jefferson County Public Service District to discuss the proposed plans. At the public meetings, the proposed scope of work was fully discussed along with the estimated user charges. A projector was used to clearly show maps, charts and explanations for the projects.

The Jefferson County Public Service District has commissioned several studies between 1997 and 2006 to determine the wastewater treatment needs of the county and examine options to meet those needs in a sustainable and economic manner. This application is a request to ease the financial burden (through providing grant funding to lower the average users rates to no more than 2% of the MHI) of the existing users for a needed infrastructure addition for the community.

The decision for this project was made after considering a limited subset of all options considered between 1997 and 2006. The second to last study commissioned by the District was the Flowing Springs Addenda 2 Facility Plan. For that particular project, the District required a value engineering study to be conducted. ARRO engineers were selected and performed a value engineering study of that facility plan. The ARRO value analysis conclusions recommended that the service area being considered by the District be split into a northern and southern service area serving the Flowing Springs and Evitts Run drainage basins with each service area discharging into a MBR wastewater treatment plant.

The Flowing Springs Addenda No. 2 Facilities Plan was developed to satisfy WVDEP requirements and provide detailed information for interested citizens and stakeholders. The plan was a preliminary investigation and analysis to establish feasibility and necessity of a wastewater treatment project, final design of a proposed project was not included in the facilities plan nor is any final design included within this report. This report documents the need for the project and selects a cost effective, environmentally sound project. “The plan also represents a public record of decision making and shall be written to provide the general public, municipal officials, and regulatory officials with a clear understanding of the problem, solutions and consequences of the project.” (WV State § 47-31-7.1)

The 2005 Jefferson County Public Service District Wastewater Facility Plan was revised, updated, refined and approved by the WVDEP Division of Water and Waste Management on August 24, 2009. That document provides detailed analysis of the project and environmental clearances from all the required agencies.

Public participation has been an integral part of the selection process. The following listing of facility plans commissioned by the District illustrates the decision making process carried out by the District. Public meetings were conducted by the District for each of the plans listed below. This application is in response to the needs of Jefferson County and incorporates the public input from all of the Facility Plans listed below.

Title:	Year:
Flowing Springs Facility Plan	1997
Flowing Springs Facility Plan Addenda 1	1998
Flowing Springs Facility Plan (Revised)	1999
Willow Spring Public Service Corporation	2000
Wastewater Facility Plan	
Jefferson County Countywide Wastewater Study	2001
Jefferson County Countywide Water Needs Study	2002
Pump Station 4-5 Upgrade Wastewater Facility Plan	2002
Flowing Springs / Cattail Run Facility Plan	2003
Flowing Springs Facility Plan Addenda 2	2004 - 2005
Value Engineering of Addenda 2 by ARRO Engineers	2005
2005 Jefferson County Public Service District	2005
Wastewater Facility Plan	

VI. ENVIRONMENTAL INFORMATION

Jefferson County is growing with many new subdivisions either under construction or planned within the next few years. Outside of the towns; subdivisions, apartment complexes and small business parks have developed. Since the Charles Town wastewater treatment has not be able to provide developers with capacity, package wastewater treatment plants and treatment systems with in-ground disposal systems have been pursued by developers. To prevent numerous small treatment plants from being established along with the increased density of existing communities and proposed developments within Jefferson County dictated that the Jefferson County Public Service District undertake this project.

Adequate wastewater facilities are part of the essential infrastructure needed for economic growth of a thriving community such as Jefferson County as well as providing necessary health and welfare for its residents. With the proposed improvements, Jefferson County will have initiated the construction of a regional wastewater system to address the needs of its citizens. Construction of this initial phase will help provide for an attractive environment for residential, commercial and industrial advances. The primary objective of this project is to provide a safe and healthy environment for the existing and future residents and wildlife in the study area. Without these improvements, the detrimental effects of pollution caused by homes and businesses in the region could eventually result in an unsafe community.

