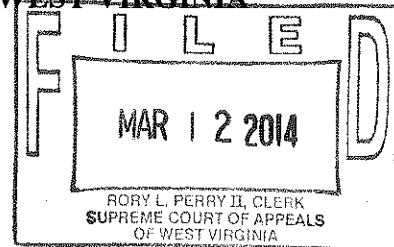


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IN THE SUPREME COURT OF APPEALS OF WEST VIRGINIA

14-0112



STATE OF WEST VIRGINIA
ex rel. **COVENANT HOUSE,**
MONIQUE WATKINS, and
VIRGINIA GARDNER,
Petitioners,

PLEADING FILED
WITH MOTION

v.

RANDY C. HUFFMAN, Secretary of the West Virginia
Department of Environmental Protection,
LETITIA TIERNEY, Commissioner of the Bureau for Public Health,
and KAREN L. BOWLING, Secretary of the West Virginia
Department of Health and Human Resources,
Respondents.

APPENDIX OF DHHR RESPONDENTS

PATRICK MORRISEY
ATTORNEY GENERAL

Christopher S. Dodrill (WV State Bar #11040)

Assistant Attorney General

Office of the Attorney General of West Virginia

Appellate Division

812 Quarrier Street, 6th Floor

Charleston, WV 25301

Phone: (304) 558-5830

Fax: (304) 558-5833

Email: christopher.s.dodrill@wvago.gov

*Counsel for Respondents Karen L. Bowling,
Secretary of the West Virginia Department of
Health and Human Resources, and Letitia
Tierney, Commissioner of the Bureau for
Public Health*

1000

1000

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CERTIFICATION

I, Christopher S. Dodrill, counsel for the Respondents, Karen L. Bowling, Secretary of the West Virginia Department of Health and Human Resources, and Letitia Tierney, Commissioner of the Bureau for Public Health, do hereby certify that the contents of this Appendix record are true and accurate copies of the items contained herein.


CHRISTOPHER S. DODRILL

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STATE OF WEST VIRGINIA
DEPARTMENT OF HEALTH AND HUMAN RESOURCES

Earl Ray Tomblin
Governor

Rocco S. Fucillo
Cabinet Secretary

February 12, 2013

Billie J. Suder
WVAWC-Kanawha Valley Dist
585 Gladys Fork Road
Weston, WV 26452

Re: SANITARY SURVEY
WVAWC-Kanawha Valley Dist
PWSID No. WV3302016
KANAWHA COUNTY

Dear Ms. Suder:

On January 08, 2013 a Sanitary Survey was conducted of the referenced water system by a representative of the Saint Albans District Office of the Office of Environmental Health Services (OEHS). This was performed in accordance with the requirements of the *West Virginia Public Water System Legislative Rules*. We would like to thank you and the site visit participants for the courtesy and assistance provided during the inspection of your public water supply system.

Eight major elements were reviewed in detail during this sanitary survey. The eight major elements are: source, treatment, distribution system, finished water storage, pumps/pump facilities and controls, monitoring/reporting/data verification, water system management/operation, and operator compliance with State requirements. Deficiencies found or recommendations made concerning these eight major elements are presented in the following sections.

Based upon review of the available records and visual examination of the facilities, no significant deficiencies require your immediate attention; however, some minor deficiencies and recommendation exist and are documented within this letter. Your system should be commended on all achieving a level of no significant deficiencies.

BUREAU FOR PUBLIC HEALTH
OFFICE OF ENVIRONMENTAL HEALTH SERVICES
Saint Albans District Office
808 B Street, Suite G
Saint Albans, West Virginia 26177
Telephone: (304) 722-0811 FAX: (304) 722-0814

Significant Deficiencies

A significant deficiency is defined as: "Any defect in a system's design components, operation, maintenance, or administration, as well as any failure or malfunction of any system component, that the department determines may cause an unacceptable public health risk; have the potential to cause the introduction of contamination into drinking water; or may adversely affect the reliable delivery of safe drinking water to the public."

No observations were recorded in this category.

Minor Deficiencies

The following observations made at the time of the survey don't fully meet the definition listed previously for significant deficiencies at the present time but have the potential to result in significant deficiencies in the near future if not addressed. WVDHHR strongly requests that the following minor deficiencies be addressed to help maintain compliance with primary drinking water regulations.

FACILITY	CATEGORY	DESCRIPTION
TANK	Finished Water Storage	Inadequate overflow erosion control measures provided.
Comments: The overflow piping discharges to a makeshift drainage device near the tank foundation. Per 64CSR77-9.1.f, storage tank overflows should discharge over a drain inlet structure or splash plate.		
FACILITY	CATEGORY	DESCRIPTION
TREATMENT PLANT	Treatment	Other item found not covered under available observations.
Comments: The leak detection system is not equipped with a local audible alarm per 64CSR77-7.4.c. The intent of the local alarm is to alert other personnel who may be in the immediate area of the potential hazard.		

Recommendations

The following observations made at the time of the survey have the potential to produce or to result in minor or significant deficiencies in the near future. WVDHHR recommends that the following be addressed to help maintain compliance with primary drinking water regulations.

FACILITY	CATEGORY	DESCRIPTION
SYSTEM	Distribution System	Percentage (%) of unaccounted water for previous calendar year was greater than 15%.
Comments: In the annual PSC filing, WVAWC reports water loss rate a on a 'state wide' basis. At the time of survey the [REDACTED] Plant estimates that their current loss rate was ~20%. The system should continue its on-going efforts to reduce this rate.		
FACILITY	CATEGORY	DESCRIPTION
STATION	Pump/pumping facility and control	Other item found not covered under available observations.
Comments: The following items were also noted for the [REDACTED] Station. 1) The station should be equipped with a floor drain per 64CSR77-8.3.a. 2) The exterior flashing on the roof is starting to deteriorate, this should be repaired to extend the life of the building and properly protect the equipment inside.		
FACILITY	CATEGORY	DESCRIPTION
#1 TANK	Finished Water Storage	Other item found not covered under available observations.
Comments: The following deficiencies were noted for the [REDACTED] #1: 1) Vegetation is growing on the fence and needs to be removed. 2) There is an accumulation of gravel around the base of the tank. The site around the tanks needs to be graded to permit proper drainage. 64CSR77 9.1.o requires the area surrounding a ground-level structure shall be graded in a manner that will prevent surface water from standing within fifty (50) feet. This accumulation of material prevents drainage.		
FACILITY	CATEGORY	DESCRIPTION
TANK	Finished Water Storage	Other item found not covered under available observations.
Comments: The grout seal is separating from the tank and tank ring. This needs to be repaired to prevent damage to the tank floor from water standing under the tank. This can cause a failure of the tank.		
FACILITY	CATEGORY	DESCRIPTION
TANK	Finished Water Storage	Other item found not covered under available observations.
Comments: The following deficiencies were noted for the [REDACTED] Tank: 1) Grout seal is deteriorating and needs to be repaired. 2) Vegetation is growing on the fence and needs to be removed.		

FACILITY	CATEGORY	DESCRIPTION
[REDACTED] TANK	Finished Water Storage	Storage tank needs painting.
Comments: There is significant rust and mildew on the exterior of this tank. This vessel should be cleaned of the rust and mildew and the rust areas repainted to extend the service life of this tank.		
FACILITY	CATEGORY	DESCRIPTION
[REDACTED] TANK	Finished Water Storage	Storage tank needs painting.
Comments: There is significant graffiti and some exterior rust on the tank. The system should consider cleaning and repainting to extend the life of the tank.		

Reminders

The following are general reminders that all WV public water systems need to keep in mind for continued compliance in various areas.


- West Virginia and federal rules require the records of all laboratory tests, chlorine residuals, and copies of written communication relating to inspections be kept on file for a period of ten (10) years.
- According to West Virginia rules, all plans for the future use of a source of supply, treatment, construction of new wells, water treatment plants, pumping stations, finished water storage facilities and distribution facilities including line extensions greater than 1000 feet used in connection with the public water supply system must be approved by DHHR in our Charleston office prior to construction. A permit application must be submitted and approved by DHHR/OEHS for any such improvements.
- West Virginia rules require that you immediately notify the appropriate OEHS offices and responsible local officials when a major breakdown or serious loss of water service occurs which presents or may present an imminent and substantial endangerment to human health.
- Operator training hours are required during every two-year renewal period for water and wastewater operators. Failure to attain the required continuing education hours (CEH) will result in non-renewal of an operator's certificates. Please contact the Training and Certification Unit office at 304-356-4335 or 304-356-4336, or my office if you need a list of training classes and dates.

Sanitary Survey
WVAWC-Kanawha Valley Dist
January 29, 2013
Page 5

Since no "significant deficiencies" were found during this survey you do not need to submit a written response to the items listed; however, the items listed as "minor" or as "recommendations" could eventually lead to more serious conditions so the system should try to address them.

Should you have any comments or questions concerning this report and its contents please contact me by telephone at 304-356-5259 or by email at Richard.C.Snyder@wv.gov.


Sincerely,


Richard Snyder, P.E., District Engineer
St. Albans District Office
Environmental Engineering Division

RCS

Enclosure

pc: Jon Jarvis, Chief Water Operator, WVAWC Kanawha Valley District
Amy Swann, Director, Water and Wastewater Division WV Public Service Commission
Kanawha Health Department
Saint Albans District Office file
Central Office File, Water Sanitation Surveys

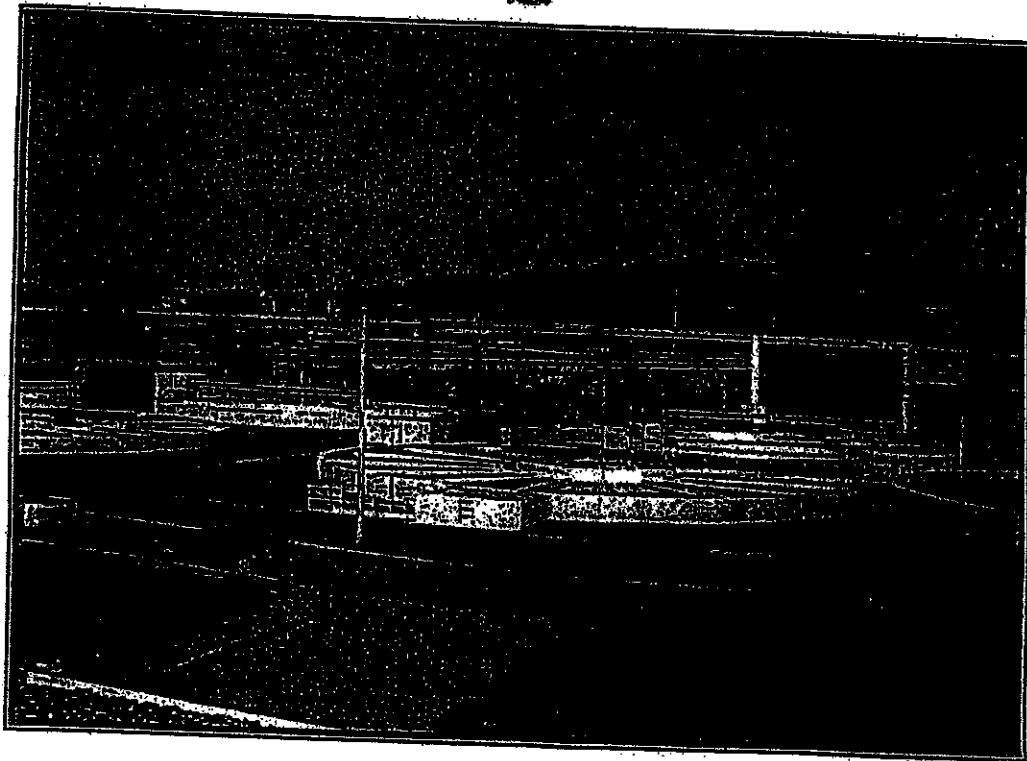


SANITARY SURVEY

PWSID No. [REDACTED]

**WEST VIRGINIA AMERICAN WATER-KANAWHA VALLEY DISTRICT
CLASS 4 SURFACE WATER TREATMENT PLANT AND DISTRIBUTION SYSTEM**

KANAWHA COUNTY



BY: RICHARD C. SNYDER, P.E., DISTRICT ENGINEER

**OFFICE OF ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL ENGINEERING DIVISION
WV BUREAU FOR PUBLIC HEALTH
SAINT ALBANS DISTRICT OFFICE**

January 8, 2013

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WVAWC-KANAWHA VALLEY
PWSID No. [REDACTED] -KANAWHA COUNTY
CLASS 4 SURFACE WATER TREATMENT PLANT AND DISTRIBUTION SYSTEM

Sanitary Survey — January 8, 2013

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ATTACHMENTS:

- A1** - Flow Diagram of Treatment Plant
- A2** - Flow Diagram Legend (2 Pages)
- A3** - Treatment Plant Schematic
- B** - Treatment Plant [REDACTED] Control Screens (12 Pages)
- C** - CT Calculations - Worst Case Conditions (3 Pages)
- D1** - AWOP Turbidity Profiles (3 Pages)
- D2** - Filter Backwash / Turbidity Graph
- D3** - Backwash Procedure (3 Pages)
- E1** - Finished Water Storage Tank Listing (2 Pages)
- E2** - Finished Water Tank [REDACTED] Control Screens (2 Pages)
- F** - Booster Station Listing (3 Pages)
- G1** - Certified Operator Listing (2 Pages)
- G2** - System Employee Listing
- H1** - Raw Water Analysis
- H2** - Finished Water Analysis
- I1 to I6** - Photographs

REPORT SUMMARY

The West Virginia American Water-Kanawha Valley treatment plant is located on the [REDACTED] of the Elk River in Charleston, West Virginia and the distribution system services portions of Kanawha, Putnam, Cabell, Boone, and Lincoln Counties.

Raw water is supplied from the Elk River adjacent to the treatment facility. For 2012, the plant averaged thirty million two hundred forty eight thousand gallons per day (30,248,000) gallons per day at a rate of approximately twenty one thousand (21,000) gallons per minute while operating twenty four hours per day. The plant supplies water through a distribution system of approximately one thousand seven hundred (1,700) miles of pipeline to a total population of two hundred seventy six thousand (276,000). Finished water storage capacity in the system is calculated to be thirty eight million (38,000,000) gallons in one hundred four (104) tanks. Storage tank water levels and one hundred twenty seven (127) [REDACTED] are primarily controlled by a sophisticated [REDACTED] system. The treatment plant, rated at 50 million gallons per day (MGD), includes the following major facilities: [REDACTED] pumps, [REDACTED] pumps, [REDACTED] pumps, [REDACTED] clarifiers, [REDACTED] conventional filters, 1 [REDACTED], and [REDACTED]. There are adequate personnel to manage and operate the system under normal circumstances and the operators currently on staff are in compliance with State requirements. All required system monitoring and reporting are current and in compliance.

Eight major elements were reviewed in detail during the survey and discussed as separate sections within this Sanitary Survey. These major elements are: source, treatment, distribution system, finished water storage, pumps/pump facilities and controls, monitoring/reporting/data verification, water system management/operation, and operator compliance with State requirements. There are no outstanding violations against the system and the system is producing water in compliance with the current regulations pursuant to the *West Virginia Public Water Systems Legislative Rules*.

