

## **5.01 Introduction**

The assessment of environmental characteristics of the planning area is a critical part of a Facilities Plan or revision to an existing plan. Paintsville Utilities has two existing Wastewater Regional Facilities Plans. The Paintsville Utilities Regional Wastewater Facilities Plan was prepared in 2005 and the Honey Branch Regional Wastewater Facilities Plan was completed in 1998. This new Combined Regional Wastewater Facility Plan represents some adjustment to and continuation of the previous plans into the next 20 years. To best plan for future needs, it is essential to understand the basics of the area.

## **5.02 Physical Characteristics of Area**

Based on data from the Soil Survey of Floyd and Johnson Counties, Kentucky as provided by the United States Department of Agriculture Natural Resources Conservation Service, the planning area is set within the Big Sandy River Valley located in the eastern most part of Kentucky. In addition, this planning area is situated primarily around the City of Paintsville in the center of Johnson County.

### **A. Topography**

Johnson County topography has some significant change in landscape from steep slopes and high, sharp-crested ridges to lower, less steep, more rounded forms. This is due to the majority of the area being within the Pennsylvania-age Breathitt formation with the exception of the Paint Creek Valley where Lee formations occur. The elevation ranges within Johnson County from about 400 feet to 1,200 feet above mean sea level.

B. Geology

Out crops within the Paint Creek Valley of Johnson County are considered part of the Lee formations and has prevented deep cutting of the valleys within the drainage basin due to its ability to resist corrosion. The remaining areas surrounding the Paint Creek Valley consist predominately of the lower Breathitt formations composed mainly of clay shale, silty shale, and coal beds. This formation is located primarily in the central and northern parts of Johnson County. The southern part of the County connects directly to Floyd County where middle and upper Breathitt formations are also known to occur.

C. Soils

Within the Paintsville planning area boundary of Johnson County, there are a few different general soil types. Shelocta-Grigsby-Stokly soil makes up the central and majority of this planning area. It is considered to be very deep to deep soils that range from well drained to somewhat poorly drained with moderately steep to nearly level soils that have a loamy subsoils in foot slopes, flood plains, and colluvial fans. The remaining western part of the planning area consists of Fred creek-Hazleton-Shelocta-Gilpin soils that are regarded as being moderately to very deep, well-drained, very steep to sloping soils with a loamy subsoil located on crests, mountainsides, noses, benches, in coves, and foot slopes. Adjacent to the Shelocta-Grigsby-Stokly soils surrounding Levisa Fork of the Big Sandy in slopes. Adjacent to the Shelocta-Grigsby-Stokly soils surrounding Levisa Fork of the Big Sandy in broad valleys in the Udothents-Allegheny-Nelse soils. This soil type is a gently sloping, very deep, well-drained soil that has underlying layers of loamy material with loamy subsoil and can be found in stream terraces, colluvial fans, reconstructed valleys and stream banks. The remaining parts of the planning area to the north and south are deemed to be Hazleton-Fredscreek-Dekalb-Marrowbone soils. This category of soil is moderately to very deep and well drainage due to the steep to

very steep nature of the soil, which also contains loamy subsoil and can be identified on mountainsides, crests, benches, noses, and in coves.

### **5.03 Hydrology**

Hydrology is the study of water in the atmosphere above and below ground. This includes such factors as precipitation, surface and groundwater flow and storage, and evaporation. The following addresses the waters in the vicinity of the planning area.

#### **A. Surface Water**

The planning area is primarily well drained to Paint Creek, John's Creek and the Levisa Fork of the Big Sandy River. Paint Creek flows directly through the City of Paintsville and is controlled by the discharge from the United States Corps of Engineers (USCOE) Paintsville Lake Dam. Flow in John's Creek is controlled by the discharge from USCOE Dewey Lake Dam. The Levisa Fork of the Big Sandy River lies mostly on the eastern side of Paintsville and almost equally divides the combined planning area. At the time this report is being written, there is only one water treatment plant in the area that receives raw water from the Levisa Fork of the Big Sandy River. The current Paintsville Water Treatment Plant intake is located approximately 100 feet upstream of the Paintsville Wastewater Treatment Plant's discharge. A new regional water treatment plant located at Paintsville Lake was placed into operation in 2015. This new plant replaced an aging plant whose raw water source was the Big Sandy River.

#### **B. Surface Water Quality**

Surface water quality was addressed in the *Kentucky Division of Water's 2010 Integrated Water Quality Report*. According to the report the streams within the Planning Area that have been assessed by the Division of Water for support of aquatic life, fish consumption, Swimming and drinking water have been classified as Waters Supporting Designated Uses.

The planning area surface waters are classified as warm water aquatic habitat with primary/secondary contact recreation. Rain is distributed throughout the year with occasional snowfall during the winter months. Certain locations within the planning area are better suited than other places for agriculture and other human activity due to steep slopes and floodplains. **Table 5.03** is a list of Impaired Streams in the proposed planning area as reported in the Report to Congress on the condition of Water Resources in Kentucky, 2010.

#### **5.04 Agricultural Land Use**

The Soil Survey of Floyd and Johnson Counties, Kentucky is written by the United States Department of Agriculture Natural Resources Conservation Service and provides agricultural land use information with regard to soil management in Johnson County. Since the planning area is located within Johnson County, the data provided for the county is applicable to this planning area. Currently, most agriculture is directed toward livestock and farming.

##### **A. Cropland**

Due to the mountainous topography, a very small amount of land use within the planning area is devoted to agriculture uses. Uses such as production of corn or tobacco occupy the most use. Tracts are typically less than 50 acres and are located mostly on creek bottom land.