Possible impact on Recreational Contact use of the Shenandoah:

Very little impact is expected from discharges from this facility other than the negative perception of wastewater plant effluent. This apprehension by the general public is reasonable to expect given the general impression of sewage. However, the effluent will be a clear fluid so the public will only see what appears and actually is pure water leaving the plant. Utilizing advanced state-of-the-art wastewater treatment methods helps assure that all discharges from this facility will not negatively impact the environment. As this plant will utilize tertiary filtration, the discharge will be as clear as drinking water. The effluent will be disinfected utilizing ozone. Ozone is a very strong oxidation agent that breaks down the cell walls of pathogenic microbes which causes the cell walls to disintegrate. Ozone has a very short life and will be gone by the time the effluent reaches the outfall. The outfalls will be constructed in a manner which will aesthetically blend in with the existing environment to further reduce the negative image associated with waste water plant discharges. The District plans to utilize reuse of the wastewater to further reduce the discharges from this facility and is currently having a study conducted to identify uses for recycled wastewater.

Air Quality/Noise Standards:

a. The office of Air Quality has previously provided data indicating that Jefferson County is included in the category of "attainment/unclassifiable" by USEPA. This means that it is presumed to meet all applicable air quality standards for criteria pollutants. The only potential

effect on air quality created by this project would be during the construction phase. This would be exhaust fumes and dust from construction equipment.

b. Incineration will not be a part of the treatment process.

c. There will be significant growth and development expected from the implementation of this project. It is anticipated that the growth and development will not create violations of the ambient air quality standards or noise standards as either primary or secondary impacts. Growth will be controlled by county zoning.

d. Violation of noise standards is not expected as a primary or secondary impact of the project.

Water Quality:

a. To mitigate the effects of possible sedimentation or erosion, a plan utilizing best practice procedures will be submitted for approval with the construction plans. The procedures outlined in the submitted plan will be followed by the contractor and the owner.

b. If the planning area continues to grow at the rates experienced in the past twenty years (or if the county experiences a population surge as many residents and officials expect), non-implementation of this project could affect the surface water and groundwater quality of Jefferson County. This would be due to the increased number of septic tanks installed or additional point source discharges of package treatment plants. It is natural to assume that the more septic water infiltrates into the ground, the greater the chance for groundwater deterioration. It should be noted that most of Jefferson County is underlain by carbonate bedrock which has undergone karstification. Chemicals can be quickly carried from the surface through conduits in the bedrock to the groundwater. From there, they can move quickly to streams, springs and water wells.

c. There are currently challenges to stream standards at the existing Charles Town Treatment Plant. This stream is Evitts Run.

Water Supply:

a. There are no known water supply intakes downstream of the proposed discharge points within the West Virginia regulatory boundaries.

b. Since all current receiving streams eventually flow into the Potomac and Shenandoah Rivers the project will not cause a significant amount of water to be transferred from one sub-basin to another.

c. There are no known existing or possible future groundwater supply sources to which the project will discharge.

Biology:

a. There are sixteen federally endangered and five federally threatened species in Jefferson County. There are an additional 81 rare species. See Appendix H for further details. Since this project is still in the planning stages, the actual type and amount of work in areas adjacent to their habitat is unknown at this time.

b. No wildlife or their habitat will be affected by the proposed construction. The effects of future development on wildlife or their habitat will be controlled by the Jefferson County Planning Commission.

c. There are no indications that aquatic life will be affected by the project or the discharge created by the project at the treatment works, except in a positive manner.

Sensitive Areas:

a. None of the proposed project construction will affect any known sensitive environmental areas.

b. There are no known plans to include any of the streams or their drainage areas in wild or scenic designated areas.

Wetlands:

a. Wetlands are included in the service area. The project has been approved to be constructed under the nationwide permit for wetland.

Land Use Planning and Management:

The Jefferson County Planning Commission has zoned a large amount of land for either residential, commercial or industrial growth. This is especially true around Charles Town, between Charles Town and Harpers Ferry and west of Shepherdstown. This Study largely serves the zoned growth areas and is in agreement with the Comprehensive Plan's goals for land usage. Some of the area served by the proposed plants is not currently within the planned growth zone of the Jefferson County Comprehensive Plan.

The possible projects within this Study do conform to existing land use plans and will not cause significant changes to existing land use patterns. Several subdivisions are already planned within the next few years with some already under construction. So, great growth is already planned for the county whether any projects within this Study proceed or not.

The proposed projects will be designed to take care of planned and projected wastewater requirements. These project will induce population changes but the effect will be only minor on energy sources and loss of agricultural land. County zoning will control growth.

Flood plains will not be opened to development due to interceptor routing. Sludge disposal will be conducted according to WV Department of Environmental Protection regulations.