No significant deficiencies were noted during this survey.

SOURCE**WATERSHED MANAGEMENT PROGRAM
(SURFACE WATER SOURCE ONLY)**

Watershed Description (examples: tributaries, counties/areas) The system uses the [REDACTED] as its raw water source. The [REDACTED], generally considered a high quality stream, begins approximately [REDACTED] treatment plant in [REDACTED]. Tributaries of the [REDACTED] include portions of Pocahontas, Randolph, Webster, Nicoles, Braxton, Clay, Roane, and Kanawha Counties. [REDACTED] located approximately [REDACTED] upstream.

Watershed Characteristics (examples: soil types, activities) [REDACTED] vast drainage area contains numerous types of soils and a wide variety of land uses. The primary soil types for the area around the intakes and immediately upstream are reddish brown clays with rapid runoff. Primary activities are farming, logging, oil and gas production, and some coal mining.

Number of intakes 3 (equipped with bar racks and traveling screens)

Does the system own the entire watershed?

Yes		No	<input checked="" type="checkbox"/>
-----	--	----	-------------------------------------

If the system does not own the entire watershed, does it own the critical areas?

Yes		No	<input checked="" type="checkbox"/>
-----	--	----	-------------------------------------

Does the system have any Landowner Agreements for watershed protection?

Yes		No	<input checked="" type="checkbox"/>
-----	--	----	-------------------------------------

Are any regulatory agency permits issued in the drainage (mining, logging)?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Does the system complete an Annual Watershed Management Report?

Yes		No	<input checked="" type="checkbox"/>
-----	--	----	-------------------------------------

**SOURCE VULNERABILITY ASSESSMENT
Sensitivity of the source water protection area (SWAP)**

Is the [REDACTED] located near shore or in a turbid water area?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Are the slopes in the immediate drainage areas steep?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Is the land in the immediate areas non-vegetated?

Yes		No	<input checked="" type="checkbox"/>
-----	--	----	-------------------------------------

SOURCE

Are large paved or non-permeable areas present in the immediate area?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Does the [REDACTED] have the ability to draw from multiple levels?

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
-----	--------------------------	----	-------------------------------------

Does the system have the ability to backflush or clean the [REDACTED]?

<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
---	-------------------------------------	----	--------------------------

Is the [REDACTED] screened?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Is the area around the [REDACTED] restricted?

<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
---	-------------------------------------	----	--------------------------

Are there known sources of pollution near or at the [REDACTED]?

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
-----	--------------------------	----	-------------------------------------

The [REDACTED] maintains a lift station approximately [REDACTED] upstream. An [REDACTED] storage facility is located near [REDACTED] and a [REDACTED] extraction plant is located near [REDACTED].

Does the system have an emergency spill response plan?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Raw water pump elevations [REDACTED] ft.

100-year flood elevation [REDACTED]

(Per FEMA flood maps)

SOURCE WATER QUALITY

Does the system regularly monitor raw water?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Yearly Average Raw Water Results							
	pH	Turbidity NTU	Alkalinity (mg/L)	Hardness (mg/L)	Fluoride (mg/L)	Iron (mg/L)	Manganese (mg/L)
2010	7.23	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2011	7.39	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
2012	7.34	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

List known causes of raw quality fluctuations

Storm events, river dredging, and Sutton Lake discharges.

Does system source generally supply adequate quantity to meet demand?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Does the system regularly have seasonal shortages of raw water?

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
-----	--------------------------	----	-------------------------------------

Has the system ever had a shortage of raw water?

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
-----	--------------------------	----	-------------------------------------

Has the system ever instituted a conservation plan?

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
-----	--------------------------	----	-------------------------------------

Does the system have a master meter to measure quantity of water treated?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

SOURCE

Has the system ever had problems with silting, debris, or clogged screens?
Debris is occasionally manually raked from intake screens.

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Does the system have [REDACTED] (Can system meet demand with a unit out)?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Does the system regularly check the actual capacity versus design capacity? *Indirectly measured during times of high demand.*

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
-----	--------------------------	----	-------------------------------------

Are the source facilities visited/inspected daily?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Do the source facilities appear to be well maintained?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Are the source facilities protected from entry by animals?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Do the [REDACTED] water lines deliver water directly to the treatment plant?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Are the [REDACTED] water lines reliable for continuous flow?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Is the source used the best possible available source?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

[REDACTED] water facility design capacity [REDACTED] MGD

Actual measured [REDACTED] water facility capacity

75 MGD [REDACTED]

TREATMENT

Treatment Facility Name

[REDACTED] Regional Water Treatment Facility

Is the treatment facility out of the 100-year flood plain elevation?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Does the system have a backup source of power?

A [REDACTED] is available to maintain the [REDACTED] system and general lighting.

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
-----	--------------------------	----	-------------------------------------

If the system has a generator, how often is it tested?

N/A

Design Capacity of the treatment facility

[REDACTED] MGD (Approved for [REDACTED] MGD)

Historic maximum daily production

44 MGD

Does the system have [REDACTED] (Can system meet demand with a unit out)?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Does the system regularly check the actual capacity versus design capacity?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Specify the treatment process/objective which best describes the facility.
(See pages 3-38, 3-39, and 3-40 of the EPA Guidance Manual for description of each)

Conventional Filtration	<input checked="" type="checkbox"/>	Direct Filtration	<input type="checkbox"/>	In-Line Filtration	<input type="checkbox"/>
Slow Sand Filtration	<input type="checkbox"/>	Single Stage Softening	<input type="checkbox"/>	Two Stage Softening	<input type="checkbox"/>
Conventional Filtration/Softening	<input type="checkbox"/>	Split and Complex Treatment	<input type="checkbox"/>	Membrane Filtration	<input type="checkbox"/>
Greensand Filtration	<input type="checkbox"/>	Simple Aeration Plant	<input type="checkbox"/>	Disinfection Treatment	<input type="checkbox"/>

TREATMENT**PRESEDIMENTATION**Number of Presedimentation units 0Total Volume of Presedimentation units N/AHow often are the Presedimentation units cleaned? N/AAre the Presedimentation unit volumes adequate to adequately reduce turbidity? N/A

Yes		No	
-----	--	----	--

Does the system have waterfowl problems on the Presedimentation units? N/A

Yes		No	
-----	--	----	--

RAPID MIX*(Rapid Mix used very seldom on an as needed basis)*Number of Rapid Mix units (East & West)

Type of Rapid Mix units

☐ In-Line Static Mixer
 ☒ Mechanical
 ☐ Other (list type)
Total Volume of Rapid Mix units [REDACTED] gallons eachHow often is maintenance performed on Rapid Mix units? As needed

Do the Rapid Mix units appear visually adequate?

Yes	✓	No	
-----	---	----	--

Is the [REDACTED] adjustable in the Rapid Mix units?

Yes	✓	No	
-----	---	----	--

Are [REDACTED] added [REDACTED] to or before the Rapid Mix units?

Yes	✓	No	
-----	---	----	--

Are any hydraulic inadequacies present at the Rapid Mix?

Yes		No	✓
-----	--	----	---

Are any cross-connections present at the Rapid Mix (Ex: [REDACTED] feed lines)?

Yes		No	✓
-----	--	----	---

TREATMENT

CHEMICALS AND CHEMICAL FEED SYSTEMS

List the chemicals currently being used/applied

		YES	NO
AS3710F	E&W common raw water header (primary coagulant)	✓	
Blended Polymer	E&W filter combined effluent, mixing chamber (as needed) and E&W to filter (as needed for pH adjustment)	✓	
50%	E&W filter combined effluent	✓	
23%	E&W filter combined effluent	✓	
1:3	E&W filter combined effluent	✓	
	E&W common raw water header	✓	
Powder Activated Carbon (Slurry)	mixing chamber (as needed)	✓	
Super	mixing chamber	✓	
Filter Aid	E&W to filters	✓	
	E&W filter combined effluent, E&W to filter (as needed); mixing chamber (as needed)	✓	

* The system plans on switching to Sodium Permanganate in the future.

Are the chemicals used appropriate for treatment desired/required?

Yes	✓	No
-----	---	----

List the chemical feed systems being used

Chemical	Feeder Type/Model	Size	Max. Pressure	Current Settings
AS3710F	1-1	GPH	psi	Varies
Super	system	GPH	—	Varies
23%	2 pumps	GPD	psi	Varies
1:3	pumps	GPD	psi	Varies
	feeder	—	—	Varies
	6	#/day ea.	—	Varies
Carbon	Liquid feeder	—	—	Varies
Filter Aid	2 pumps	SPD	psi	Varies
50%	6 pumps	GPD	psi	Varies

See Attachment B for typical Chemical Feed Setting for 1/25/2013.

TREATMENT

CHEMICALS USED											
	[REDACTED] Liq. (ppm)	[REDACTED] Liq. (ppm)	50% [REDACTED] Liq. (ppm)	23% [REDACTED] Liq. (ppm)	Corrosion Inhib. 1:3 [REDACTED] Liq. (ppm)	[REDACTED] Liq. (ppm)	Super [REDACTED] Liq. (ppm)	Filter Aid [REDACTED] Liq. (ppm)	Filter Aid [REDACTED] Liq. (ppm)	[REDACTED] Pre Liq. (mg/l)	[REDACTED] Post Liq. (mg/l)
2010		10.0	14.8	1.4	2.3	0.6	0.17	0.17	1.26	1.27	2.61
2011		12.8	13.2	1.3	2.3	0.5	0.00	0.41	0.89	1.42	2.63
2012	9.1*	5.5	13.2	1.2*	2.8	0.6	0.64	0.54	0.72	1.32	2.71

* April through December

Are all feeders sized above the historical maximum dosage rate?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Are the feeders used compatible with chemicals used?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Are the feeders used in good condition?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Do all feeders have adjustable feed rates?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Are the feed rate adjustments made manually or automatic? Both

Manual	<input checked="" type="checkbox"/>	Automatic	<input checked="" type="checkbox"/>
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All feed rate adjustments are automatically controlled by flow or analyzers except for manual adjustments for [REDACTED] and [REDACTED]

How often are chemical feeders calibrated/ checked for accuracy?

Annually or when maintenance is performed or as needed

How are quantities of chemicals fed determined (weighed by scales, calculated, etc.)?

Weighed and measured by tank levels

Does the system have [REDACTED] for each of the feed systems?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

If the system does not have [REDACTED] for each, are adequate spares available?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

TREATMENT

List the storage used for each chemical

AS3710F [REDACTED]	2- [REDACTED] gal. bulk tanks	[REDACTED]	[REDACTED] gallons
Super [REDACTED]	[REDACTED] gallon totes	[REDACTED]	[REDACTED] totes
23% [REDACTED]	1- [REDACTED] gal. bulk tank	[REDACTED]	[REDACTED] gallons
1:3 [REDACTED]	3- [REDACTED] gal. bulk tanks	[REDACTED]	[REDACTED] gallons
[REDACTED]	[REDACTED] gallon drums	[REDACTED]	[REDACTED] lbs.
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	2- [REDACTED] gal. buried slurry tanks	[REDACTED]	[REDACTED] gallons
Filler Aid [REDACTED]	1- [REDACTED] gallon. bulk tank	[REDACTED]	[REDACTED] gallons
50% [REDACTED]	4- [REDACTED] gal. bulk tanks	[REDACTED]	[REDACTED] gallons

If bulk tanks are used, are day-use tanks provided?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Are all chemical storage areas adequately labeled/marked?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Does the system have backflow prevention on each of the feed units?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Is adequate ventilation provided in all chemical feed/storage areas?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

CHLORINE GAS SAFETY

Does the system have a properly functioning [REDACTED] leak detector?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

If equipped with a detector, is it linked to both an audible and a visual alarm?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Is proper self-contained breathing apparatus (SCBA) available?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

If so, is the SCBA properly maintained/fully charged?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

If a leak repair kit available for the [REDACTED] ton cylinders

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Is a [REDACTED] available for leak location?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

TREATMENT

Are the [REDACTED] storage and feed rooms air-tight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Do the [REDACTED] areas have exits to the outside equipped with panic bars?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Are the inactive cylinders contained in a separate room from the feed area?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Do the [REDACTED] areas have a viewing/inspection window?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Are all cylinders stored in a secured and upright position? [REDACTED] cylinders are used.	N/A Yes <input type="checkbox"/> No <input type="checkbox"/>
Does the system have functional scales for weighing the [REDACTED] cylinders?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Are the cylinders stored in an area protected from excessive heat/direct sunlight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Is the [REDACTED] area heated to at least 60°F?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Are the areas properly ventilated with a discharge located near the floor and an inlet near the ceiling? The system has a [REDACTED] in place to handle any [REDACTED] leakage.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Does the ventilation fan provide for one complete air change per minute?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Are the controls for the fan located on the outside of the room?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Are the [REDACTED] properly vented and screened?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

COAGULATION / FLOCCULATION / SEDIMENTATION

Number of Coagulation / Flocculation units

Type of Coagulation / Flocculation units Contact clarifiers with settling tubes

Total Volume of Coagulation / Flocculation units gallons each

How often are the Coagulation / Flocculation units cleaned? Twice per year

Do the Coagulation / Flocculation units have [REDACTED] mixing?

Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Is the mixing rate adjustable in the units?

Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

How often is maintenance performed on mechanical units? Units are shut down for maintenance twice per year.

TREATMENT

Do the Coagulation / Flocculation units appear visually adequate?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

How is sludge removed and disposed?

Sludge is being pressed and landfilled.

Any sludge visible in the units?

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
-----	--------------------------	----	-------------------------------------

Do the Sedimentation / Clarification units appear visually adequate?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Settled Turbidity during survey

[REDACTED] NTU-West
[REDACTED] NTU-East

Raw Turbidity during survey

[REDACTED] NTU**FILTRATION**

Number of Filtration units

[REDACTED] East Side & [REDACTED] West Side

Type of Filtration units

[REDACTED]

Size of Filtration units

[REDACTED] ft² each

Media/thicknesses

[REDACTED] sand and [REDACTED] GAC on Leopold underdrains[REDACTED] filters were rebuilt in 2012. There are 6 more filters scheduled for rebuilding in 2013. [REDACTED] filters are currently on a 3-4 years rebuild schedule.

Can system meet demand with [REDACTED] unit out of service?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Does the system have turbidimeters for each of the filter effluent lines?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Type of Backwash equipment

[REDACTED] pumps and [REDACTED] surface scour wands for each filter.

Describe the criteria used to determine the need for backwash 1.) Time based [REDACTED] to [REDACTED] hours; 2.)
and/or when head loss reaches [REDACTED] ft., and/or [REDACTED] when the finished water turbidity reaches [REDACTED] NTU.

What is the average backwash frequency?

Every [REDACTED] hours

Describe the backwash procedure (including return to service)

See Attachment D3 for Backwash Procedure

Does the backwash procedure appear to be adequate?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

TREATMENT

Are floor drains present?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Is the piping gallery color-coded?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Is backwash water recycled?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Calculated Filter Rate gal. / ft² / min.