**Table 5.03**  
**List of Impaired Streams in**  
**Johnson County, Kentucky**

Waterbody & Segment	Total Size	Watershed	Basin	Support Status*	Designated Uses**	Causes	Sources
Banjo Branch 0.0 to 1.5	1.5 Mi.	Sandy/Tygarts	Big Sandy River	PS	WAH	Sedimentation/Siltation	Agriculture; Channelization; Loss of Riparian Habitat; Non-point Source
Barnetts Creek 0.0 to 1.6	1.6 Mi.	Sandy/Tygarts	Big Sandy River	PS	WAH	Sedimentation/Siltation	Petroleum/Natural Gas Activities; Surface Mining
Buffalo Creek 0.0 to 1.5	1.5 Mi.	Sandy/Tygarts	Big Sandy River	NS	WAH/PCR	Chlorine; E. coli; Ammonia; Dissolved Oxygen; Fecal Coliform; Total Suspended Solids	Package Plant or Other Permitted Small Flows Discharges
Greasy Creek 0.0 to 4.7	4.7 Mi.	Sandy/Tygarts	Big Sandy River	NS	WAH	Nutrient/ Eutrophication Bio. Indicators; Organic Enrichment Bio. Indicators; Sedimentation/ Siltation	Agriculture; Coal Mining; Municipal Point Source Discharges
Jennys Creek 5.3 to 10.8	5.5 Mi.	Sandy/Tygarts	Big Sandy River	NS	WAH	Sedimentation/ Siltation	Sand/Gravel/Rock Mining or Quarries; Site Clearance; Surface Mining
Jennys Creek 0.0 to 3.1	3.1 Mi.	Sandy/Tygarts	Big Sandy River	PS	WAH	Sedimentation/ Siltation; Specific Conductance	Channelization; Coal Mining; Highway/Road/Bridge Runoff; Loss of Riparian Habitat
Johns Creek 0.0 to 5.8	5.8 Mi.	Sandy/Tygarts	Big Sandy River	PS FS	WAH PCR	Sedimentation/ Siltation; Specific Conductance; Total Dissolved Solids	Impacts from Hydrostructure Flow Regulation/Modification; Sand/Gravel/Rock Mining or Quarries; Surface Mining; Upstream Impoundments
Miller Creek 0.0 to 6.4	6.4 Mi.	Sandy/Tygarts	Big Sandy River	NS	WAH	Nutrient/ Eutrophication Bio. Indicators; Organic Enrichment Bio. Indicators; Sedimentation/ Siltation; Total Dissolved Solids	Loss of Riparian Habitat; On-site Treatment Systems; Post-development Erosion & Sedimentation; Surface Mining
Mudlick Creek 3.7 to 4.1	0.4 Mi.	Sandy/Tygarts	Big Sandy River	NS	PCR	E. coli; Fecal Coliform	Package Plant or Other Permitted Small Flows Discharges
Paint Creek 0.0 to 7.1	7.1 Mi.	Sandy/Tygarts	Big Sandy River	NS	CAH/PCR	E. coli; Fecal Coliform; Nutrient/ Eutrophication Bio. Indicators; Organic Enrichment Bio. Indicators; Sedimentation/ Siltation; Water Temperature	On-site Treatment Systems; Post-development Erosion & Sedimentation; Unspecified Domestic Waste; Woodlot Site Clearance
Waterbody & Segment	Total Size	Watershed	Basin	Support Status*	Designated Uses**	Causes	Sources

Paint Creek 7.1 to 8.3	1.2 Mi.	Sandy/Tygarts	Big Sandy River	PS  NS	CAH  PCR	Fecal Coliform; Nutrient/ Eutrophication Bio. Indicators; Organic Enrichment Bio. Indicators; Sedimentation/ Siltation; Water Temperature Sedimentation/Siltation	On-site Treatment Systems; Post- development Erosion & Sedimentation; Unspecified Domestic Waste; Woodlot Site Clearance
Toms Creek 0.0 to 8.0	8.0 Mi.	Sandy/Tygarts	Big Sandy River	PS	WAH		Sand/Gravel/Rock Mining or Quarries; Surface Mining
UT of Barnetts Creek	0.1 Mi.	Sandy/Tygarts	Big Sandy River	NS	WAH	Ammonia; Dissolved Oxygen	Package Plant or Other Permitted Small Flows Discharges
UT of Johns Creek 0.0 to 0.2	0.2 Mi.	Sandy/Tygarts	Big Sandy River	NS	WAH/PCR	Ammonia; Fecal Coliform	Package Plant or Other Permitted Small Flows Discharges
UT of Stave Branch 0.0 to 0.5	0.5 Mi.	Sandy/Tygarts	Big Sandy River	NS	WAH	Ammonia; Dissolved Oxygen; Total Suspended Solids	Package Plant or Other Permitted Small Flows Discharges
Williams Fork 0.0 to 0.2	0.2 Mi.	Sandy/Tygarts	Big Sandy River	NS	WAH	Ammonia	Package Plant or Other Permitted Small Flows Discharges

Source: *Integrated Report to Congress on the Condition of Water Resources in Kentucky, 2010* (305(b) and 303(d))

\*NS = Non-Support, PS = Partial Support, FS = Full Support

\*\*WAH = Warmwater Aquatic Habitat, CAH = Coldwater Aquatic Habitat, PCR = Primary Contact Recreation, SCR = Secondary Contact Recreation, FC = Fish Consumption

B. Pasture

Raising of livestock is one of the more lucrative agricultural practices for Johnson County. Pasture land is mostly on cleared hill sides or creek bottom lands.