Reserve Capacity:

a. The treatment plants and pump stations will have for a 20 year staging period, greater than 30% of their design average capacity devoted to reserve.

b. The interceptor will have a designed staging period of greater than 20 years and documentation exists to indicate that the overall (primary and secondary) environmental impacts will not be reduced by construction with a larger pipe at the present time.

Socio-Economic Environment:

The project will not require the acquisitions of residential property however easements for the proposed collection lines will be necessary. No parks or recreational areas will be acquired or affected by treatment plant construction or interceptor routing.

The plant sites will have a 300-foot buffer zone required by the State of West Virginia.

The project will not violate any laws that were imposed to protect the environment.

There is no known documentation which suggests the local populace cannot afford their local share of the proposed project however this application is a request to reduce that local share to no more than 2% of the MHI.

The West Virginia Division of Culture and History has provided clearance for this project after a Phase 1 Archeological Study was conducted for both the plant site and the interceptors.

VII. PROJECT SUMMARIES

1. ENGINEERING SUMMARY

The tables on the following pages detail the proposed project. The Flowing Springs project will consist of gravity sewage collection system which will flow to a 1.0 MGD Membrane Biological Reactor treatment plant on Flowing Springs. The upgrade will provide digestion and solids dewatering at the plant. The upgrade will also provide an onsite laboratory for the facility along with ozone disinfection.

Table 6 - Jefferson County PSD, Flowing Springs Wastewater Project, 7-26-2010, Project Costs:

Item	Units	Qty.	Unit Price	Total
Upper Jefferson Avenue System:				
Reverse Flow from PS 4-2:				
New Pumps for Pump Station 4-2	LS	1	\$45,000	\$45,000
6" SDR-21 Forcemain	LF	1300	\$60	\$78,000
Reverse Flow from PS 3-6:				
New Pumps and wet well for Pump Station 3-6	LS	1	\$70,000	\$70,000
6" SDR-21 Forcemain	LF	750	\$60	\$45,000
Connection to Flowing Springs Interceptor:				
8" SDR-21 Forcemain	LF	50	\$70	\$3,500
Sub Total				\$241,500
Alternative Gravity Line:				
Gravity Line (30" SDR-35 PVC)	17,092	LF	\$175	\$2,991,100
6' Manholes	88	EA	\$3,000	\$264,000
Stream Crossing (30" Line)	200	LF	\$250	\$50,000
Road Bore (30" Line)	240	LF	\$550	\$132,000
Railroad Bore (30" Line)	75	LF	\$600	\$45,000
Railroad Bore Permits and Fees	1	EA	\$12,000	\$12,000
Gravity Line (8" SDR-35 PVC)	754	LF	\$40	\$30,160
Gravity Line (10" SDR-35 PVC)	213	LF	\$55	\$11,715
4' Manholes	4	EA	\$2,500	\$10,000

Decommission Pump Station	2	EA	\$7,000	\$14,000
Service Connections	5	EA	\$750	\$3,750
Sub Total				\$3,563,725
FLOWING SPRINGS INTERCEPTOR:				
36" SDR-35-PVC	LF	5,893	\$120	\$707,160
STREAM CROSSINGS (36" LINE) USING DIP AND STONE	LF	142	\$550	\$78,100
6' DIA. MANHOLE	EA	27	\$3,000	\$81,000
Road Bore (36" Line)	LF	100	\$550	\$55,000
Decommission Breckenridge PS and replace with manhole	LS	1	\$7,000	\$7,000
Sub Total				\$928,260
PROPERTY AND RIGHT OF WAYS:				
Alternative Gravity Line	16,360	LF	\$2	\$32,720
Flowing Springs Interceptor	6,145	LF	\$2	\$12,290
Plant Site	12.49	LS	\$38,030	\$475,000
Sub Total				\$520,010
TREATMENT PLANT:				
Flowing Springs WWTP	1	EA	\$15,088,488	\$15,088,488
Total Construction Costs:				
Collection System:				
Upper Jefferson Avenue System				\$241,500
Alternative Gravity Line				\$3,563,725
Flowing Springs Interceptor				\$928,260
Subtotal Collection System				\$4,733,485
Contingencies @ 10%				\$473,349
Total Collection System Cost				\$5,206,834