Is Filter Rate in an acceptable range?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Calculated Backwash Rate gal. / ft² / min. for the wash cycle (gpm); approximately
gallons of wash () and gallons of post wash
(restratification) are also used.

Is Backwash Rate in an acceptable range?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Filter media visually appears worn and needs replaced? Media is changed on a
year schedule. No sample obtained.

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

Is treated water properly protected from wastestream backflow/backslphonage?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

CLEARWELL

What is the clearwell volume? Million Gallons

Is the clearwell protected from contamination?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Is the clearwell baffled? curtains serve as baffles in the clearwell.

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

DISTRIBUTION SYSTEM

Does the system have accurate and up-to-date distribution mapping?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Does the mapping show all line, valve, and hydrant locations?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Does the mapping show pipe sizes and materials?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Does the system maintain a distribution maintenance record?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Does the system maintain a customer complaint record?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Minimum pressure in the system The system has pressure waivers for customers that have less than [REDACTED] psig.Maximum pressure in the system [REDACTED] psigPiping materials/sizes used WVAWC-Kanawha Valley operates approximately [REDACTED] miles of distribution piping comprised of sizes ranging from 1/4" to 48".Does the system flush mains regularly?
The system has [REDACTED] blow-offs that are regularly flushed to maintain [REDACTED] residuals.

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

How often? [REDACTED] year schedule

Does the system exercise valves regularly?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

How often? [REDACTED] yrs for [REDACTED] and greater, [REDACTED] yrs for < [REDACTED]

Does the system disinfect all new lines?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Does the system disinfect all repaired lines? *When pressure is lost.*

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Does the system perform bacteriological testing for all new lines?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Does the system perform bacteriological testing for all repaired lines? [REDACTED]

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Does the system maintain adequate repair materials on-hand?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Does the system have a formal Cross-Connection Control Program?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Has the system made inspections for cross-connections?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

DISTRIBUTION SYSTEM

Has the system installed or had installed any backflow prevention assemblies?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Are all customers metered (including facilities such as fire stations)?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

What is the latest reported/calculated water loss? % per the system's operating records at time of

survey. WVAWC reports a state wide loss in the annual PCS Report.

SERVICE CONNECTION SUMMARY

(Based on 12/31/2011 PSC Annual Report)

	Residential	Commercial	Industrial	Public Works
Number of connections	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Meter Size	[REDACTED] to [REDACTED]"	[REDACTED] to [REDACTED]"	[REDACTED] to [REDACTED]"	[REDACTED] to [REDACTED]"

*Based in 12/31/2011 PSC Report. Information given in the PSC report is for the total number of connections. The PSC Report does not break down the individual categories for each separate district.

Population served 248,385 (108,465 x 2.28) Kanawha Valley District22,726 (9,391 x 2.42) Madison District3,475 (1,407 x 2.47) Hamlin District

Any Purchase Systems?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

List them

Lincoln Rt. 3 PSD (population 1,095)-Queen Shoals (population 451)Reamer Hill (population 64)Hurricane (seasonal)

Does the system purchase from another?

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
-----	--------------------------	----	-------------------------------------

List

Total Population served (with all purchase systems)

276,196

FINISHED WATER STORAGE

The finished water tanks included in this section were inspected as representative samples of the system's storage facilities. See Attachment for complete listing of all storage tanks. Most WVAWC tanks are fenced and have motion and security equipment. Security is monitored by plant operators over a [REDACTED] system.

[REDACTED] #1

Type: Ground ☒ Elevated ☐ Below ground ☐

Construction material Welded Steel Date of construction 1999

Date of last painting 1999 Date of last inspection 1999

Dimensions [REDACTED] ft. Dia. x [REDACTED] ft. H Total volume [REDACTED] gallons

Base elevation [REDACTED] ft. Top elevation [REDACTED] ft. (estimated) Overflow elevation [REDACTED] ft.

Control type [REDACTED] system

High water setting [REDACTED] ft. Volume [REDACTED] M gallons

Low water setting [REDACTED] ft. Volume [REDACTED] M gallons

Properly functioning visual level gauge? N/A

Sampling tap? Yes ☐ No ☐

Exterior condition: Yes ☒ No ☐

Interior condition: Yes ☐ No ☐

Adequately fenced Yes ☒ No ☐

Adequately fenced Some vegetation on fence. Yes ☒ No ☐

Adequate overflow Yes ☒ No ☐

Tank lid/manhole secured/locked? Yes ☒ No ☐

Valve vault secured/locked? Yes ☒ No ☐

Good site drainage? Yes ☒ No ☐

Some gravel accumulation around tank foundation.

FINISHED WATER STORAGE

Site: [REDACTED] **#2**

Type: Ground ☒ Elevated ☐ Below ground ☐

Construction material Welded Steel Date of construction 1999

Date of last painting 1999 Date of last inspection 1999

Dimensions [REDACTED] ft. Dia. [REDACTED] ft. H Total volume [REDACTED] gallons

Base elevation [REDACTED] ft. Top elevation [REDACTED] ft. (estimated) Overflow elevation [REDACTED] ft.

Control type [REDACTED] system

High water setting [REDACTED] Volume [REDACTED] M gallons

Low water setting [REDACTED] Volume [REDACTED] M gallons

Properly functioning visual level gauge? ☐ Yes ☐ No ☐ N/A

Sampling tap? ☐ Yes ☒ No ☐

Exterior condition:
Vegetation present on tank. Good ☒ Fair ☐ Poor ☐

Interior condition: Unknown ☒ Good ☐ Fair ☐ Poor ☐

Adequately fenced
Vegetation on fence. Yes ☒ No ☐

Adequately vented Yes ☒ No ☐

Adequate overflow Yes ☒ No ☐

Proper access ladder Yes ☒ No ☐

Tank lid/manhole secured/locked? Yes ☒ No ☐

Valve vault secured/locked? Yes ☒ No ☐

Good site drainage? Yes ☒ No ☐

Debris around tank ring. Yes ☒ No ☐

FINISHED WATER STORAGE

[REDACTED] Tank

Type: Ground ☒ Elevated ☐ Below ground ☐

Construction material Welded Steel Date of construction 1978

Date of last painting Unknown Date of last inspection 2000

Dimensions [REDACTED] ft. Dia. X [REDACTED] ft. H Total volume [REDACTED] gallons

Base elevation [REDACTED] ft. Top elevation [REDACTED] ft. (estimated) Overflow elevation [REDACTED] ft.

Control type [REDACTED] system

High water setting [REDACTED] ft. Volume [REDACTED] gallons

Low water setting [REDACTED] ft. Volume [REDACTED] gallons

Properly functioning visual level gauge? Yes ☐ No ☒

Sampling tap? Yes ☒ No ☐

Exterior condition: Mildew on exterior of tank. Good ☐ Fair ☒ Poor ☐

Interior condition: Unknown ☒ Good ☐ Fair ☐ Poor ☐

Adequately fenced Vegetation on fence. Yes ☒ No ☐

Adequately vented Yes ☒ No ☐

Adequate overflow No proper splash guard. Yes ☐ No ☒

Proper access ladder Yes ☒ No ☐

Tank lid/manhole secured/locked? Yes ☒ No ☐

Valve vault secured/locked? Yes ☒ No ☐

Good site drainage? Yes ☒ No ☐

Grout seal on tank is deteriorated.

FINISHED WATER STORAGE

Tank

Type: Ground ☒ Elevated ☐ Below ground ☐

Construction material Welded Steel Date of construction 1961

Date of last painting 1984 Date of last cleaning 1994

Dimensions ft. Dia. x ft. H Total volume gallons

Base elevation ft. Top elevation ft. (estimated) Overflow elevation ft.

Control type system

High water setting ft. Volume gallons

Low water setting ft. Volume gallons

Properly functioning visual level gauge? ☐ Yes ☐ No ☐ N/A

Sampling tap? ☐ Yes ☒ No ☐

Exterior condition: Unknown ☐ Good ☒ Fair ☐ Poor ☐

Interior condition: Unknown ☒ Good ☐ Fair ☐ Poor ☐

Adequately fenced ☐ Yes ☒ No ☐ Adequately vented ☐ Yes ☒ No ☐

Adequate overflow ☐ Yes ☒ No ☐ Proper access ladder ☐ Yes ☒ No ☐

Tank lid/manhole secured/locked? ☐ Yes ☒ No ☐

Valve vault secured/locked? ☐ Yes ☒ No ☐

Good site drainage? ☐ Yes ☒ No ☐

Grout seal on tank is damaged.

Graffiti on tank

PUMPS / PUMP FACILITIES AND CONTROLS

Raw Water Pumps (4) - [REDACTED] & [REDACTED] pumps w/ [REDACTED] & [REDACTED] Hp GE Motors

Displacement Pump: Reciprocating ☐ Rotary ☐ Other ☐

Centrifugal Pump: Vertical Turbine ☒ Submersible ☐ Other ☐

Pump Capacity [REDACTED] & [REDACTED] gpm

P&M schedule? Yes ☒ No ☐

Spare available/Duality? Yes ☒ No ☐

Properly working? Yes ☒ No ☐

Is pump at a booster station (location other than: treatment area, well, or intake)? Yes ☐ No ☒

Is booster station subject to flooding? N/A ☒ Yes ☐ No ☐

Is station properly designed/maintained (floor drains, security)? N/A ☒ Yes ☐ No ☐

High Service Pumps (5) [REDACTED], [REDACTED], and [REDACTED] Hp GE Motors

Displacement Pump: Reciprocating ☐ Rotary ☐ Other ☐

Centrifugal Pump: Vertical Turbine ☒ Submersible ☐ Other ☐

Pump Capacity [REDACTED] gpm, [REDACTED] gpm, and [REDACTED] gpm

P&M schedule? Yes ☒ No ☐

Spare available/Duality? Yes ☒ No ☐

Properly working? Yes ☒ No ☐

Is pump at a booster station [REDACTED] Yes ☐ No ☒

Is booster station subject to flooding? N/A ☒ Yes ☐ No ☐

Is station properly designed/maintained (floor drains, security)? N/A ☒ Yes ☐ No ☐

PUMPS / PUMP FACILITIES AND CONTROLS**Filter Backwash Pumps** [REDACTED] & [REDACTED]

Displacement Pump: Reciprocating ☐ Rotary ☐ Other ☐

Centrifugal Pump: Vertical Turbine ☒ Submersible ☐ Other ☐

Pump Capacity [REDACTED] gpm
[REDACTED] gpm

P&M schedule? Yes ☒ No ☐

Spare available/Duality? Yes ☒ No ☐

Properly working? Yes ☒ No ☐

Is pump at a booster station (location other than: treatment area, well, or intake)? Yes ☐ No ☒

Is booster station subject to flooding? N/A ☒ Yes ☐ No ☐

Is station properly designed/maintained (floor drains, security)? N/A ☒ Yes ☐ No ☐

The booster stations reviewed during the survey represent a random sampling of the system's pumping facilities. See Attachment for listings of all the system's distribution pumping facilities.

Pump Name / Use: [REDACTED] hp & [REDACTED] hp)

Displacement Pump: Reciprocating ☐ Rotary ☐ Other ☐

Centrifugal Pump: Vertical Turbine ☒ Submersible ☐ Other ☐

Pump Capacity [REDACTED] @ [REDACTED] gpm & [REDACTED] @ [REDACTED] gpm;

P&M schedule? Yes ☒ No ☐

Spare available/Duality? Yes ☒ No ☐

Properly working? Yes ☒ No ☐

Is pump at a booster station [REDACTED] Yes ☒ No ☐

Is booster station subject to flooding? N/A ☒ Yes ☐ No ☒

Is station properly designed/maintained (floor drains, security)? N/A ☐ Yes ☒ No ☐

System has a permanent back-up generator.

PUMPS / PUMP FACILITIES AND CONTROLS

[REDACTED] [REDACTED] [REDACTED] **Balder**

Displacement Pump: Reciprocating ☐ Rotary ☐ Other ☐

Centrifugal Pump: Vertical Turbine ☒ Submersible ☐ Other ☐

Pump Capacity unknown

P&M schedule? Yes ☒ No ☐

Spare available/Duality? Yes ☒ No ☐

Properly working? Yes ☒ No ☐

Is pump at a booster station (location other than: treatment area, well, or intake)? Yes ☒ No ☐

Is booster station subject to flooding? N/A ☐ Yes ☐ No ☒

Is station properly designed/maintained (floor drains, security)? N/A ☐ Yes ☒ No ☐

[REDACTED] [REDACTED] [REDACTED] **hp**

Displacement Pump: Reciprocating ☐ Rotary ☐ Other ☐

Centrifugal Pump: Vertical Turbine ☒ Submersible ☐ Other ☐

Pump Capacity unknown

P&M schedule? Yes ☒ No ☐

Spare available/Duality? Yes ☒ No ☐

Properly working? Yes ☒ No ☐

Is pump at a booster station [REDACTED]? Yes ☒ No ☐

Is booster station subject to flooding? N/A ☐ Yes ☐ No ☒

Is station properly designed/maintained (floor drains, security)? N/A ☐ Yes ☒ No ☐

PUMPS / PUMP FACILITIES AND CONTROLS

[REDACTED] (@) [REDACTED] hp Floway

Displacement Pump: Reciprocating ☐ Rotary ☐ Other ☐

Centrifugal Pump: Vertical Turbine ☒ Submersible ☐ Other ☐

Pump Capacity [REDACTED] gpm each

P&M schedule? Yes ☒ No ☐

Properly working? Yes ☒ No ☐

Spare available/Duality? Yes ☒ No ☐

Is pump at a booster station [REDACTED] Yes ☒ No ☐

Is booster station subject to flooding? N/A ☐ Yes ☐ No ☒

Is station properly designed/maintained (floor drains, security)?

Roof flashing is starting to deteriorate.

System has a permanent back-up generator. N/A ☐ Yes ☒ No ☐

MONITORING / REPORTING / DATA VERIFICATION

Any current violations?

Yes		No	<input checked="" type="checkbox"/>
-----	--	----	-------------------------------------

If so, list violations N/A

Have all required sampling plans been submitted?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Have all Monthly Operational Reports (MOR's) been completed/submitted?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Have the MOR's been completed properly?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Have all Phase II/V tests been conducted/submitted?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Have the Phase II/V tests been conducted properly?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Have all bacteriological tests been conducted/submitted?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Have the bacteriological tests been conducted properly?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Have all Lead and Copper tests been conducted/submitted?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Have the Lead and Copper tests been conducted properly?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

System conducting all DBPR testing?

Yes	<input checked="" type="checkbox"/>	No		NA	
-----	-------------------------------------	----	--	----	--

Have all Public Notices been conducted as required?

Yes		No		NA	<input checked="" type="checkbox"/>
-----	--	----	--	----	-------------------------------------

Does the system have proper monitoring equipment?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Is monitoring equipment properly calibrated?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Have any Boil Water Notices been issued since the last sanitary survey?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

If so, list reasons One hundred and ten (110) utility issued BWNs have been issued between January 2010 and December 2012. These have been primarily for line breaks and major leaks.