C. Woodlands

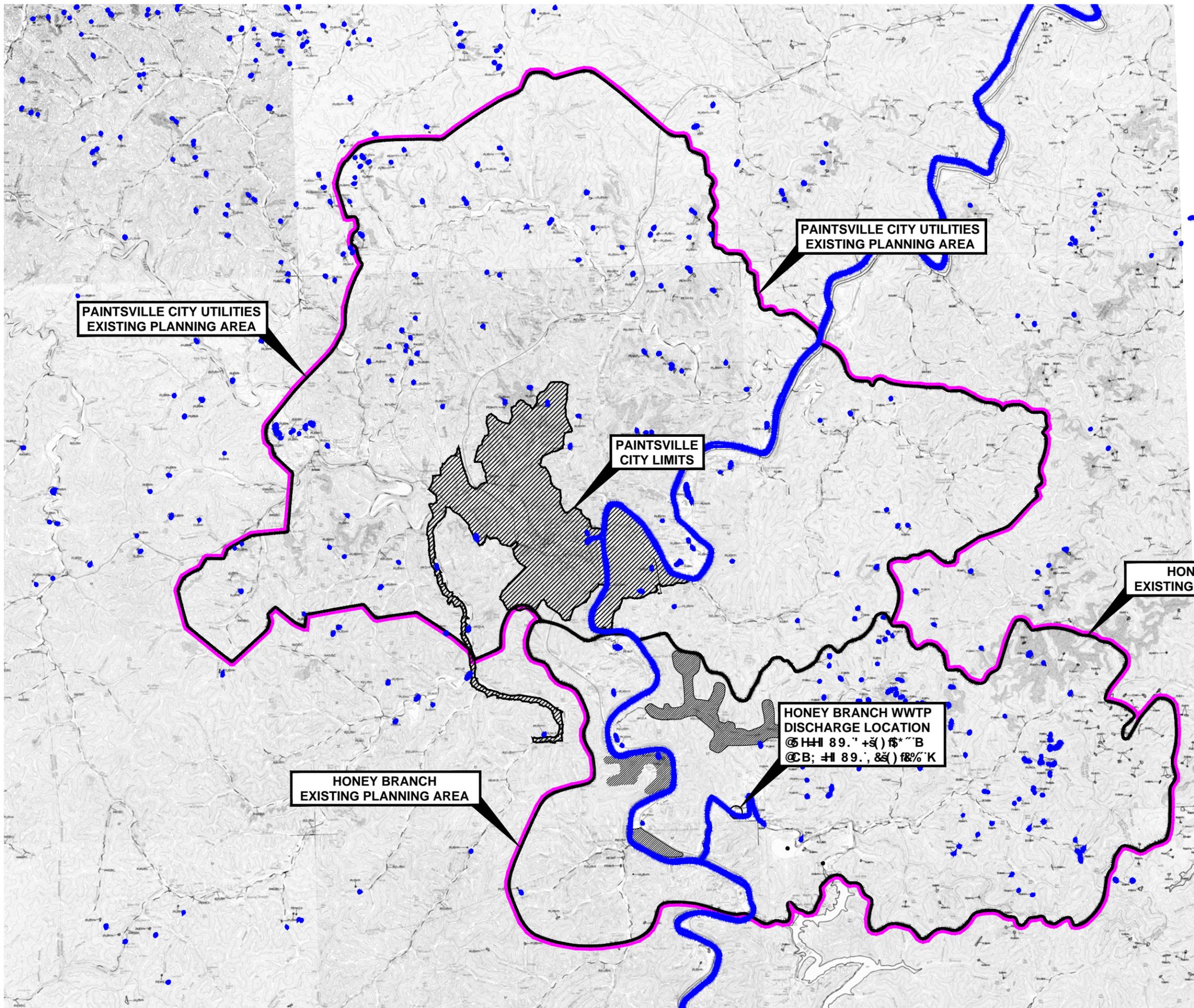
The majority of land in Johnson County including those areas with very steep slopes has remained woodlands and consists of approximately 135,000 acres.

**5.05 Wetlands in Planning Area**

The U.S. Department of the Interior through the U.S. Fish and Wildlife Services provides National Inventory Wetlands Maps. **Figure 5.05** shows a map with known locations of wetlands within the project area. No wetlands will be impacted by construction of planned construction of collection systems or treatment facilities within the planning area.

**5.06 Septic Tanks, Straight Pipes Discharge and Other Failing Systems**

The majority of residences outside the Paintsville city limits and within the planning area utilize on-site treatment systems (septic tanks & leach fields). There are a few small private package plants scattered throughout the proposed planning areas that will be decommissioned once sewers become available to that particular area. Package plants have been eliminated in several areas over the past couple of years and others will be eliminated when sewers are available over the next 20 years.



PAINTSVILLE CITY UTILITIES  
EXISTING PLANNING AREA

PAINTSVILLE CITY UTILITIES  
EXISTING PLANNING AREA

PAINTSVILLE  
CITY LIMITS

HONEY BRANCH  
EXISTING PLANNING AREA

HONEY BRANCH  
EXISTING PLANNING AREA

HONEY BRANCH WWTP  
DISCHARGE LOCATION  
@ H+I 89.' +s() \$\*''B  
@CB; +H 89.; &s() f&%'K

**FIGURE 5.05**

**COMBINED PLANNING AREAS  
WETLANDS MAPS**

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Through previous communication with the Environmental Supervisor for the Johnson County Health Department Environmental Services, it was determined that numerous areas within the planning area have problems including failing septic tank systems and straight pipes. This letter also suggests that most problems with the septic tank systems in the planning area are due to the poor percolating soil conditions (types of soil), small lot sizes, and older systems. High water tables in the area can also limit the effectiveness of the septic tanks/leach fields. Within this planning area, the following sub-areas along waterways not only have septic tank problems but are also known to have straight pipes:

Little Mud Lick, Davis Branch, Thealka, Route 40 from Davis Branch to the Martin County line, Hollows including, but not-limited-to, Kite Hollow, and un-sewered areas along Route 40 West from Paintsville to the Magoffin County line, etc.

### **5.07 Air Quality**

Johnson County is listed in the Kentucky Administrative Regulations (401 KAR 51:0101) as being in the attainment of the air quality standards for the following: particulates, carbon monoxide, and sulfur dioxide, ozone and nitrogen oxide.

### **5.08 Proposed Projects Impact on Environment**

Overall the construction of the projects will have a positive impact on the existing environment. The consolidation of the two sewage treatment facilities and the upgrade in the treatment process will insure that the plant discharge will meet limits and reduce the possibility of pollution of the area streams. This will also result in a positive impact on fish and wildlife in the area. The extension of sewer service to areas currently being served by septic systems will help to eliminate the pollution of groundwater and will have a positive impact on the soils. The majority of the construction activities will occur in previously disturbed areas so as not to impact archaeological or historical resources.

## 6.01 Paintsville Collection System

The existing Paintsville wastewater collection and conveyance system consists of conventional gravity sewer system that drains to various pumping stations for further conveyance. The existing gravity sewers are vitrified clay and PVC pipes with concrete manholes for maintenance access. Due to the age of the system and cross connections with the storm system, excessive inflow and infiltration (I/I) is currently experienced during wet weather. During heavy rain events, the additional flow to the plant can exceed 1.5 million gallons per day. The I & I reduction program recommended as a part of this report is anticipated to reduce the existing inflow and infiltration considerably.