Treatment Plant				\$15,088,488
Contingencies @ 10%				\$1,508,849
Total Treatment Plant Cost				\$16,597,337
Total Construction Cost				\$21,804,170
Soft Costs:				
Construction				\$19,821,973
Contingency				\$1,982,197
Legal and Fiscal Services				\$225,000
Administrative				\$100,000
Planning				\$7,500
Engineering (Design)				\$1,709,000
Engineering (Design Alternative Gravity Line)				\$228,947
Engineering Construction Services				\$927,000
Engineering Construction Services (Gravity Line)				\$100,000
Start Up/Overview/Certification				\$100,000
Right of Ways and Plant Site				\$520,010
Bond Counsel				\$100,000
Interim Financing				\$100,000
Charles Town Sewer Service Diversion Agreement Transition Assistance Payment				\$279,177
Sub Total				\$4,396,634
Contingencies @ 10% (excluding bond counsel)				\$429,663
Total Soft Costs				\$4,826,297
Total Project Cost				\$26,630,468

$\$26,630,468 - \$1,000,000 = \$25,630,468$

$\$25,630,468 - (\$100,000 \text{ Bond Counsel}) \times 0.02765 \text{ (@ } \frac{1}{2}\% \text{ - 40 yr SRF Loan)} = \$705,917$

$*\$25,630,468 \text{ Loan} + \$705,917 \text{ Pre-Funding Reserve Account} = \$26,336,385$

$\$26,336,385 \times 0.02765 = \$728,201 \text{ approximate annual payment}$

Total Project Cost with Pre-Funding Reserve Account = **\$27,336,385**

B. COST SUMMARY

A detailed cash flow analysis is provided in the appendix.

C. PROJECT SCHEDULE

- | | | |
|------|---|--|
| (1) | Approval of facilities plan | August 24, 2009 |
| (2) | Loan application acceptance
WVDEP SRF Loan offer letters | September 14, 2007
Sept. 14, 2007, Sept 22, 2008, July 13, 2010 |
| (3) | Archaeological Research Completed and SHPO approval | October 30, 2008 |
| (4) | Design begins | June 2008 |
| (5) | Submission of user charges to the West Virginia
Public Service Commission for approval | November 2009 |
| (6) | Begin Right of Way acquisitions | June 2008 |
| (7) | Submission of project plans and specifications | May 30, 2008 |
| (8) | Approval of project plans and specifications | June 22, 2010 |
| (9) | Advertisement for bids | |
| (10) | Opening of bids | 30 days after (9) |
| (11) | Awarding of contracts | 60 days after (10) |
| (12) | Loan Receipt | 90 days after (10) |
| (13) | Commencement of project construction | Concurrent with (12) |
| (14) | Completion of project construction | 365 days after (13) |

Note: Exact dates are contingent upon approval dates of various state agencies.

D. LANDS AND RIGHTS-OF-WAY

Sixty-eight (68) right of ways will be required. To date less than 90% of the right of ways have been obtained.

E. PUBLIC HEALTH BENEFITS

Jefferson County is growing with many new subdivisions either under construction or planned within the next few years. Outside of the towns; subdivisions, apartment complexes and small business parks have developed. Some of these are served by package wastewater treatment plants, but the majority are served by in-ground septic disposal systems.

If the planning area continues to grow at the rates experienced in the past twenty years (or if the county experiences a population surge as many residents and officials expect), non-implementation of this project could affect the surface water and groundwater quality of Jefferson County. This would be due to the increased number of septic tanks installed or additional point source discharges of package treatment plants. It is natural to assume that the more septic water infiltrates into the ground, the greater the chance for groundwater deterioration. It should be noted that most of Jefferson County is underlain by carbonate bedrock which has undergone karsification. Chemicals can be quickly carried from the surface through conduits in the bedrock to the groundwater. From there, they can move quickly to streams, springs and water wells.

Due to the karst geology of Jefferson County, ground-water is easily susceptible to contamination from sources such as failing septic systems, fertilizers and insecticides. Currently, nearly sixty percent of the county’s homes use septic systems for wastewater disposal and over half of the county is farmed (possibly as much as 75 percent). A number of government agencies have designated areas with septic system problems. The County Comprehensive Plan states that “while the greatest usage at present is surface-water, the greatest potential for future use is ground-water.”

Numerous individual ground-water wells are operated by individuals to supply their potable water needs. The 1990 census reported that 46.50% of Jefferson County utilized wells for their potable water supplies. “The Jefferson County Comprehensive Plan”(page III-17) states that 41.5% of the residents rely on ground-water.