WATER SYSTEM MANAGEMENT / OPERATION

Are the administrative files up-to-date?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Are files maintained for correct time frames?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Do files contain all required items?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Is personnel adequate to maintain the system?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

See Attachment [REDACTED] for a current listing of all WVAWC-Kanawha Valley personnel.

Describe the planning / purchasing process: West Virginia American uses [REDACTED] System as a planning
and purchasing tool. Five year cash forecasts are prepared for operational expenditures and for capital
construction projects; these plans are reviewed and updated annually. A purchase order system is used for all
major expenditures. Many employees have P-Cards (with various limits) for the purchase incidentals.

Does system have O&M manuals?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Does system have a SOP?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

SOPs are prepared and maintained for activities covered by the various corporate departments: Water Quality, Production and Plant Operations.

Is system self-supporting?

Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
-----	-------------------------------------	----	--------------------------

Income / Revenue for previous year

Total Operating Revenues- \$124,407,814

Expenses for previous year

Total Operating Expenses- \$115,183,426

These figures for revenue and expenditures were taken from the 12/31/2011 PSC Annual Report. They represent
the income statement totals for the entire WVAWC system; not for just the Kanawha Valley District. Net income for
2011 was reported as \$9,224,388.

OPERATOR COMPLIANCE WITH STATE REQUIREMENTS

See Attachment for a current listing of all WVAWC-Kanawha Valley certified operators and personnel.

Is number of operators sufficient to operate / maintain system?

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

Do operators have proper knowledge to operate / maintain system?

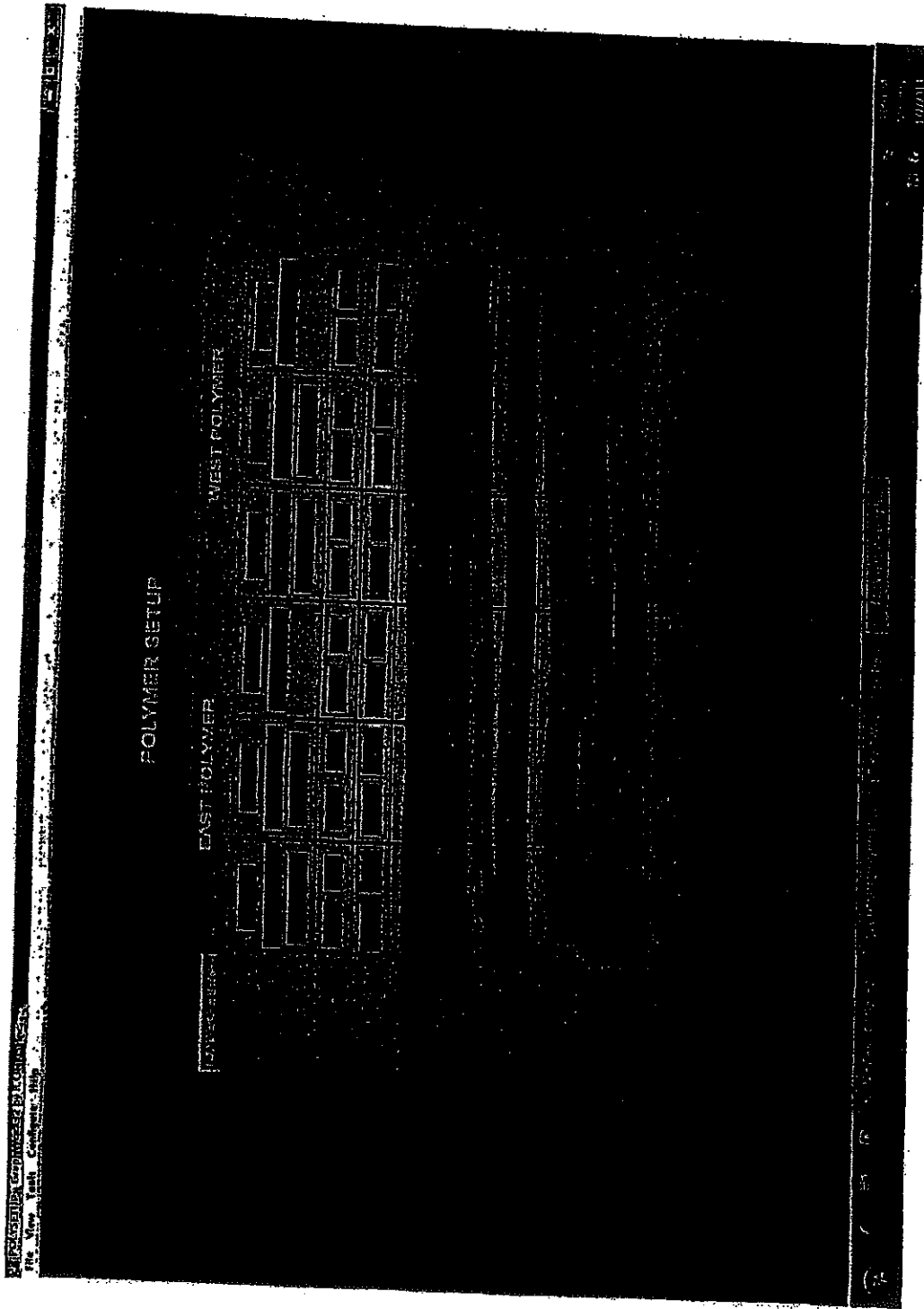
Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

TOWN NAME	SIZE	CITY	MAP NUMBER	LATITUDE	LONGITUDE	YEAR	LAST
1 AIRPORT TOWN	100	CHARLESTON				1987	1987
2 ALLEN	102	CHARLESTON				1987	1987
3 ALLEN ROUTE	102	CHARLESTON				1987	1987
4 AMBER FORD	107	MISSOURI				1987	1987
5 AMBER FORD	98	ST. ALBANS				1987	1987
6 AMBER FORD	81	MISSOURI				1987	1987
7 AMBER FORD	151	CHARLESTON				1987	1987
8 BALD HILLS (LAKES CREEK)	179	CHARLESTON				1987	1987
9 BALD HILLS	252	BALD HILLS				1987	1987
10 BALCON ROAD	50	CHARLESTON				1987	1987
11 BATE	50	CHARLESTON				1987	1987
12 BERRY HILLS	493	HILLS				1987	1987
13 BLOUNT	508	CHARLESTON				1987	1987
14 BRYAN HILL	158	CAMPBELL'S CREEK				1987	1987
15 BRYANWOOD	117	CHARLESTON				1987	1987
16 CANNON (HOLLYWOOD)	150	CHARLESTON				1987	1987
17 CANNON HILL	154	CANNON				1987	1987
18 CHAFFET HOLLOW	508	CHARLESTON				1987	1987
19 CHERRYVALE	173	KANAWHA CITY				1987	1987
20 CHERRYVALE STREET	508	SOUTH CHARLESTON				1987	1987
21 CHERRYVALE HILLS	453	SOUTH CHARLESTON				1987	1987
22 CITY HILL TOWN	65	CLINTON				1987	1987
23 CLAYTON HEIGHTS	41	MISSOURI				1987	1987
24 CLAYTON HILL	100	CLINTON				1987	1987
25 CLAYTON HILL	750	CLINTON				1987	1987
26 CLAYTON HILL	122	CLINTON				1987	1987
27 CLAYTON HILL	35	CHARLESTON				1987	1987
28 CLAYTON HILL	100	PARADE				1987	1987
29 CROSS LAKES	314	CROSS LAKES				1987	1987
30 CULLOCH	499	CULLOCH				1987	1987
31 DOCKERS CREEK	150	CLINTON				1987	1987
32 DONALD HOLLOW (UPPER)	5	KANAWHA CITY				1987	1987
33 DUNN HILL	500	RIDGEVIEW				1987	1987
34 DUNN HILL	115	QUICK				1987	1987
35 DUNN HILL	135	CHARLESTON				1987	1987
36 DUNN HILL	173	CHARLESTON				1987	1987
37 DUNN HILL	148	CHARLESTON				1987	1987
38 DUNN HILL	101	CHARLESTON				1987	1987
39 DUNN HILL	184	CHARLESTON				1987	1987
40 DUNN HILL	182	CHARLESTON				1987	1987
41 DUNN HILL	87	CHARLESTON				1987	1987
42 DUNN HILL	10	CHARLESTON				1987	1987
43 DUNN HILL	15	CHARLESTON				1987	1987
44 DUNN HILL	180	CHARLESTON				1987	1987
45 DUNN HILL	522	CHARLESTON				1987	1987
46 DUNN HILL	502	POCA				1987	1987
47 DUNN HILL	5	WILLIAM HILL				1987	1987
48 DUNN HILL	511	CHARLESTON				1987	1987
49 DUNN HILL	220	CONCORD				1987	1987
50 DUNN HILL	147	ALLEN CREEK				1987	1987
51 DUNN HILL	77	OUTER				1987	1987
52 DUNN HILL	139	HAND				1987	1987
53 DUNN HILL	122	CONCORD				1987	1987
54 DUNN HILL	150	CHARLESTON				1987	1987
55 DUNN HILL	150	CHARLESTON				1987	1987
56 DUNN HILL	500	CHARLESTON				1987	1987
57 DUNN HILL	500	CHARLESTON				1987	1987
58 DUNN HILL	158	CHARLESTON				1987	1987
59 DUNN HILL	305	OUTER				1987	1987
60 DUNN HILL	280	MADISON				1987	1987
61 DUNN HILL	155	MADISON				1987	1987
62 DUNN HILL	267	SOUTH CHARLESTON				1987	1987
63 DUNN HILL	1,011	NO CHARLEY				1987	1987
64 DUNN HILL	212	KANAWHA CITY				1987	1987
65 DUNN HILL	1,028	LAKE WASHINGTON				1987	1987
66 DUNN HILL	202	CROSS LAKES				1987	1987
67 DUNN HILL	1,008	WITTO				1987	1987
68 DUNN HILL	60	POCA				1987	1987
69 DUNN HILL	750	POCA				1987	1987
70 DUNN HILL	748	POCA				1987	1987
71 DUNN HILL	251	POCA				1987	1987
72 DUNN HILL	150	POCA				1987	1987
73 DUNN HILL	182	MADISON				1987	1987
74 DUNN HILL	507	KANAWHA CITY				1987	1987
75 DUNN HILL	122	SOUTH CHARLESTON				1987	1987
76 DUNN HILL	122	SETH				1987	1987
77 DUNN HILL	100	SHARLES				1987	1987

78 SHREWSBURY	211	SHREWSBURY			1982	1982	2005
79 SOUTH CHARLESTON RESERVOIR	1,000	SOUTH CHARLESTON			na	na	na
80 SOUTH OAKRIDGE	227	CHARLESTON			1988	1984	2000
81 SOUTH PARK #1	148	CHARLESTON			1984	1988	1998
82 SOUTH PARK #2	101	CHARLESTON			1972	1983	1984
83 SPRING FORK	5	CAMPBELLS CREEK			1953	1986	1995
84 STADIUM VIEW	2,891	CHARLESTON			1948	1953	1984
85 THORFARE ROAD (BIG SANDY)	unkn.	CLENDENIN			unkn.	unkn.	2004
86 TORNADO (WASHINGTON PSD)	89	TORNADO			1976	1998	2000
87 TURPERS CREEK (SISSONVILLE PSD)	271	SISSONVILLE			1984	1992	2000
88 UPPER FRAME	150	ELKVIEW			2005	2005	2005
89 VAN	154	VAN			1975	2005	2005
90 VANDALIA #1 (PART OF PROP WAS SOLD TO DOH)	2,990	CHARLESTON			1977	1985	1985
91 VANDALIA #2 (PART OF PROP WAS SOLD TO DOH)	3,662	CHARLESTON			1953	2005	2005
92 VORPE ROAD	25	ST. ALBANS			1978	1978	1995
93 WALKER RIDGE (Wm. Ridge)	330	LEON			2010	2010	2010
94 WASHINGTON HEIGHTS	202	CHARLESTON			1978	1978	2005
95 WEST	4,768	DUNBAR			1972	1990	2000
96 WEST FORK #1	110	BANDYTOWN			1983	unkn.	2000
97 WEST FORK #2	78	TWILIGHT			1983	unkn.	2000
98 WEST UNION	8	CLENDENIN			1990	1990	unkn.
99 WESTMORELAND (CIVIL ACTION #874)	101	DUNBAR			1971	1983	1984
100 WILLIAMS MOUNTAIN	90	WILLIAMS MOUNTAIN			1978	unkn.	2000
101 WILLS CREEK	250	ELKVIEW			2001	2001	2001
102 WOODRUM LANE #1	5	CHARLESTON			1953	1988	1995
103 WOODRUM LANE #2	10	CHARLESTON			1984	1988	1993
104 YOUNGS BOTTOM	263	FALLING ROCK			1986	1995	1998
RIVERSIDE SYSTEM							
RIVERSIDE	102	RIVERSIDE			1982		
QUEEN #2045 PSD							

NEXT DEP.	DIMENSIONS		ELEVATIONS	
	DIAM FT	HEIGHT IN FT	BASE (INCH)	C.F. (INCH)
	35.0	41.5		
2004	22.0	34.0		
2006	31.0	19.0		
2007	27.0	22.0		
Paint	24.0	34.0		
2007	37.0	24.0		
Paint	23.0	46.0		
2006	36.0	39.0		
2006	35.0	36.0		
2005	17.0	29.0		
2007	64.0	38.0		
Paint	46.0	39.0		
	39.0	31.0		
2005	21.0	48.0		
2007	27.0	36.0		
2005	30.0	31.0		
2004	48.0	37.0		
2007	31.0	26.0		
2004	25.0	47.0		
Paint	42.0	49.0		
2005	36.0	61.0		
	20.0	39.0		
2006	10.0	70.0		
	27.0	22.0		
	67.0	27.0		
2006	30.0	22.0		
2006	12.0	36.0		
2004	21.0	41.0		
2004	48.0	34.0		
2004	60.0	34.0		
2006	30.0	30.0		
Paint	0.0	0.0		
2006	48.0	36.0		
	27.0	27.0		
	24.0	40.0		
2007	33.0	27.0		
2004	27.0	34.0		
Paint	18.0	63.0		
2005	36.0	27.0		
2006	31.0	27.0		
2004	31.0	11.0		
2004	0.0	20.0		
Paint	20.0	27.0		
Paint	36.0	72.0		
2004	31.0	80.0		
2006	0.0	16.0		
Paint	36.0	70.0		
2010		60.0		
2007	33.0	23.0		
Re	34.0	11.0		
2005	38.0	40.0		
2007	30.0	23.0		
2006	30.0	30.0		
2006	30.0	31.0		
2006	30.0	30.0		
2006	24.0	30.0		
2006	24.0	30.0		
2004	23.0	47.0		
2006	30.0	36.0		
2004	36.0	29.0		
2007	24.0	40.0		
Paint	30.0	44.0		
Paint	66.0	39.0		
Paint	28.0	46.0		
2007	38.0	62.0		
2004	70.0	23.0		
2004	23.0	66.0		
2016	20.0	36.0		
Paint	60.0	62.0		
2006	61.0	49.0		
Paint	43.0	34.0		
2010	27.0	23.0		
2006	31.0	34.0		
2007	25.0	130.0		
Paint	31.0	36.0		
2007	30.0	23.0		
	27.0	24.0		