The collection system consists of 16 pumping stations that direct the flow to the treatment plant. Detailed information on these pumping stations can be found in **Figure 6.01-1**. Limits of service areas served by these pumping stations are shown in **Figure 6.01-2**. The Depot Road, Robin Hill and Island Creek Pumping Stations discharge directly to the treatment plant. Island Creek's flow enters the WWTP

**The maximum rate of flow to the WWTP is directly related to the pumping capacities of these pumping stations.**

The Depot Road Pumping Station is the largest station in the system. It receives flow from several other stations and transfers sewage directly to the treatment plant. The station was originally constructed in 1965 and received upgrades in 1987 and 2006. Each of the three pumps installed in the station has a capacity of 1000 gallons per minute. The station is capable of running two of the three pumps at the same time. The amount of flow with both pumps running is restricted by the 10 inch diameter force main. Currently with 2 pumps running

Paintsville WWTP Lift Station Name NPDES: KY0020630	Type	Flow (gpm)	TDH (feet)	# of Pumps	Pump HP	Wet Well Diameter (feet)	Force Main Size (inches)	Force Main (lf)	Pump Vendor Manufacture	DIA Size (inches)	Phase	Date of Startup
Clifton Horne	Submersible	150	49	2	10	6	4	953	Myers	4	3	2010
Robin Hill	Submersible	180	47	2	10	6	6	1941	Myers	6	3	2010
Depot Road Paint Creek Main LS	Submersible	1000	134	3	83	12	10	1876	KSB			2006
Paintsville WWTP Drainage LS	Submersible	400/600	35/40	2	7.5	8	8		Hydromatic			1986-1987
Paintsville WWTP Oxidation Ditches	Submersible	750	37	1 Two Total	15	N/A	6		Hydromatic			
North 23/460 (Lowes)	Submersible	250	61.4	2	15	10	6	5350	Hydromatic			1998
Island Creek	Submersible	400	28	2	7.5	8	6	5683	Hydromatic			1975
Flat Rock Branch	Grinder	10	44.2	2	2	4	2	651	Hydromatic			1985-1986
Green Town	Submersible	100	27	2	5	6	4	2251	Myers			2003
KY 1107 (Golf)	Grinder	35.7	23.1	2	5	4	4	2259	Hydromatic		1	2003
Paintsville Lake	Submersible	80	134	2	15	6	4	11,880	Hydromatic			2001
Cross Creek I	Submersible	180	83	2	7.5	6	6	8190	Hydromatic			2001
Cross Creek II	Submersible	80	68	2	7.5	6	6	20	Hydromatic			2001
Tourism Bldg. KY 40	Grinder	25	60	2	2	4	2	1744	Myers			2003
Village Green	Grinder			2	2				Myers			
Woodland Estates	Grinder								Myers			
Burkshire	Submersible	47	72	2	5		3		Myers	3	1	2010
Preston Estates	Submersible	45	133	2	7.5		3		Myers	3	3	2010

**FIGURE 6.01-1**

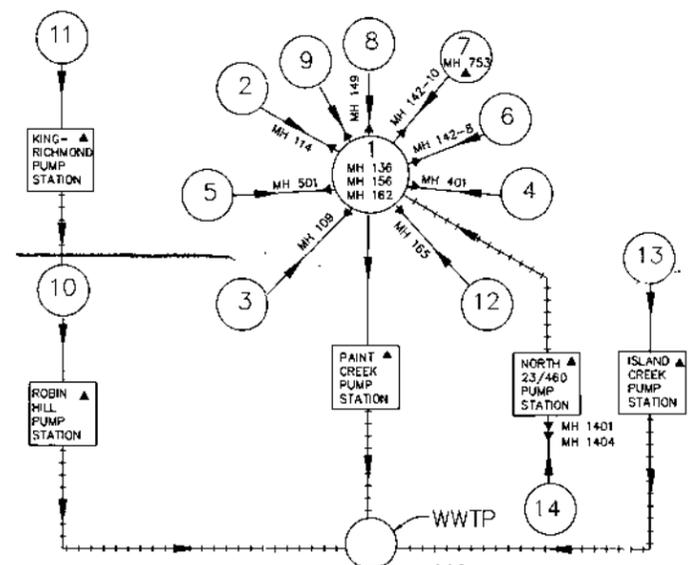
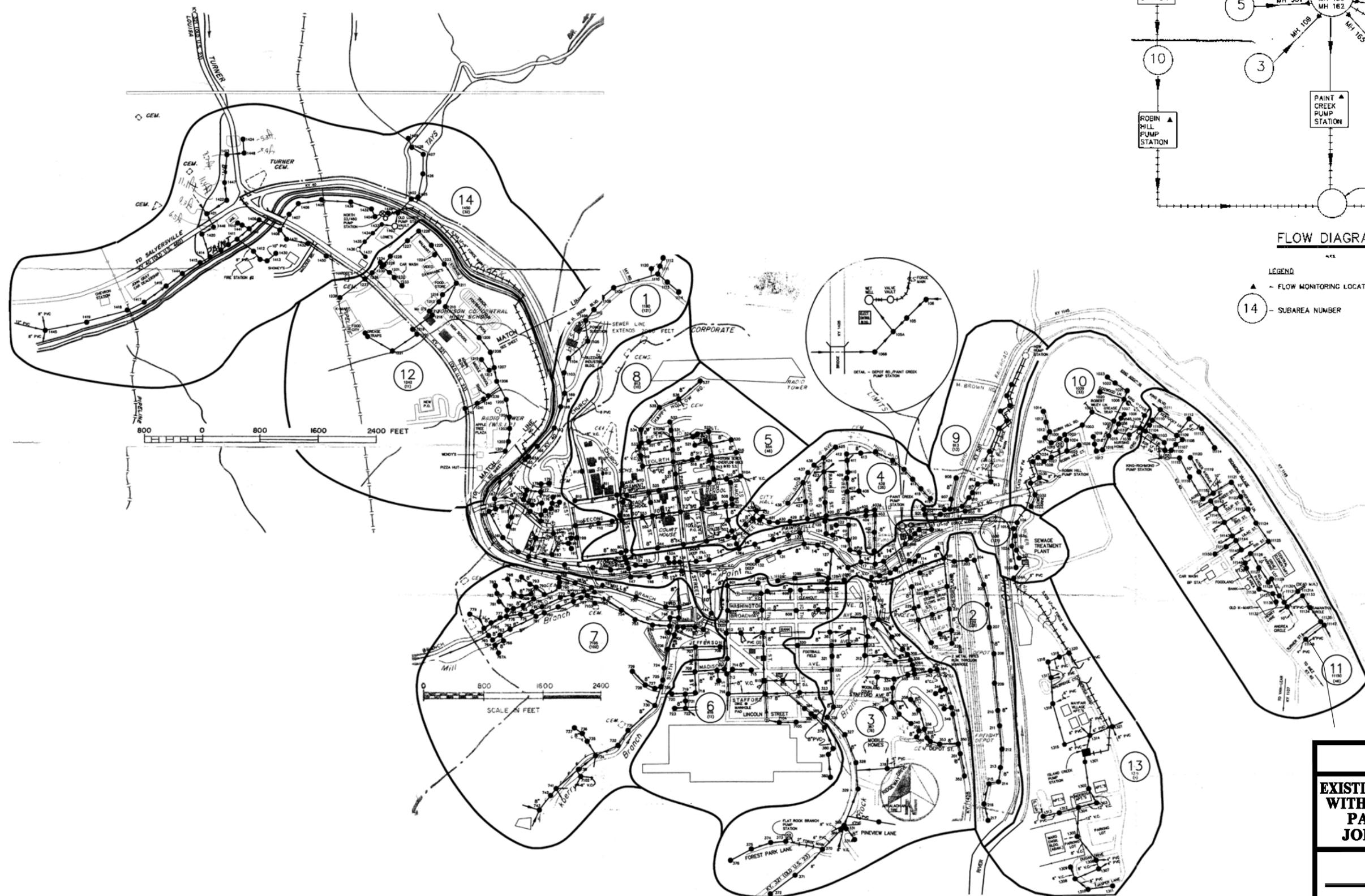
**PAINTSVILLE  
COLLECTION SYSTEM  
SEWAGE PUMPING STATION DATA**