Implementation of this project will provide positive benefits with the elimination of septic systems in a high density areas of Jefferson County. The elimination of the septic systems will help assure a safe groundwater supply for the communities.

F. EVIDENCE OF FILING

See attached Public Service Commission of West Virginia Order, Case Number 05-395-PSD-30B (next pages)

G. EVIDENCE OF 5G COMPLIANCE

See documentation in appendix

APPENDIX

5G DOCUMENTATION

WASTELOAD ALLOCATION

AFFIDAVIT OF PUBLICATION

9-4-21-20

**PUBLIC NOTICE
JEFFERSON COUNTY PUBLIC
SERVICE DISTRICT
REQUEST FOR ENGINEERING
PROPOSAL**

On May 3, 1996, the Jefferson County Public Service District published Public Notice of its Request For Engineering Proposal for the project described herein. In order to comply with the publication requirements set forth in West Virginia Code 5G-1-3 The District is republishing the notice as follows:

The Jefferson County Public Service District is in the process of obtaining engineering services to provide feasibility studies and cost estimates, design and construction services necessary for the design and preparation of funding applications to various Federal, State, and Local sources as well as implementation of projects for water and sewer.

Professional services will include: (1) Feasibility Studies, (2) Cost estimates along with advice and information necessary in order to prepare competitive and programs eligible applications, (3) if funded, design in accordance with all State, Federal and Local regulations that pertain to the District's water and sewer systems, (4) Preparation of bidding and contracting documents, (5) Participate in the evaluation of bids received, (6) Monitor and inspect construction activities on a daily basis to ensure compliance with plans and specifications and (7) Provide construction management services.

Final plans, specifications and bid documents will be completed after the project is funded. Procurement of said services shall be in accordance with 24 CFR Part 85 and West Virginia Code Chapter 5G. All consultants interested in being considered for this project must submit a proposal detailing qualification, technical expertise, management and staffing capabilities and related experience.

The object of the competitive process is to objectively select the firm who will provide the highest quality of service. Accordingly, technical qualifications and experience will be weighed heavily. Selected respondents will be interviewed and the firm judged most qualified will be selected.

Please submit all requested information to:

William S. Stone, Jr.
General Manager
Jefferson County Public
Service District
210 West 3rd Avenue
Ranson, West Virginia 25438

Proposals will be accepted until 5:00 p.m. on October 1, 1996. Those engineering firms which submitted proposals in response to the May 3, 1996 Public Notice need not resubmit the materials, as those proposals will be considered by the District in addition to any proposals received in response to this Notice.

Attention is directed to the fact that funding sources for the proposed project may include, but not be limited to, West Virginia Infrastructure, Rural Utilities Service, SRF, EDA, ARC, or HUD SCBG funding. All work will be performed in accordance with the regulations issued by these agencies and the State of West Virginia as pertaining hereto. The selected firm will be required to comply with Title VI of the Civil Rights Act of 1964, Executive Order 11246, Section 109 of the House and Urban Development Act of 1974, Section 8 of the Housing and Urban Development Act of 1968, Conflict of Interest Statement and Access to Records provisions, where applicable.

The District will afford opportunity for minority business enterprise to submit a show of interest in response to this invitation and will not discriminate against any interested firm or individual on the grounds of race, creed, color, sex, age, handicap or national origin in the contract award.

The District reserves the right to accept or reject any and/or all proposals.

STANLEY E. ZOMBRO.

Certificate of Publication

This is to certify the annexed advertisement

Robert R Rodecker

Jefferson County Public Service Dist. Request for engineering proposal

appeared for 2 consecutive days/weeks in The Journal Publishing Company, a newspaper published in the City of Martinsburg, WV in its issue beginning

9/14

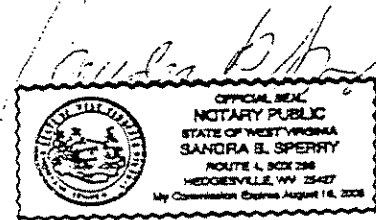
and ending

9/21

The Journal

207 W. King Street
Martinsburg, WV 25401

Fee \$ 96.71



MINUTES OF
ENGINEER SELECTION COMMITTEE
MEETING HELD ON OCTOBER 23, 1996

Jefferson County
Public Service District

Engineer Selection Committee
October 23, 1996
Minutes

The Engineer Selection Committee of the Jefferson County Public Service District met at 10:00 A.M. on October 23, 1996 to interview engineers for the County-Wide Sewer and Water Feasibility Study. The committee members were Stanley E. Zombro, Thomas M. West, Carole A. Hall and William B. Stine, Jr..