Paint	30.0	40.0
ns		
Paint	36.0	28.0
2005	27.0	34.0
Paint	27.0	23.0
	6.5	11.0
Paint	100.0	80.0
Paint	30.0	40.1
2007	27.0	23.0
2007	32.0	45.0
2010	20.0	29.0
2010	33.0	24.0
2004	100.0	80.0
2010	100.0	80.0
2004	16.0	19.0
	17.0	30.0
Paint	23.0	43.0
Paint	150.0	26.0
2007	25.0	20.0
2007	20.0	33.0
2004	10.0	18.0
2004	27.0	23.0
Paint	10.0	15.0
2008	34.0	30.0
2004	8.0	11.0
Paint	10.0	17.1
2005	30.0	40.0
	22.0	36.0



POLYMER SETUP

EAST POLYMER WEST POLYMER

Associated B-1012
 Typical Plant Control Screen
 WWA/WC Kanawha Valley - Safety Screen
 January 8, 2015

KV Rechlorination Sites

Install Data	Pump Station Normal Flow gpm	Max Capacity Feed Rate lb/day	Summer Feed Rate lb/day	Winter Feed Rate lb/day	Summer Desired Concentration mg/L
1 [REDACTED] Station 2010	250	24	8	2	3
2 [REDACTED] 2010	100 (resubbed from 200)	24	3	1.5	3
3 [REDACTED] 2009	110 (runs once / 3 days)	13.7	2.5	Off	2.5
4 [REDACTED] Creek 2011	250	24	8	2	2.5
5 [REDACTED] Creek 2001	370	10	8	2	3.3
6 [REDACTED] Road 2005	275	10	4	0.5	3
7 [REDACTED] (gas switchover) 2000	1500	25	23	8	3.1
8 [REDACTED] 1990	215	10	3.5	Off	3.1
9 [REDACTED] 2001	120	10	2.5	0.75	3.7
10 [REDACTED] 2000	225	12	3.5	Off	2.8

Standard Operating Procedure: Filtration

It is very important that the Kanawha Valley Plant maintain and operate in a proper manner to maintain optimum efficiency. This requires a more diligent approach to how filters are backwashed. When problems occur with the filters, supervision needs to be notified immediately of any problems noticed with the filters.

We want the operators to take the opportunity (at least once per shift) to initiate a filter backwash either in manual or automatic, preferably manual. The operator should be available to watch the entire backwash cycle. During the backwash the operators should make notations as to the condition of the filters. A clipboard with worksheet will be hanging in the operator's control room.

What to Look For?:

- Do all the valves work properly?
- Are the surface sweeps attached?
- Do the surface sweep turn at a constant speed?
- Did the filter backwash evenly? The best way to check this is to note whether or not the filters overflow the troughs at approximately the same time.
- Does the backwash flows through each side of the filter banks look the same?
- At the end of the high wash cycle, does the filter look clean? At the end of a proper back wash, the operator should notice more floc and less mud (marbling) carrying over into the troughs.
- Did filter turbidity levels come back to normal within 15 to 30 minutes?

What the Operator Can Do?:

The operator is empowered to make a number of decisions regarding the backwashing of filters. Based on how the filter backwashes the operator should make a number of decisions.

- Increase the time of low wash and increase the time the surface sweeps run.
- Increase the high wash backwash rate.
- Increase the high wash Backwash time.

ATTACHEMNT D3 - 1 of 3
Backwash Procedure
WVAVWC - Kanawha Valley Sanitary Survey
November 20, 2012

- Backwash in manual. If a particular filter is extremely dirty, it is recommended that the operator take the filter down through the bottom before initiating backwash, thus allowing air to help scour the filter media. This would also be a good time to extend the high wash time to allow the extra mud to be removed from the filter.
- Decrease the time between backwash cycles. This would be recommended prior to and after a major rain/raw turbidity event.
- Using fire hose/water hose, hose down the sides of the filter during backwash cycles if there is build-up on the filter walls
- Never put a filter back in surface unless all steps in a filter backwash are complete. If the SCADA system stops the program (auto only) in the middle of a backwash, the filter should be washed manually prior to putting back into service.

Note: It is important that all problems be reported by the operators and that all problems are addressed as promptly as possible.

Filter Backwash Steps

1. Close Influent valve.
2. Once water has dropped even to the level of the troughs, close the Effluent valve.
3. Open Drain valve.
4. Turn backwash pumps on.
5. Turn on surface sweeps. Allow sweeps to operate for roughly 2 -3 minutes; more if filter is very dirty.
6. Open backwash valve to low flow. 8,000 gpm
7. Turn off surface sweeps.
8. Open backwash valve to high flow, roughly 16,000 -17,000 gpm. Allow to run at least 5 minutes.
9. Close backwash valve down to low flow, roughly 8,000 to 10,000 gpm. Allow to run at least 5 minutes or until dirty water or scum has been removed from top of water.
10. Close backwash valve completely.
11. Turn off backwash pumps.
12. Open Influent valve.
13. Open filter to waste valve. Once trough is washed, close drain valve.
14. Once filter NTU drops below 0.15 NTU, close filter to waste and open Effluent valve.
15. Check that all valves settings are in the proper position for normal operations.

ATTACHEMNT D3 - 2 of 3
Backwash Procedure
WVAWC - Kanawha Valley Sanitary Survey
November 20, 2012

Filter Inspections:

Periodic inspections of the filters is necessary to insure that filters are being maintained and operated properly. Filters should be inspected quarterly. There are several things to look for when inspecting a filter or even when the filter is down for maintenance.

- Are mud balls present on top of the filter media? In the media? What is the size and location of the mudballs?
- Check freeboard on each of the filter banks. At least 3 measurements should be taken per each bank (front,middle,back)
- Is media pulling away from the walls of the filter. This could be a problem with the drain, a dead spot in the filter where washing is ineffective or cold weather related.
- Are there cracks in the media? This is indicative of underdrain failure.
- Are there any raised places in the media? This is indicative of a disturbance in the underdrain.
- Check conditions of surface sweep fittings, nozzles and brackets. Look for signs of corrosion, wear in the couplings and movement in the piping.
- At least 1 sample per filter should be collected annually and sent in for analysis by the supplier.
- When putting the filter back in service does the backwash water flow evenly?
- Measure the filter bed expansion.
- Loss of head meters should be checked for any needed maintenance.
- Filter turbidimeters should be cleaned and checked after putting the filter back in service.
- Avoid having filters out of service for more than 24 hours.
- Keep accurate up to date records of filter inspections for historical use.

ATTACHEMNT D3 - 3 of 3
Backwash Procedure
WVAWC - Kanawha Valley Sanitary Survey
November 20, 2012

WVAW

Jeffrey McIntyre
Vanessa Turner
Sean Graves
Philip Bright
David Bowles
Brett Morgan
David Carovillano
Jeremy Spence
Billie Suder
Andrea Thomas
Lisa Weber
Mike Shank
Sarah Workman
Melinda Young
Laura Jordan
Dan Bickerton
Dean Van Horne
Vacant
Judy Judy

Kanawha Valley District

Production & Water Quality

Jon Jarvis
Joe Sisson
Tod Reedy
Mike "Bubba" Bowles
Brian Sizemore
Jeff Baldwin
Tim Cummings
Greg Ferrell
Sandy Nelson
Jon Martin
Bill Jordan

Field Operations

Tommy Boggs
Jeffrey Ferrell
David Holstein
Bob Weiford
William "Butch" Templeton
Henry Perkins
Ken Marcum
Jana Lilly
Janet Messer
Peggy Hall
Trena Adkins

President - WV
Administrative Assistant
Director of Operations
Manager NRW
Supervisor NRW
Manager Engineering
Senior Engineer
Drafter/CAD
Manager Water Quality
ORM Senior Specialist
Administrative Assistant
Senior SCADA Engineer
Supervisor - Administrative Support
Specialist Operations
Manager External Affairs
Director of Business Development
Manager Finance
Human Resource Specialist
Legal Secretary

Supervisor Water Quality - Chief Operator
Supervisor Production
Maintenance Serv. Specialist
Maintenance Serv. Specialist
Maintenance Serv. Specialist
Booster Technician
Booster Technician
Booster Technician
Administrative Assistant
SCADA (Statewide)
SCADA (Statewide)

Supervisor Construction
Supt Field Operations - Chief Operator for Field
Supervisor Field Operations - Boone Cnty
Supervisor Field Operations - Dist. West
Supervisor Field Operations - Dist. East
Supervisor Field Operations - Commercial
Supervisor Field Operations - Meter Readers
Administrative Assistant
Administrative Assistant
Administrative Assistant
Operations Specialist

Attachment G2
Administrative Staff
WVAWC - Kanawha Valley Sanitary Survey

BOOSTER STATIONS IN WVAWC INVENTORY AND NOT IN SWIFT(MY INVENTORY SYSTEM) TO BE ADDED

Pocatalico
 Brenda Lane
 Dutch Ridge
 Walker Ridge Booster
 Woods Drive
 Haws Dr.
 Allen
 Cromwell Estates

[REDACTED]

[REDACTED]

BOOSTER STATIONS IN SWIFT BY NOT IN WVAWC INVENTORY - TO BE CHANGED TO INACTIVE STATUS IN

Whittington Hill Booster Station
 Hawes Hollow Booster Station. - Is this Haws Drive? Number 75?
 Kelly Hill booster
 Airport Booster

STORAGE TANKS IN WVAWC INVENTORY AND NOT IN SWIFT(MY INVENTORY SYSTEM)

[REDACTED] TANK
 [REDACTED]
 [REDACTED]
 [REDACTED]

300
 115
 135
 150
 130

CHARLESTON
 QUICK
 CHARLESTON
 ELKVIEW
 LEON

[REDACTED]
 [REDACTED]
 [REDACTED]

STORAGE TANKS IN SWIFT BY NOT IN WVAWC INVENTORY - TO BE CHANGED TO INACTIVE STATUS IN SW

[REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]

-(Entered twice in SWIFT)

Tank

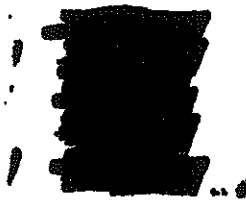
Tank

Tank

Tank

TO SWIFT

SWIFT



/IFT

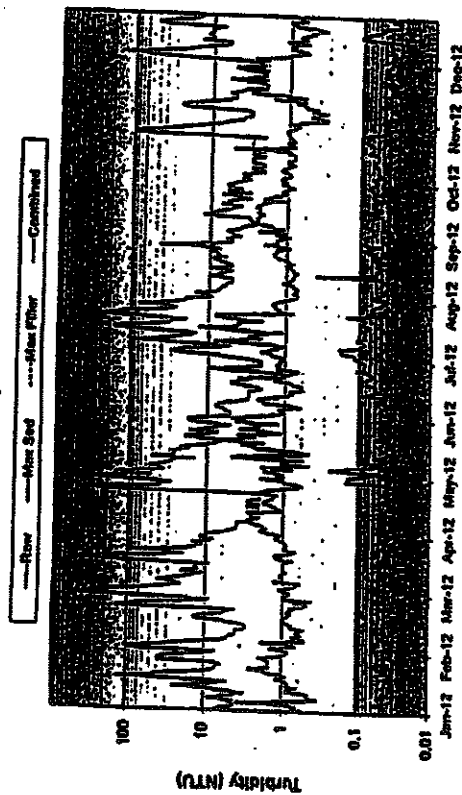
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CONSTITUTIONAL PROVISIONS

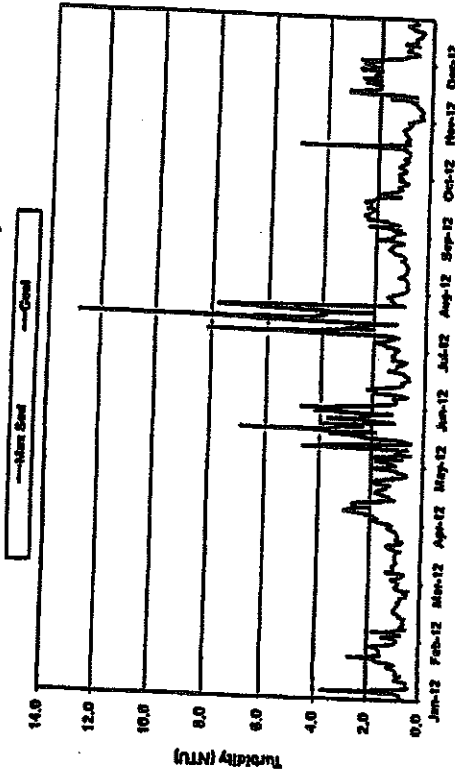
Attachment 52: 1 of 7
Typical Weirage Tank Control Screen
WEAWE: Karimulla Valley - Seismic Survey
January 8, 2013

Treatment Barrier Performance Summary

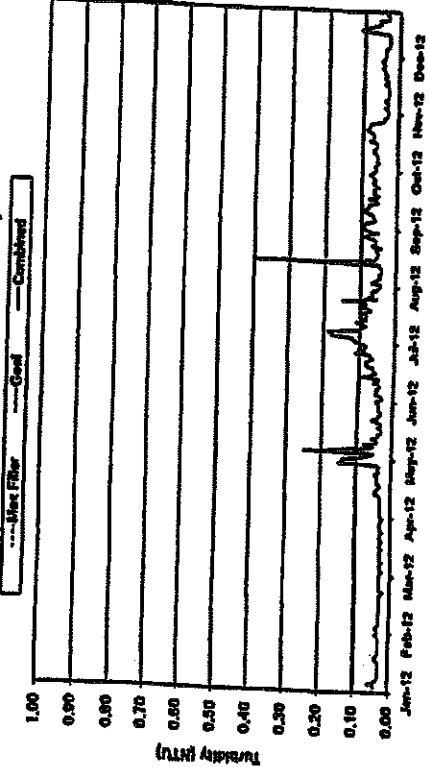
Turbidity Profile



Maximum Daily Settled Water Turbidity



Maximum Daily Filtered Water Turbidity



ANNUAL DATA	Avg	Min	Max	RSD	SS%	Opt. Goal	Reg.
Raw Turbidity	NTU	NTU	NTU	NTU	% Values	% Values	% Values
Max. Settled Turbidity							
Max. Filtered Turbidity							
Combined Filtered Turbidity							