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**FLOW DIAGRAM**

**LEGEND**  
 ▲ - FLOW MONITORING LOCATION  
 14 - SUBAREA NUMBER

**FIGURE 6.01-2**  
**EXISTING PUMP STATION SERVICE AREAS**  
**WITHIN PAINTSVILLE SEWER SYSTEM**  
**PAINTSVILLE CITY UTILITIES**  
**JOHNSON COUNTY, KENTUCKY**

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the estimated maximum flow rate of the station is approximately 1,500 gallons per minute. Pump curves for this station indicate that the ultimate output for the station could be increased considerably with the construction of a larger force main. The pump station is currently in need of an upgrade that would include new pump bases, guide rails and check valves.



**Figure 6.01-3 – Depot Road Pumping Station**

The Island Creek Pumping Station is the second largest pump station in the Paintsville system with a rated flow capacity of 400 gallons per minute. The pumping station was originally constructed in 1980. The station was designed to provide service to a large industrial building as well as development in the area. Currently the industry is closed and the station only provides service to approximately 25 homes and 4 apartment complexes. This station is in poor condition and needs to be replaced.

Other pumping stations within the Paintsville system that need attention include:

Flat Rock Station – Complete renovation including new pumps, rails and control panel.

Lowe’s Pump Station – New rails and lifting system.

Cross Creek Pump Station – New rails and re-set lid.

Golf Course Pump Station – New control panel.

Plant Pump Station – Complete renovation including new pumps, rails and control panel.

The Woodland Estates Pump Station, Burkshire Pump Station and Preston Estates Pump Stations are new stations. The Clifton Horne and Robin Hill pump stations were recently completely renovated and are in good condition as well.



**Figure 6.01-4 – Burkshire Pump Station**

No problems have been reported at the remaining pumping stations in the Paintsville collection system.

The existing gravity collection system has been addressed in another section of this report.

## **6.02 Paintsville WWTP**

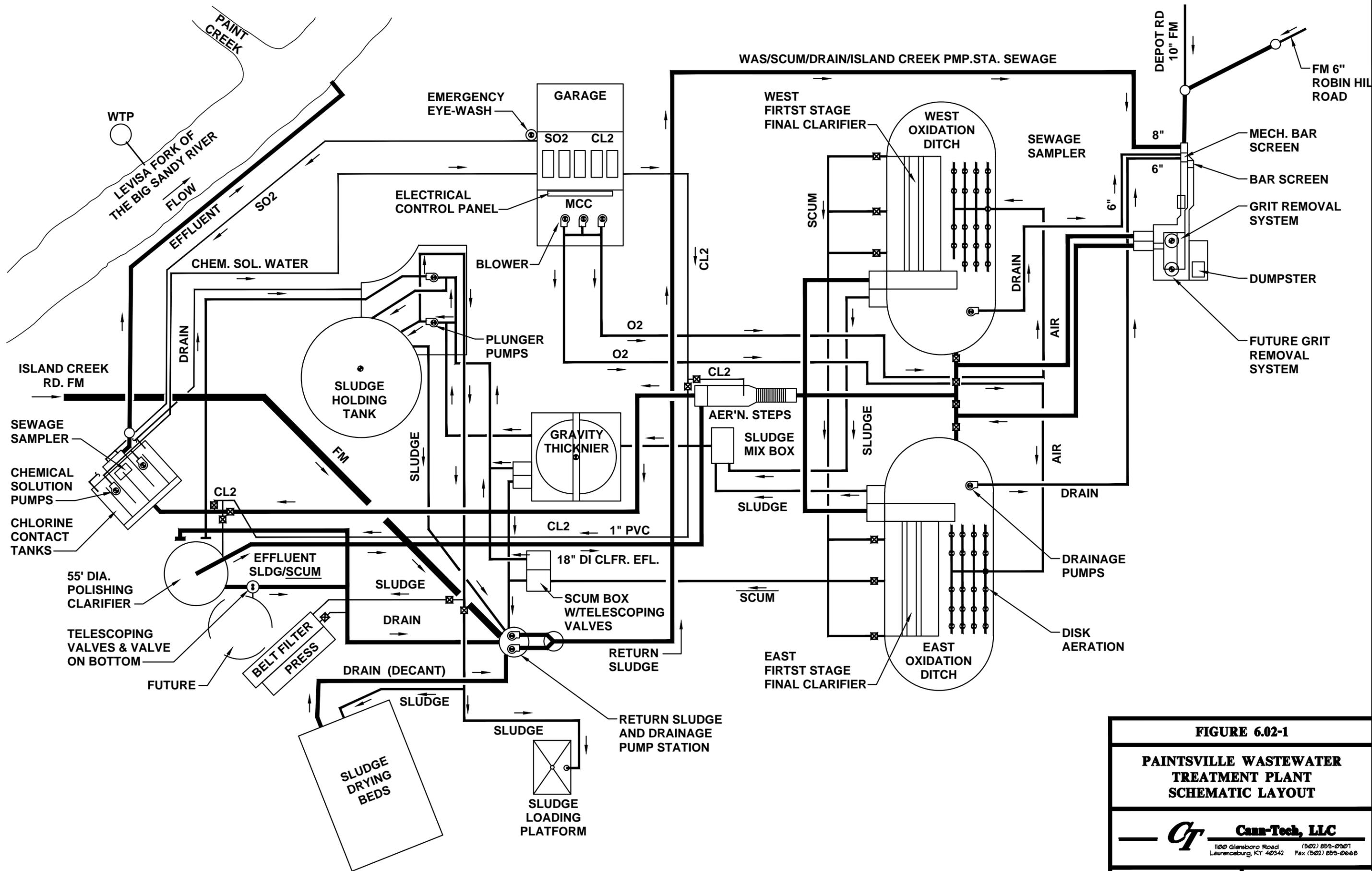
The existing Paintsville WWTP is located east of the convergence of Paint Creek and the Levisa Fork of the Big Sandy River in Johnson County. The existing WWTP was constructed in 1986 to replace the old 1964 facility and was upgraded in 1998 and 2001. The existing facility is designed to operate at an average daily flow of 0.99 mgd with a peak design flow of 2.27 mgd.