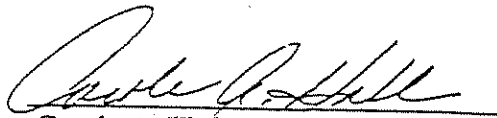
The following firms were interviewed:

Buchart Horn, Inc.

Anderson & Associates, Inc.

Pentree, Inc.

The Committee agreed to make the selection at the next PSD Board Meeting.


Carole A. Hall, Secretary

MINUTES OF
MEETING HELD ON NOVEMBER 12, 1996

Jefferson County
Public Service District

Regular Meeting
November 12, 1996
Agenda

Unfinished Business:

Charles Town/Ranson

PSC Hearing - Walnut Grove/Jefferson Utilities - Transfer of Ownership

The Hearing is scheduled for November 13, 1996. The General Manager will be meeting Mr. Rodecker in Charleston prior to the hearing.

- Walnut Grove/Jefferson Utilities Agreement

Mr. Rodecker discussed with the board a meeting with the Walnut Grove Homeowners Association and Jefferson Utilities. Mr. Rodecker made an offer for the Walnut Grove Sewer. The Board instructed Mr. Rodecker how to proceed if the offer was rejected.

Sanitary Associates

The Board discussed Sanitary Associates Water and Sewer. Mr. Rodecker was instructed to report to Jefferson Utilities that the District has every intention of pursuing the acquisition of Sanitary Associates Sewer.

Discussion was also held concerning SRF funding for the connection of Sanitary Associates and for the purchase of Walnut Grove Utilities.

- Complaint Hearing- Mose

The General Manager reported that the hearing date had been changed to November 21, 1996. Discussion followed.

- KOA

The General Manager reported that the surveying is to be done to find the sewer sleeve and its elevations.

- John Skinner - Contingency Fee

John Skinner and the Board discussed retaining his legal services on a contingency basis.

Mr. Skinner also reported that he had appealed the unemployment Law Judges decisions concerning the unemployment status for Timothy Mose.

Blue Ridge Water Project

Discussion of this project was held. Tom West made a motion to instruct Will Smith of Pentree Inc. to present the application to the Infrastructure Council for funding approval. Carole Hall seconded the motion, motion carried.

- Facility Plan- Selection

SEE ATTACHED MINUTES OF SELECTION COMMITTEE

Tom West made a motion to hire Pentree Inc. to do engineering services to provide feasibility studies and cost estimates for the design and construction services necessary for the design and preparation of funding applications to various federal, state and local sources as well as implementation of projects for water and sewer.

New Business:

Charles Town/Ranson

- DEP Inspection of Treatment Plant

The General Manager reported on a meeting he attended at the City of Charles Town concerning the Sewage Treatment Plant. The DEP inspection showed several areas that need to be corrected. Discussion followed. The General Manager was instructed to keep the Board informed on further developments.

- Disbursements

The General Manager presented the Board with the current bills. Carole Hall made motion instructing the General Manager which bills to pay. Tom West seconded the motion, motion carried.

Keyes Ferry Acres

- Disbursements

The General Manager presented the Board with the current bills. Tom West made a motion instructing the General Manager which bills to pay. Carole Hall seconded the motion, motion carried.

Glen Haven

- Disbursements

The General Manager presented the Board with the current bills. Tom West made a motion instructing the General Manager which bills to pay. Carole Hall seconded the motion, motion carried.

Cavaland

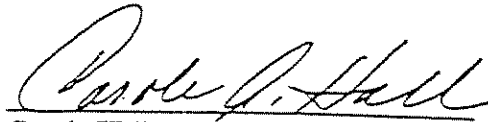
- Disbursements

The General Manager presented the Board with the current bills. Tom West made a motion instructing the General Manager which bills to pay. Carole Hall seconded the motion, motion carried.

Burr Industrial Park

- Disbursements

The General Manager presented the Board with the current bills. Carole Hall made a motion instructing the General Manager which bills to pay. Carole Hall seconded the motion, motion carried.