RSD = Coefficient of Variation for two selected data sets

SS% = 95th Percentile value for data set

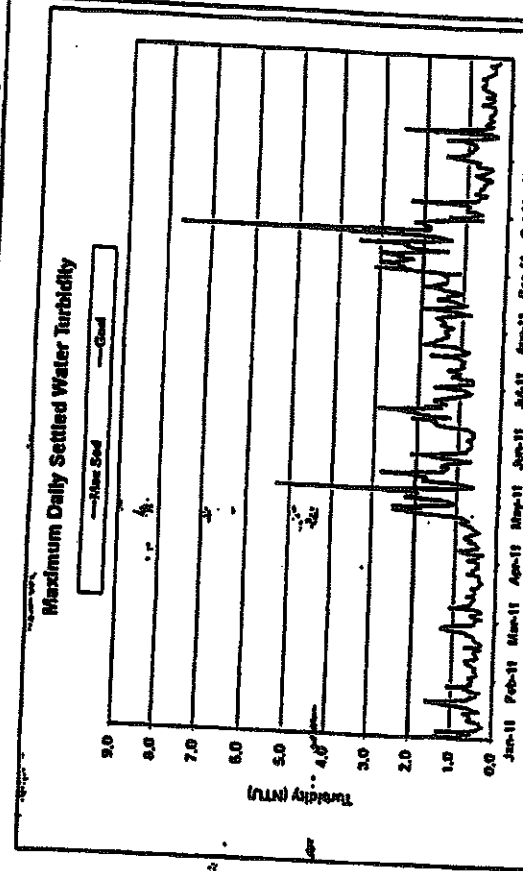
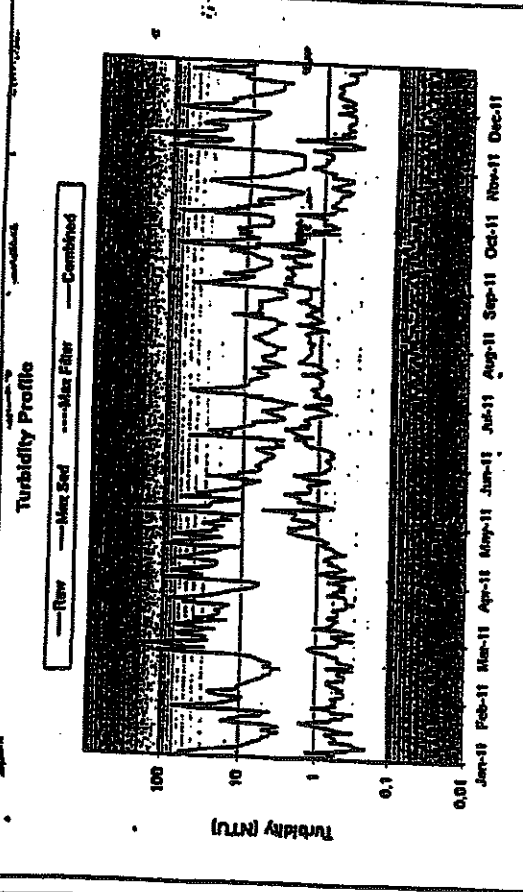
Opt. Goal = % of values in data set that are less than or equal to the selected optimization turbidity goal

Reg. = % of values in data set that are less than or equal to the regulated turbidity requirement

Attachment D1: 3 of 3
Typical Plant Control Screen
WVAVC Kanawha Valley - Sanitary Survey
January 8, 2013

WVAVC-Kanawha Valley

Treatment Barrier Performance Summary



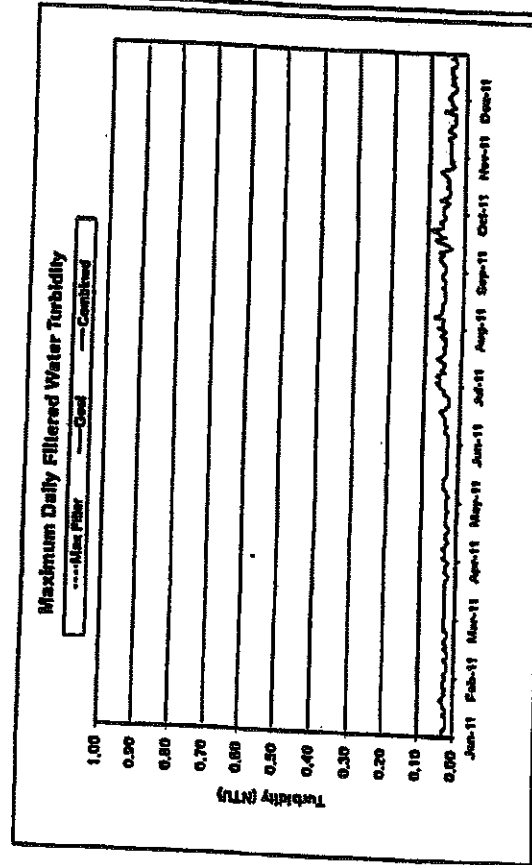
ANNUAL DATA	Avg		Min		Max		RSQ		95%		Opt. Goal		Res.	
	NTU		NTU		NTU				NTU		% Values		% Values	
Raw Turbidity											n/a		n/a	
Max. Settled Turbidity											n/a		n/a	
Max. Filtered Turbidity											n/a		n/a	
Combined Filtered Turbidity											n/a		n/a	

RSQ = Correlation Coefficient for two selected data sets

95% = 95th Percentile value for data set

Opt. Goal = % of values in data set that are less than or equal to the selected optimization turbidity goal

Res. = % of values in data set that are less than or equal to the regulated turbidity requirement



Attachment D1: 2 of 3
Typical Plant Control Screen
WVAVC Kanawha Valley - Sanitary Survey
January 8, 2013

**WATER ANALYSIS REPORT
SAINT ALBANS DISTRICT LABORATORY**

WATER SUPPLY	<u>WVAWC-Kanawha Valley</u>	PWSID #	<u>[REDACTED]</u>
ADDRESS	<u>P.O. Box 1906</u>	COUNTY	<u>Kanawha</u>
	<u>Charleston, WV 25327-1906</u>	DATE OF ANALYSIS	<u>1/8/2013</u>
COLLECTED BY	<u>Richard Snyder</u>	DATE OF COLLECTION	<u>1/11/2013</u>
<input type="checkbox"/> FINISHED WATER	<input checked="" type="checkbox"/> RAW WATER	TIME OF COLLECTION	<u>1:00 p.m.</u>
		POINT OF COLLECTION	<u>Plant raw water tap</u>

SECONDARY STANDARDS AND MISCELLANEOUS PARAMETERS

Alkalinity (PHTH) (as CaCO ₃) (mg/l)	---	---
Alkalinity (M.O.) (as CaCO ₃) (mg/l)	32	20
Calcium Hardness (as CaCO ₃) (mg/l)	---	---
Total Hardness (as CaCO ₃) (mg/l)	66	56
pH (std. units)	7.7 E / 7.3 W	7.3
*Turbidity (0.5 NTU)		---
*Iron (0.3) (mg/l)	0.079	0.09
*Manganese (0.05) (mg/l)	0.029	0.035
TDS (mg/l)	---	---
Temperature (°C)	---	---
LSI (0 = ideal, <0 = corrosive, >0 = scaling)	---	---
Chlorine Residual (mg/l) <input type="checkbox"/> free <input type="checkbox"/> total	---	---
Other Fluoride (mg/l)	---	0.10

Remarks: Iron not digested prior to testing.

Analyst Richard Snyder

*Maximum Desirable Concentrations Are Shown in Parenthesis.

**SAINT ALBANS DISTRICT LABORATORY
808 "B" STREET, SUITE G
ST. ALBANS, WV 25177
(304) 722-0611**

Attachment H1
Raw Water Analysis
WVAWC-Kanawha Valley Sanitary Survey
January 8, 2013

**WATER ANALYSIS REPORT
SAINT ALBANS DISTRICT LABORATORY**

WATER SUPPLY	<i>WVAVC-Kanawha Valley</i>	PWSID #	
ADDRESS	<i>P.O. Box 1906</i>	COUNTY	<i>Kanawha</i>
	<i>Charleston, WV 25327-1906</i>	DATE OF ANALYSIS	<i>1/11/2013</i>
COLLECTED BY	<i>Richard Snyder</i>	DATE OF COLLECTION	<i>1/8/2013</i>
		TIME OF COLLECTION	<i>1:00 p.m.</i>
<input checked="" type="checkbox"/> FINISHED WATER	<input type="checkbox"/> RAW WATER	POINT OF COLLECTION	<i>Plant lab sink</i>

SECONDARY STANDARDS AND MISCELLANEOUS PARAMETERS

Parameter	WVAVC 1/8/2013 (GOOD)	SADL 1/11/2013
Alkalinity (PHTH) (as CaCO ₃) (mg/l)	---	---
Alkalinity (M.O.) (as CaCO ₃) (mg/l)	36	14
Calcium Hardness (as CaCO ₃) (mg/l)		
Total Hardness (as CaCO ₃) (mg/l)	78	56
pH (std. units)	7.7 W / 7.3 E	7.2
*Turbidity (0.5 NTU)	0.026	---
*Iron (0.3) (mg/l)	.0002	<0.01
*Manganese (0.05) (mg/l)	0.003	0.009
TDS (mg/l)	---	---
Temperature (°C)	---	---
LSI (0 = ideal, <0 = corrosive, >0 = scaling)	---	---
Chlorine Residual (mg/l) <input checked="" type="checkbox"/> free <input type="checkbox"/> total	2.19	1.7**
Other Fluoride (mg/l)	0.90	0.70

Remarks: *Iron not digested prior to testing.*

Analyst

Richard Snyder

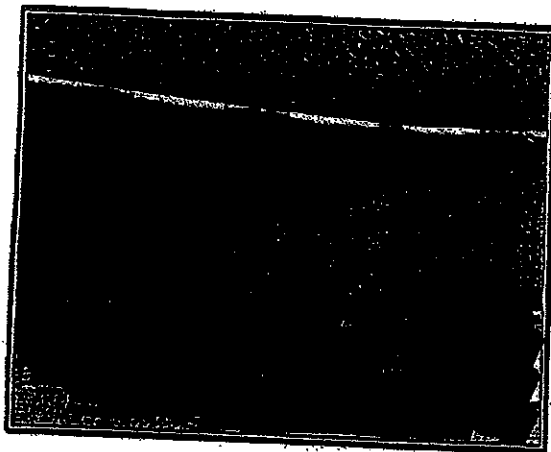
*Maximum Desirable Concentrations Are Shown in Parenthesis.

**Analyzed 1-11-2013

SAINT ALBANS DISTRICT LABORATORY

808 "B" STREET, SUITE G
ST. ALBANS, WV 25177
(304) 722-0611

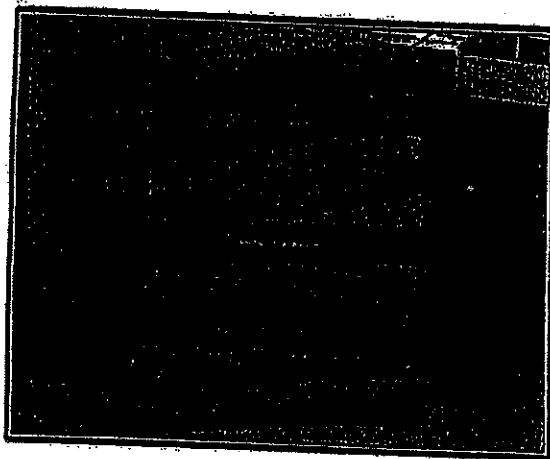
Attachment H2
Finished Water Analysis
WVAVC-Kanawha Valley Sanitary Survey
January 8, 2013



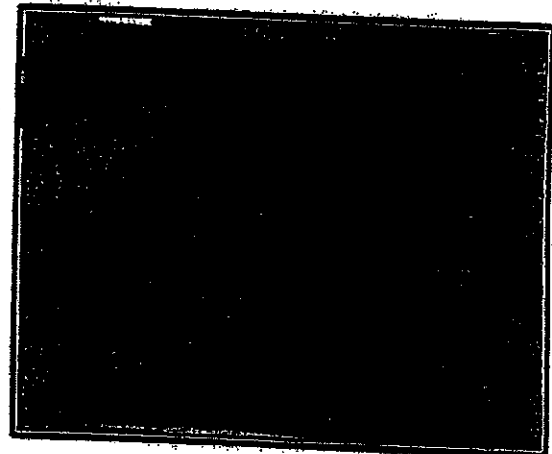
Raw Water Inlet



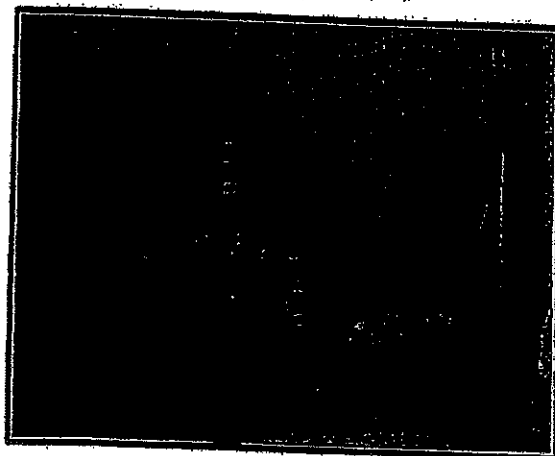
Raw Water Inlet Initial Screen



Raw Water Initial Filter



Raw Water Pumps

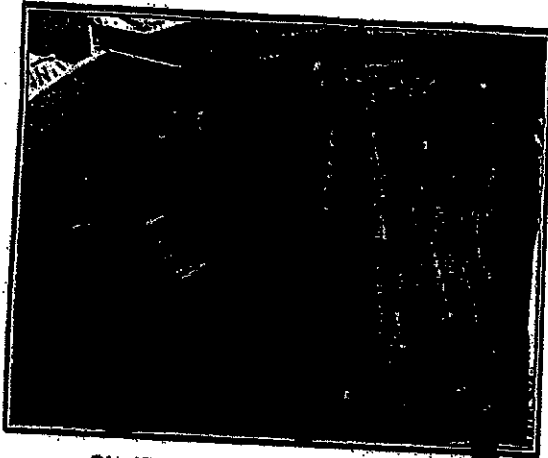


Raw Water Addition



Tube Settlers

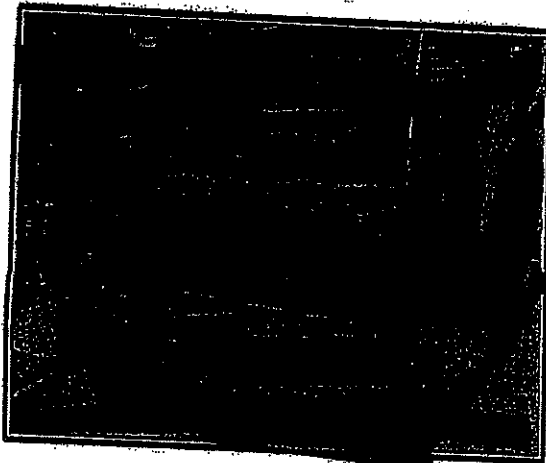
ATTACHEMNT 11
Photos
WVAWC – Kanawha Valley Sanitary Survey
November 20, 2012