The WWTP consists of an activated sludge type plant with a mechanical bar screen, grit removal, two oxidation ditches with internal clarifiers, aeration steps, flow monitoring, a polishing clarifier, effluent flow meter, sludge thickener, sludge holding tank, two chlorine contact tanks, a belt filter press and five drying beds. The belt filter press was added in 1986 and the polishing clarifier was added in 2001.

The existing WWTP does a good job in meeting effluent requirements during normal dry weather flow. However as mentioned before, excessive I & I during rain events disrupts biological processes. The plant was constructed in 1986 with limited modifications done in 1998 and 2001. Due to the age and condition of many of the components of the facility a major upgrade is warranted to continue to provide good service and to provide the additional capacity required to be capable of treating projected flows.

A schematic layout of the existing treatment facility is shown on **Figure 6.02-1**.

Existing site plan of the Paintsville WWTP is shown on **Figure 6.02-2**.

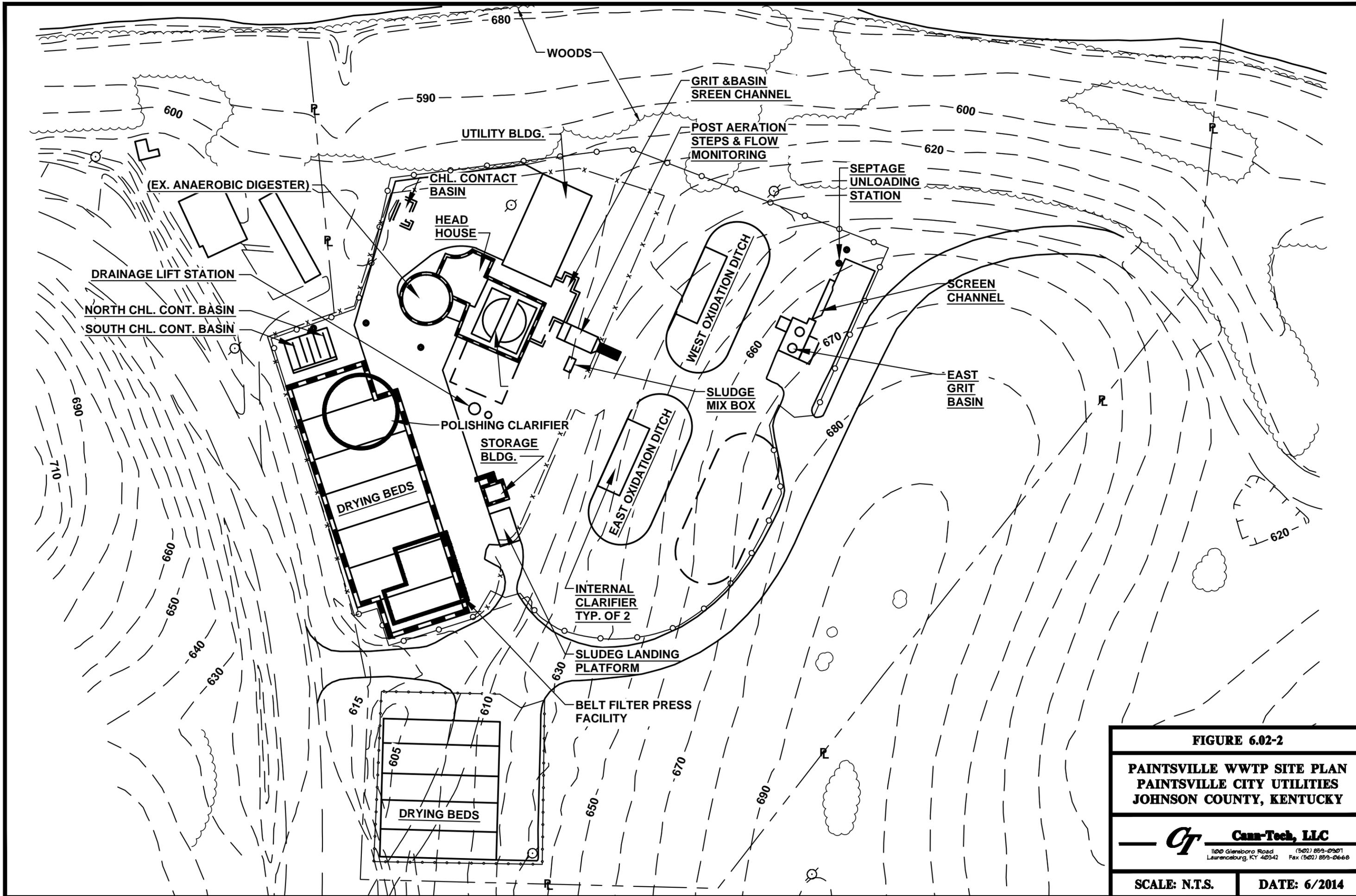


**FIGURE 6.02-1**  
**PAINTSVILLE WASTEWATER TREATMENT PLANT SCHEMATIC LAYOUT**

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**FIGURE 6.02-2**  
**PAINTSVILLE WWTP SITE PLAN**  
**PAINTSVILLE CITY UTILITIES**  
**JOHNSON COUNTY, KENTUCKY**

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The following is a summary of the condition and needed upgrades of major components of the existing facility to continue operation:

**Headworks Building:** Both the mechanical bar screen and pista type grit facility are not operational. Both need replacing with modern equipment and controls. Additionally a new influent flow meter is needed as well as a new influent sampler.



**Figure 6.02-3 – PWWTP Headworks Building**

**Oxidation Ditches:** The existing two oxidation ditches also house internal clarifiers. Operating personnel indicate that they have constant issues with the

aeration plumbing systems in both ditches. Both ditches require new aeration systems and new mixers. Both sludge flow meters need to be replaced as well. Air valves and mufflers need to be replaced on both operational blowers. The spare blower needs to be replaced. Several ventilation improvements to the blower housing facility also need to be done.



**Figure 6.02-4 - PWWTP Oxidation Ditch**

Disinfecting System: Waste valves in the chlorine contact basins need to be replaced. A new chain hoist and scales are needed in the chlorine storage room. A new eyewash station is needed as well. A new effluent sampler and flow monitoring system needs to be installed.

Sludge Disposal System: The existing plunger pumps and control panels need to be either re-built or replaced as well as several sludge valves. The belt press facility needs a new roof and a winch system to lift dumpsters.