A handwritten signature in cursive script, reading "Carole A. Hall". The signature is written in dark ink and is positioned above a horizontal line.

Carole Hall, Secretary

Next Meeting:

November 27, 1996

December 11, 1996

MUNICIPAL/PRIVATE SEWAGE TREATMENT WASTELOAD ALLOCATION IMPORTANT: READ CAREFULLY INSTRUCTIONS AND CONDITIONS ON OTHER SIDE

PART A. TO BE COMPLETED BY APPLICANT DATE: 10-23-09

1. Owner of the Wastewater system: Jefferson County Public Service District

Owners Address: 340 Edmond Road, Suite A, Kearneysville, West Virginia 25430

Form submitted by: Susanne Lawton, General Manager Phone Number: 304-725-4647

Email Address: gm@jcpd.com

Mailing address: 210 West Third Avenue, Ranson, West Virginia 25438

II. Treatment facilities physical location: Flowing Springs Run

III. List wastewater treatment facilities within one mile: Halltown Paperboard Co. WV0005517

IV. Attach a statement identifying the source of your right-to-enter in and upon the real property adjacent to the receiving stream to install or construct the proposed point source. (This can include recorded deeds, leases, options, real estate contracts and easements.)

Discharge point location. (The discharge point refers to the exact location of the pipe outlet from the treatment facility.)

(a) Name of the county where discharge point is located: Jefferson

(b) Name of U.S.G.S. 7.5 minute topographic map: Charles Town

(c) Name of U.S.G.S. 7.5 minute topographic map: Charles Town

(d) Does the immediate receiving stream have a year round flow? Yes No. And Springs (See Attached)

(e) The discharge point on the immediate receiving stream is _____ miles (to the nearest tenth) from the mouth of the immediate receiving stream.

(f) Within five miles down stream from the discharge point, does the receiving stream have a domestic water supply intake? Yes No; an impoundment? Yes No.

(g) Latitude and longitude of discharge point to the nearest second. Latitude 39° 18' 00" Longitude 77° 48' 12"

(h) If area of watershed above the discharge point to the immediate stream is less than 200 square miles, give measured drainage area from the U.S.G.S. topographic map: 4.5 square miles. (See item 5, instructions.)

V. Facility Description

(a) Name and purpose of facility (municipality, mobile home park, motel, etc.) Municipal Wastewater Treatment Plant

(b) Will this treatment plant handle sewage from towns/entities other than the owner listed above? Yes No. If yes, list all other towns/entities. Charles Town and Ranson may send some of their flows to this facility

(c) Will this facility be used for industrial wastes? Yes No. If yes, give the percent of flow from industrial users: Approximately 20% of the flow could come from industrial sources

(d) Is this a proposal to construct a new treatment facility or to expand an existing treatment facility? Yes No. If yes, it will be necessary to fill out the Additional Information for Municipal/Private Sewage Treatment Wasteload Allocation Form. This form can be downloaded from our website at <http://www.wvdep.org/Dccs/380/addwloadform.pdf>

(e) Design Criteria Existing 9,451 Number of persons 87.4 gal/day/person 90.6 gal/day/person 11,038 Design (See item 6, instructions.)

(a) Flow per person 87.4 gal/day/person 90.6 gal/day/person

(b) Total waste water flow 826,000 gallons/day 1,000,000 gallons/day

(c) Distance to the nearest public sewer N/A miles or N/A feet

(d) Street or other location of nearest public sewer This is a public sewer

(e) Give reason why the public sewer is not being used: (See item V, conditions.) This application is for a public sewer.

VI. Mail completed form to: Division of Water and Waste Management, Permitting Section 601 57th Street SE, Charleston, WV 25304-2345

PART B. To be completed by the Division of Water and Waste Management, WV Department of Environmental Protection

Date:	10-28-09
Design Flow	1.0 mgd
Trout	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
7/0/10	1.51
(cfs) mgd	Graph Station
TRC Max, ug/l:	0
Bacteria disinfection is required	DO
Elevation	ft. 408

Allowable Waste Load (30 Day Average)	Conc. (mg/l)	lbs/day
UBOD	21.21	19.14
BOD5	5.0	3.34
SS	3.0	2.00
DO	1.5	20.03
Instantaneous		

Completed by: *[Signature]*

Entered *[Signature]* 1130