Clarifier Center Sludge



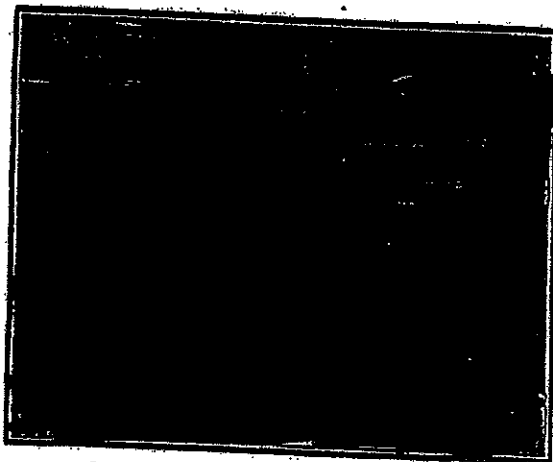
Sludge Thickener Clarifier



Sludge Press



Rapid Mix Basin

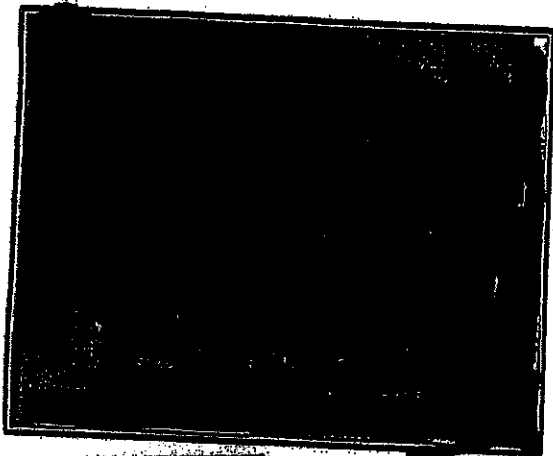


Filter Room

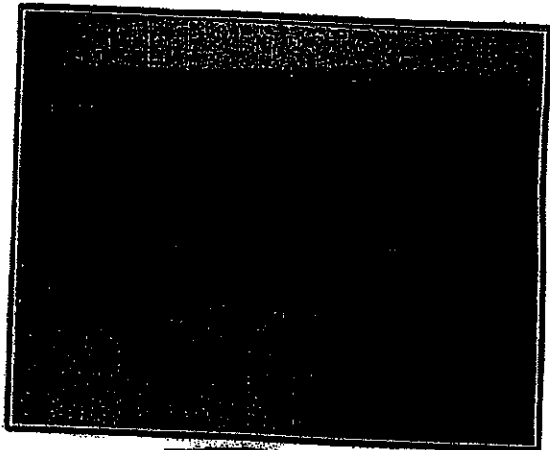


Filter Outlet Addition

ATTACHEMNT 12
Photos
WVAWC – Kanawha Valley Sanitary Survey
November 20, 2012



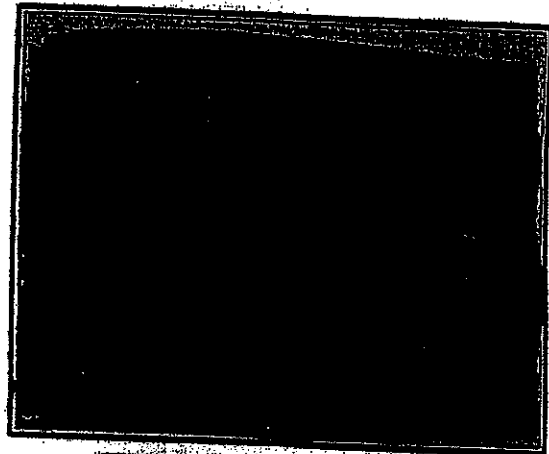
[REDACTED] Addition



[REDACTED] Feeders



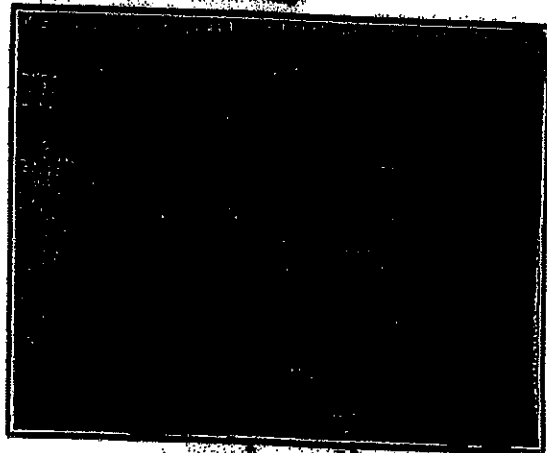
[REDACTED] Analysis at Clearwell Inlet



[REDACTED] Meter Set-Up



[REDACTED] Day Tanks

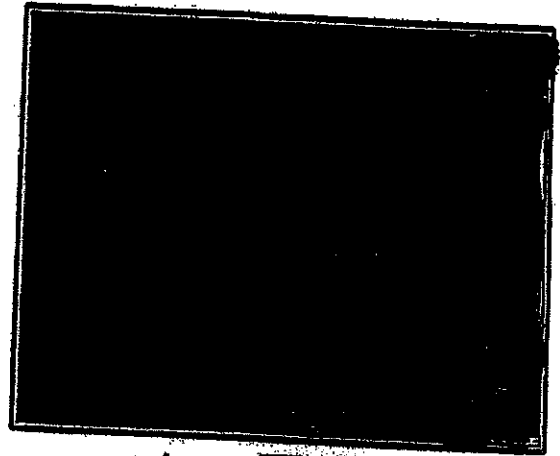


[REDACTED] Tank

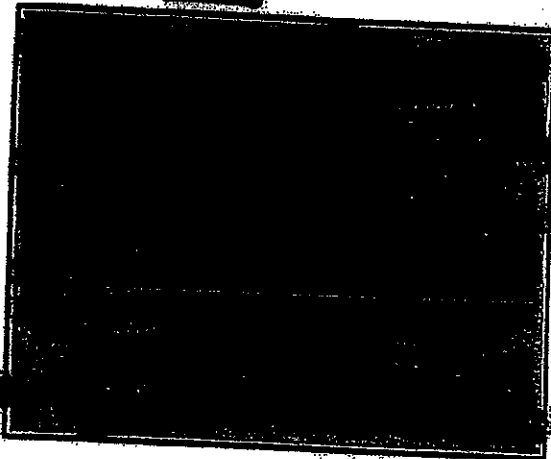
ATTACHEMNT 13
Photos
WVAWC – Kanawha Valley Sanitary Survey
November 20, 2012



 Bulk Tanks



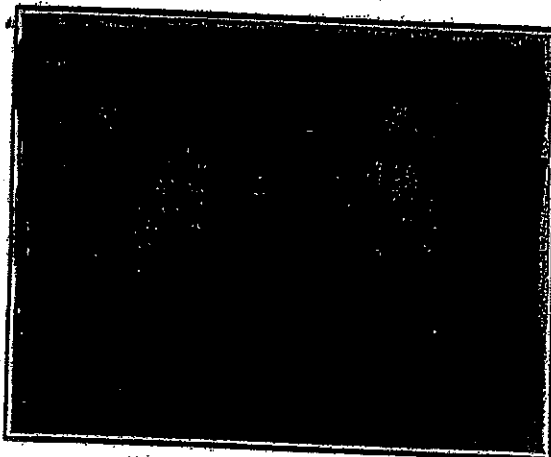
Bulk  Tanks



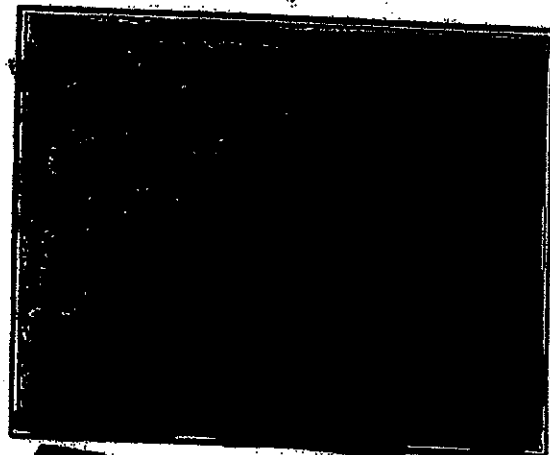
Backwash Pump



High Service Pumps



 Booster Pumps



 Booster Building Roof Flashing

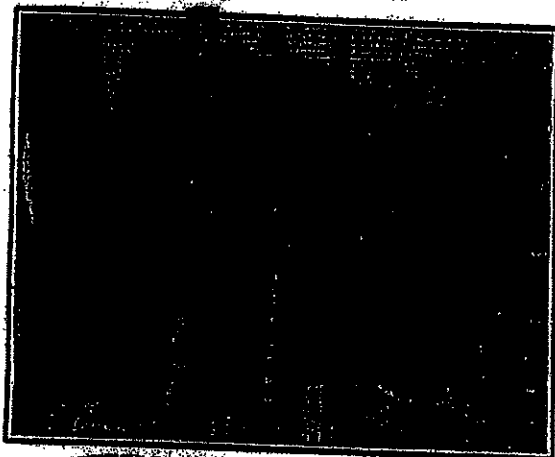
<p>ATTACHEMNT 14 Photos WVAWC – Kanawha Valley Sanitary Survey November 20, 2012</p>



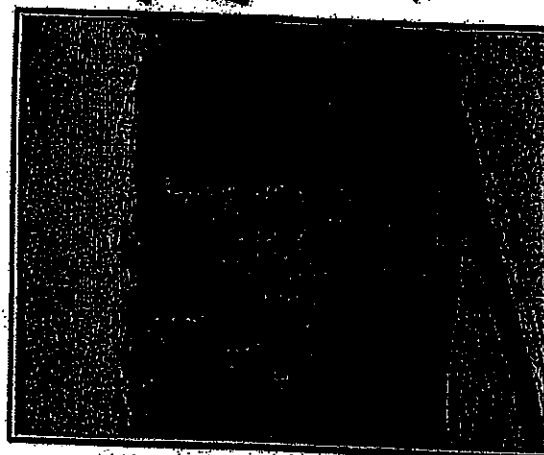
[REDACTED] Booster Pumps



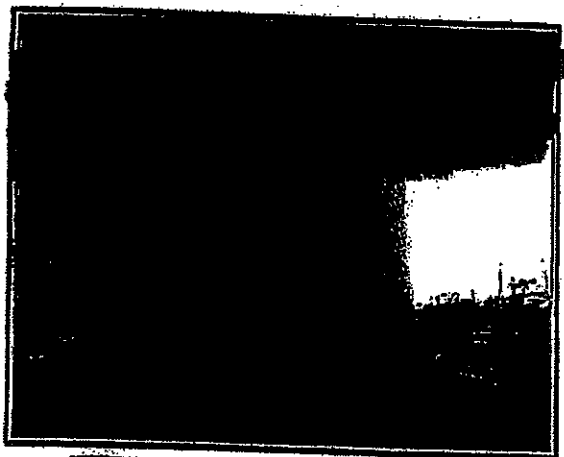
[REDACTED] Booster Pumps



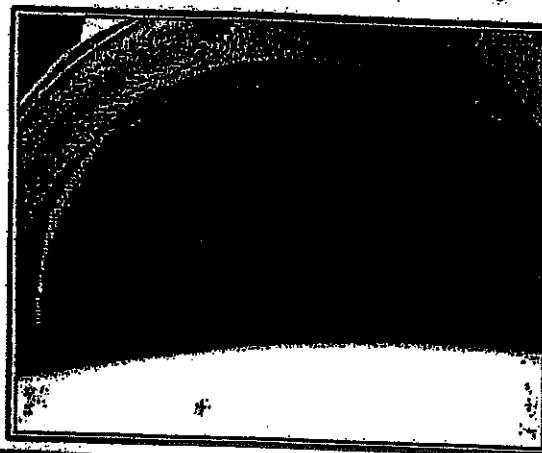
[REDACTED] Booster Pumps



[REDACTED] Booster Pump Packing



[REDACTED] Tank (1 of 2 Tanks)

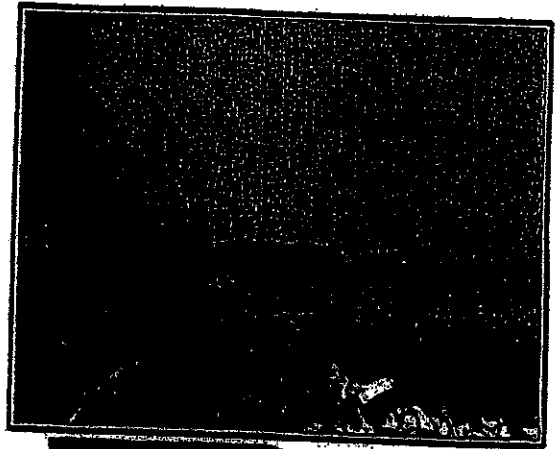


[REDACTED] Tank Overflow Screen (missing)

ATTACHEMNT 15
Photos
WVAWC – Kanawha Valley Sanitary Survey
November 20, 2012



[REDACTED] Tank



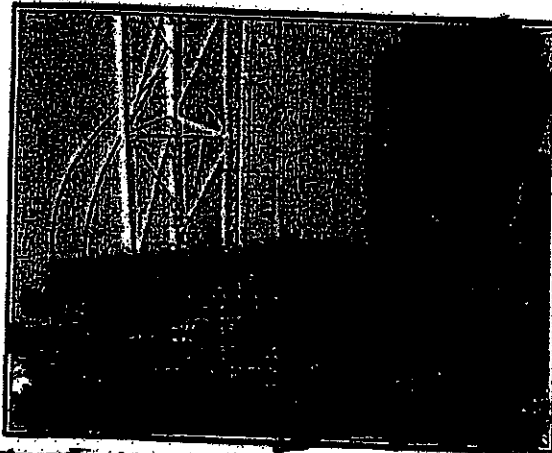
[REDACTED] Tank Grout Seal



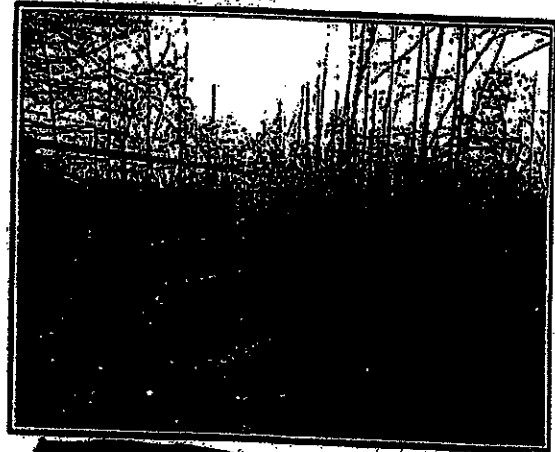
[REDACTED] Tank Overflow



[REDACTED] Tank Overflow (2)

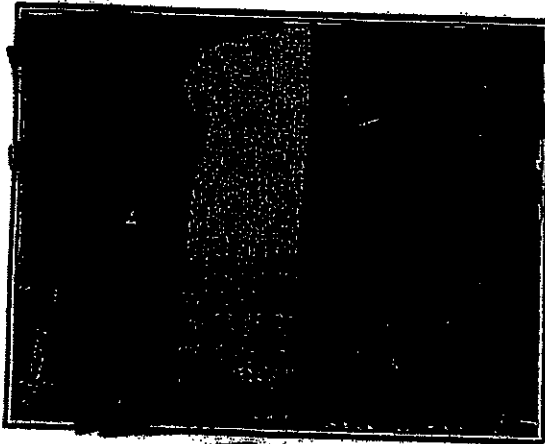


[REDACTED] Tank Broken Level Gauge

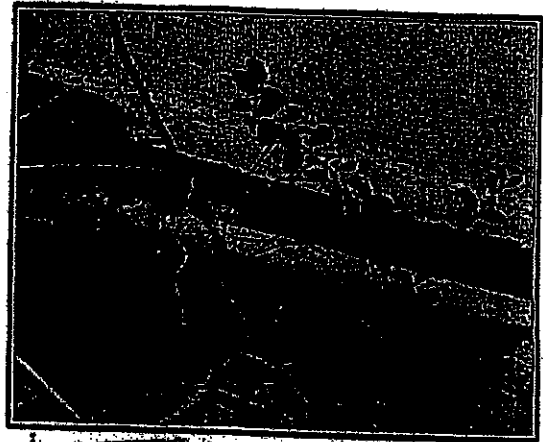


[REDACTED] Vegetation on Fence

ATTACHEMNT 16
 Photos
 WVAWC – Kanawha Valley Sanitary Survey
 November 20, 2012



[REDACTED] Tank



[REDACTED] Tank Grout Seal

ATTACHEMNT 17
Photos
WVAWC – Kanawha Valley Sanitary Survey
November 20, 2012



STATE OF WEST VIRGINIA
DEPARTMENT OF HEALTH AND HUMAN RESOURCES
BUREAU FOR PUBLIC HEALTH
OFFICE OF ENVIRONMENTAL HEALTH SERVICES

Joe Manchin III
Governor

March 31, 2006

Martha Yeager Walker
Secretary

WVAWC-KANAWHA VALLEY DIST
HOLBROOK, THOMAS W
P O BOX 1906
CHARLESTON, WV 25327

RE: Source Water Questionnaire Reply Requested by April 14, 2006
WVAWC-KANAWHA VALLEY DIST, PWSID WV3302016, KANAWHA County

Dear Administrative Contact:

The Source Water Assessment and Protection (SWAP) program was created in the 1996 amendments to the 1974 *Safe Drinking Water Act* (SDWA). This survey is intended to obtain feedback on current source water protection activities that surface water systems are currently pursuing or planning to pursue. Please complete and return the survey in the time period listed above.