Control/Lab Building: The wiring in the lab needs to be upgraded as many receptacles are not operational. A new eye wash station is required. The roof on the building needs to be replaced. A new HVAC system also needs to be installed.



**Figure 6.02-5 - PWWTP Control Building**

The construction of a third oxidation ditch and clarifiers would be needed to provide additional treatment capacity with the above proposed component upgrades.

### **6.03 Honey Branch Collection System**

Prior to the construction of the Honey Branch WWTP, communities within the Honey Branch Planning Area had no centralized wastewater collection and conveyance system.

A majority of the wastewater generated was disposed of through the use of septic tanks or through the use of an untreated and uncontrolled straight pipe discharge. Some of the concentrated communities were served by package treatment plants.

The Honey Branch Planning Area encompasses United States Penitentiary (USP) Big Sandy and Honey Branch Industrial Park, and the unincorporated developed areas of West Van Lear, Powell's Addition, Auxier, Van Lear, Hagerhill, Richmond Hills and Porter School. The Honey Branch Wastewater Treatment Plant was designed to eventually provide service to these areas with a phased construction of collection and conveyance systems in these areas.

The first areas, Phase 1, that were served by the Honey Branch WWTP were USP Big Sandy and the Honey Branch Industrial Park. Conveyance of sewage from these two areas is by a gravity fed force main approximately 9 miles long. A pre-screening and dosing facility is located near the prison that was designed to remove material from the wastewater that could potentially clog the gravity force main and to provide a desired "slug flow" that helps flush and limit the deposition of solids in low spots of the gravity fed force main. The gravity fed force main was also designed with flushing and pigging stations that should facilitate maintenance.

The West Van Lear Service Area collection and conveyance system was constructed in 2003 as part of the Phase 2 project. The collection system consists of a conventional gravity sewer collection system directed to a duplex submersible sewage pumping station for conveyance to the Honey Branch WWTP via a 10 and 12 inch PVC force main. A secondary pumping station in the development directs sewage from a low area to the

gravity sewer collection system. The force main was sized large enough to provide a conveyance system for West Van Lear as well as other potential communities in vicinity.

The 700 gallons per minute pumping station at West Van Lear provides adequate flow rates to maintain the required 2 feet per second velocity in the force main. The communities of Powell's Addition and Van Lear will eventually be served by this force main.