Thank you for your input and assistance. Your participation in the source water protection program is imperative to protecting drinking water supplies across our state. Please contact me at 304-558-6713 or e-mail scottrodeheaver@wvdhhr.org if you have questions or require additional information.

Sincerely,

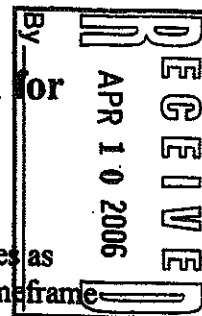
J. Scott Rodeheaver, Assistant Manager
Source Water Assessment and Protection
Environmental Engineering Division

JSR/cjj

Enclosures

Capitol and Washington Streets
1 Davis Square, Suite 200
Charleston, West Virginia 25301-1798
Telephone: 304-558-2981

WV Department of Health and Human Resources, Bureau for
Public Health
Annual Source Water Assessment and Protection Survey



Please answer the following questions as completely as possible and use additional pages as needed. Be sure to submit the completed survey and any additional pages within the time frame requested to the address provided below.

1. Basic information:

PWSID # 330201C

Public Water Supply Name WV AMERICAN WATER / KANAWHA VALLEY

Address Box 1906 CHARLESTON, WV 25327

Phone Number 304-340-2999

County KANAWHA

Administrative Contact Person Name BRETT MORGAN

Address Box 1906 CHARLESTON, WV 25327

Phone Number 304-340-2035

Email BMORGAN@WVAWATER.COM

Do you prefer to be contacted by email or mail? MAIL

Chief Operator Name RON BOGESS

Certification Number 2007000705F

Address Box 1906 CHARLESTON, WV 25327

Phone Number 304-340-2036

Email RBOGESS@WVAWATER.COM

Surface Water Intake Names(s)

ELK RIVER MP 1.0

2. What do you perceive as barriers to developing and implementing source water or watershed protection plans? Check all that apply.

- ☒ Lack of available funding ☐ Lack of technical assistance
☐ Lack of community involvement ☒ Lack of personnel resources
☐ Lack of information on source water protection

3. Would your system be interested in low interest loans from the Drinking Water State Revolving Fund for purchasing land and conservation easements within the watershed area for the purpose of source water protection? Yes ☒ No ☐ List type of activities if know:

4. Would your system be interested in low interest loans from the Drinking Water State Revolving Fund for implementing voluntary source water protection measures such as land use controls and management tools including: fencing, riparian buffers or public outreach activities? Yes ☒ No ☐

List type of activities if know:

Source Water Protection Program Surface Water Survey 2006

5. Are you currently participating in an early warning communication network?

Yes ☐ No ☒ If yes, name of network if available _____

Would you be interested in working with the other public surface water suppliers to participate in an early warning communication network? Yes ☒ No ☐

6. Upon review of land use or other activities within your source water watershed, based on your knowledge, what are the top four (4) potential threats to your water supply? (One (1) being the highest)

Land Use Activities	Ranking	Land Use Activities	Ranking
Industrial Discharges		Sediment Runoff - Agriculture	
Mining Discharges		Sediment Runoff - Timbering	1
Animal Waste from Feedlots and Farms		Sediment Runoff - Transportation Routes	
Concentrating Animal Feeding Area		Sediment Runoff - New Building	2
Combined Sewer and Sanitary Sewer Overflow (CSOs/SSOs) Discharges	3	Non-Functioning Septic (on-site sewage disposal) Systems or Straight Pipe Discharges	
Pesticides and Fertilizers from Agricultural Fields		Pasture (grazing)	
Municipal Sewage Discharges		Transportation Routes	
Spills and Leaks of Petroleum Products and Industrial Chemicals		Polluted Runoff from Storm Water or Snowmelt in Urban and Suburban Areas	4
Recreational Boating Areas		Flooding	
Others			

7. Please identify any local source water protection activities on the list below that you are planning to do with a (P), currently doing with a (C), or have interest in doing with an (I) in your area.

- ☒ Risk Management Plans
- ☒ Emergency Response Plans
- ☐ Contingency Plans
- ☐ Participate in an early warning communication network
- ☐ Stream monitoring beyond the normal regulatory requirements
- ☐ Land use measures (i.e. prohibition of various land uses in area, special permitting of land uses, transfer of development rights, growth controls, etc.)
- ☐ Land or easement acquisitions
- ☒ Public education and outreach activities (i.e. signage and stencils for visual awareness of protection areas, and newspaper, radio or TV ads about drinking water)
- ☒ Participate in a local source water or watershed committee
- ☒ Review your watershed for potential contaminant sources
- ☐ Surface water flow modeling.

Source Water Protection Program Surface Water Survey 2006

List any additional ideas or explanations of possible source water activities for your area in the space provided below.

1) INVENTORY OF COAL IMPOUNDMENTS / AMD SITES ALONG WATERSHED

This survey was completed on 4-4-06
Date

Date _____

by

y Daniel C. Pitt
Signature

Signature

DAVID C. PETERS

Printed Name _____

WR SUPERVISOR

Position Title

200600610 F

Operator Certification Number

THANK YOU!!!

THANK YOU!!!

The Source Water Assessment and Wellhead Protection Program is administered by the Department of Health and Human Resources, Bureau for Public Health. The information provided will be used to update and maintain the currently approved wellhead/source water protection plans and related projects. If you have any questions or comments regarding this survey, please contact Scott Rodeheaver at:

Office of Environmental Health Services

Capitol and Washington Streets

1 Davis Square, Suite 200

Charleston, WV 25301-1798

Phone: 304.558.6713 Fax: 304.558.0324

Email: scottrodeheaver@wvdhhr.org

Website at <http://www.wvdhhr.org/oehs/eed/swap/>

Payne, Judy L

From: Fucillo, Rocco S
Sent: Friday, April 12, 2013 11:43 AM
To: Huffman, Randy C
Cc: Curtis, Chris H; Dadisman, Marsha A; Jordan, Molly M; Harich, Christopher H; Bailey, Beatrice P; Kemp, Ruth F; Ledford, Joyce A; Jackson, Carol L; Kerley, Neal R; Fucillo, Rocco S; Payne, Judy L
Subject: U.S. Chemical Safety Board Recommendations
Attachments: Chemical Study Resolution due to accident at the Bayer CropScience.doc
Importance: High

Secretary Huffman,

As you are aware, in August 2008, there was an accident at the Bayer CropScience facility in Institute which resulted in the fatality of two workers. Subsequent to that accident, the U.S. Chemical Safety and Hazard Investigation Board conducted an investigation and made numerous recommendations; including recommendation for the West Virginia Department of Environmental Protection and the Department of Health and Human Resources to "Work with the Director of the Kanawha-Charleston Health Department to ensure the successful planning, fee collection, and implementation of the Hazardous Chemical Release Prevention Program...including the provision of services to all eligible facilities in the State."

Shortly after receipt of that recommendation, there was considerable discussion within the West Virginia Department of Health and Human Resources (DHHR) and including your staff, specifically Mike Dorsey, about the logistics and feasibility of establishing such a program. Since DHHR has neither the capacity, resources, nor expertise to undertake such a program, and because several other state, federal and local agencies are also recommended to take action (and in fact have some responsibility in this arena), we believe the appropriate course of action would be a legislative study on the need for a program of this nature.

To that end, my staff have drafted the attached study resolution. I believe Mr. Dorsey has had the opportunity to provide input into its development, but wanted to be sure you are in agreement before discussions commence with the Governor's office and the legislature. Our plan is to introduce the study resolution next legislative session.

I would be happy to discuss this further or provide additional information at your request.

Rocco S. Fucillo, Cabinet Secretary
Department of Health and Human Resources
One Davis Square, Suite 100 East
Charleston, West Virginia 25301
Telephone: (304) 558-0684

1 HOUSE CONCURRENT RESOLUTION NO. ____

2 (By _____)

3
4
5
6 Requesting the Joint Committee on Government and Finance study
7 the need for a specialized hazardous chemical release
8 prevention program for the regulation, safety planning and
9 oversight of chemical facilities located in the State of
10 West Virginia.

11 WHEREAS, On August 28, 2008, an explosion occurred at the
12 Bayer CropScience facility located in Institute, West Virginia,
13 that resulted in the loss of lives, injuries to employees,
14 contract workers, volunteer fire firefighters and property, and
15 required local residents to shelter-in-place for more than three
16 hours; and

17 WHEREAS, As a result of the Bayer CropScience accident the
18 United States Chemical Safety and Hazard Investigation Board
19 conducted an investigation into the matter and compiled an
20 investigative report in January 2011; and

21 WHEREAS, The investigative report included a recommendation
22 that the Director of the Kanawha-Charleston Health Department
23 establish a hazardous chemical release prevention program that

1 would require direct participation by the chemical industry,
2 enhance the prevention of accidental releases of highly
3 hazardous chemicals, optimize responses in case of emergencies,
4 and require facility safety, planning and assistance by an
5 independent entity on a state or local level; and

6 WHEREAS, The investigative report further recommended that
7 the new program study and evaluate the possible applicability of
8 the experience of similar programs throughout the country that
9 focus on the prevention of chemical accidents and that require
10 regular monitoring, strict oversight and enforcement of federal
11 and state safety requirements for chemical facilities; and

12 WHEREAS, The chemical industry in West Virginia is
13 currently regulated, inspected and monitored by the federal
14 Occupational Safety and Health Administration and the United
15 States Environmental Protection Agency, as well as the West
16 Virginia Department of Environmental Protection; and

17 WHEREAS, The safety and welfare of the citizens of West
18 Virginia, particularly those living in areas that include
19 chemical facilities, must be balanced with economic and
20 regulatory considerations to ensure that the regulation and
21 oversight of the chemical industry in West Virginia will not be
22 duplicative, costly or overly burdensome to State and local

1 governments or the chemical facilities operating in this State;
2 and

3 WHEREAS, In order to ensure that the development of a new
4 program is needed, practical, affordable and realistic in West
5 Virginia, a broad group of stakeholders must participate in a
6 study of the relevant issues and related costs; study and review
7 programs in other states; determine whether the other state
8 programs would address the needs, health and safety concerns and
9 other factors relevant to West Virginia; determine whether the
10 programs in other states are duplicative of the existing
11 oversight and regulatory powers of current state or federal
12 agencies; review the possibility of developing similar programs
13 in West Virginia, if needed; and as an alternative, study the
14 feasibility of strengthening and funding the regulatory and
15 oversight powers of existing programs; and therefore, be it

16 *Resolved by the Legislature of West Virginia:*

17 That the Joint Committee on Government and Finance be
18 requested to study existing chemical hazard prevention and
19 regulatory programs throughout the country; study and evaluate
20 the need for an additional independent oversight program in West
21 Virginia that will regulate the chemical facilities located in
22 this state, enhance the prevention of accidental releases of
23 highly hazardous chemicals and optimize responses to such

1 emergency occurrences; to determine whether any such program
2 would be duplicative of existing federal or state programs; to
3 study and determine the practicality, cost and feasibility of
4 establishing a chemical hazard prevention and regulatory program
5 on a state or local basis; and to study whether there are
6 alternative means of increasing the safety and confidence of the
7 communities, workforce and state and local authorities affected
8 by the existence of the chemical facilities in this State; and,
9 be it

10 *Further Resolved*, that the Joint Committee on Government
11 and Finance report to the regular session of the Legislature,
12 2014, its findings, conclusions and recommendations, together
13 with drafts of any legislation necessary to effectuate its
14 recommendations, and, be it

15 *Further Resolved*, That the expenses necessary to conduct
16 the study, to prepare a report and to draft necessary
17 legislation be paid from legislative appropriations to the Joint
18 Committee on Government and Finance.

1 S:\secretary\Secretary Fucillo\104 - legislation\Chemical Study Resolution due to accident at the Bayer CropScience.doc

CERTIFICATE OF SERVICE

I, Christopher S. Dodrill, Assistant Attorney General and counsel for the Respondents Karen L. Bowling, Secretary of the West Virginia Department of Health and Human Resources, and Letitia Tierney, Commissioner of the Bureau for Public Health, hereby verify that I have served a true copy of the "Appendix of DHHR Respondents" upon the counsel listed below by depositing said copy in the United States mail, with first-class postage prepaid, on this 12th day of March, 2014, addressed as follows:

Jennifer S. Wagner, Esq.
Bren J. Pomponio, Esq.
Mountain State Justice, Inc.
1031 Quarrier Street, Suite 200
Charleston, WV 25301
Counsel for Petitioners

J. Michael Becher, Esq.
Joseph M. Lovett, Esq.
Appalachian Mountain Advocates
P. O. Box 507
Lewisburg, WV 24901
Counsel for Petitioners

Charles S. Driver, Esq.
Jason E. Wandling, Esq.
West Virginia Department of Environmental Protection
Office of Legal Services
601 57th St. SE
Charleston, WV 25304
*Counsel for Respondent Randy Huffman, Secretary,
West Virginia Department of Environmental Protection*


CHRISTOPHER S. DODRILL