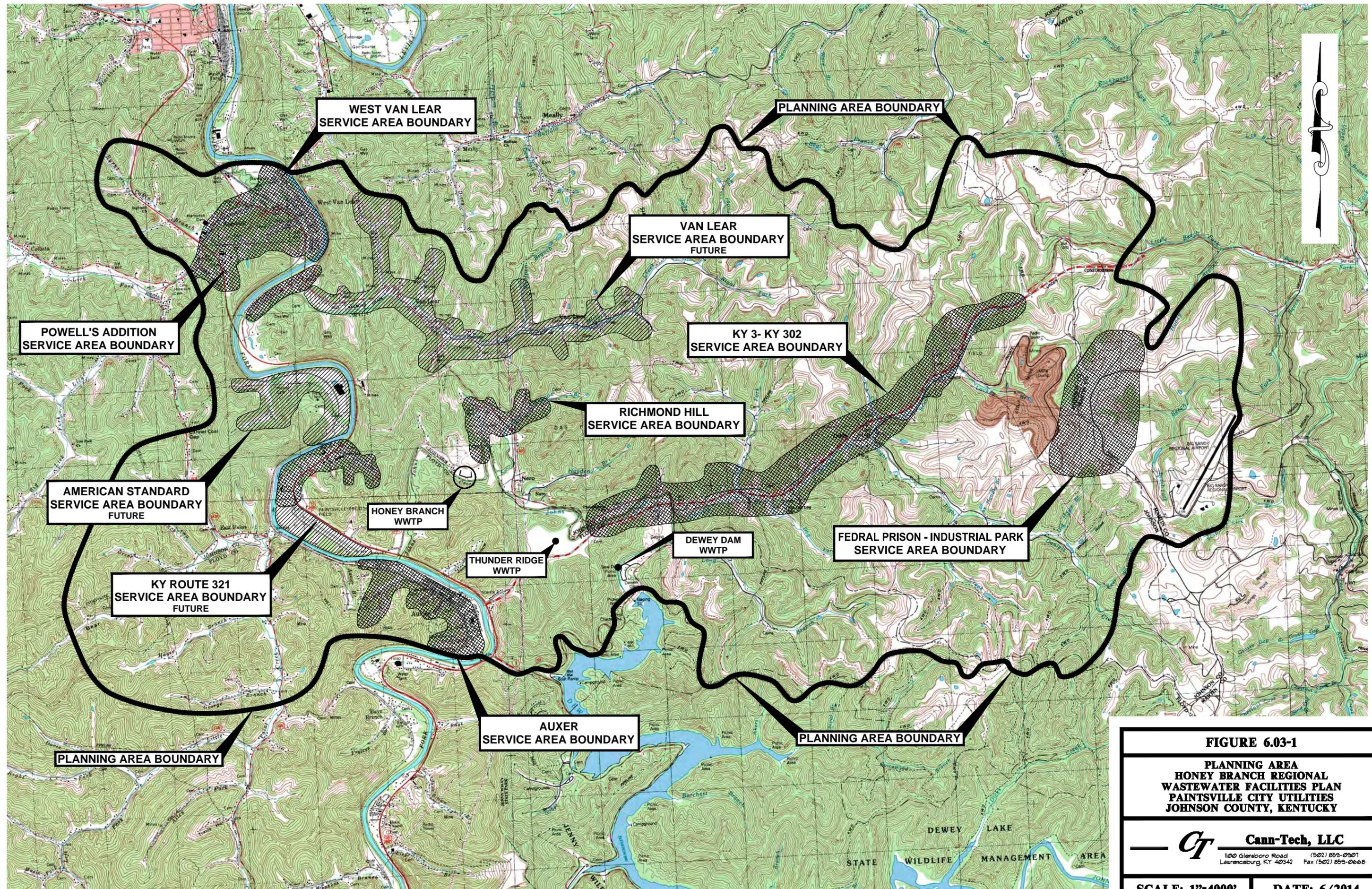
The Auxier Service Area collection and conveyance system was also constructed in 2003 as part of the Phase 2 project. The collection system consists of a conventional gravity sewer collection system directed to two duplex submersible sewage pumping stations. The larger pumping station discharges into the 12 inch PVC that was constructed as a part of the West Van Lear Project.

Phase 1 of the American Standard Service Area collection and conveyance system was constructed in 2005. This system eliminated the 20,000 gallons per day package treatment plant that served the American Standard factory. The system was designed to handle flow from the nearby Mayo School as well as the surrounding residential area. At the time of this report the factory was not in operation so sewage conveyed by this system is minimal.

Other smaller communities have constructed collection and conveyance systems and are being served by the Honey Branch WWTP include:

- Dewey Dam Recreational Area – Eliminated a package treatment plant
- Richmond Hills – Eliminated a package treatment plant
- Thunder Ridge Racetrack – Eliminated a package treatment plant
- Porter School – Eliminated a package treatment plant

The Honey Branch Planning Area is shown on **Figure 6.03-1**. The Honey Branch Collection System includes 18 sewage pumping stations. Detailed information on the pumping stations can be found in **Figure 6.03-2**.



**FIGURE 6.03-1**  
**PLANNING AREA**  
**HONEY BRANCH REGIONAL**  
**WASTEWATER FACILITIES PLAN**  
**PAINTSVILLE CITY UTILITIES**  
**JOHNSON COUNTY, KENTUCKY**

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**SCALE: 1"=4000'** **DATE: 6/2014**

U:\PAINTSVILLE\344-Paintsville Downtown Sewer Rehab\Drawings\Exhibits\Paintsville City Limits.dwg, FIG 6.03-1, 3/25/2016 1:50:17 PM, DWG To PDF.pc3

Honey Branch WWTP Lift Station Name NPDES: KY0103578	Type	Flow (gpm)	TDH (feet)	# of Pumps	Pump HP	Wet Well Diameter (feet)	Force Main Size (inches)	Force Main (lf)	Pump Vendor Manufacture	Impeller DIA (inches)	Phase	Date of Startup
American Standard	Submersible	95	155	2	7.5	6	4 > 12	23,320	Myers - HOMA			
HB Screening Facility	Suction Lift Pump	1550	36.5	2	25	N/A	12	39,778	Gorman-Rupp Co.			
HB Dosing Siphons	Siphons 5000 G	2000		2	0	N/A	12		Fluid Dynamic Siphons			
Dewey Dam	Submersible	25	132	2	5	6	2 > 12	4729	Myers			
West Van Lear 001	Submersible	45	80	2	5	4	2	1815	Hydromatic			
West Van Lear 002	Submersible	700	133	2	40	8	10 > 12	4600*	Hydromatic			
Auxier 001	Submersible	140	36	2	3	5	4		Hydromatic			
Auxier 002	Submersible	340	90	2	15	6	10 > 12		Hydromatic			
Honey Branch WWTP	Grinder	80	39	2					HOMA - EBARA			
HB Raw Sewage	Centrifugal	125	70	2	7.5	N/A	4		Gorman-Rupp Co.			
HB Biotower	Centrifugal	700-2100	38-67	2	50	N/A	10		Gorman-Rupp Co.			
Richmond Hills Sub.	Submersible	45	39	2	5		3		Myers	3	230	2010
Paradise Valley	Submersible	40	30	2	3		3		Myers	3	230	2010
Stoney Brook Sub.	Submersible	90	57	2	5	SQ	4 > 12	0	Myers			9/20/2004
MC Industrial Park 001	Submersible			2	7.5				Myers			2006
MC Industrial Park 002	Submersible			2	7.5				Myers			2006
MC Industrial Park 003	Submersible			2	7.5				Myers			2006
MC Industrial Park 004	Submersible			2	7.5				Myers			2006

**FIGURE 6.03-2**

**HONEY BRANCH  
COLLECTION SYSTEM  
SEWAGE PUMPING STATION DATA**



**SCALE: N.T.S.**

**DATE: 6/2014**

#### 6.04 Honey Branch WWTP

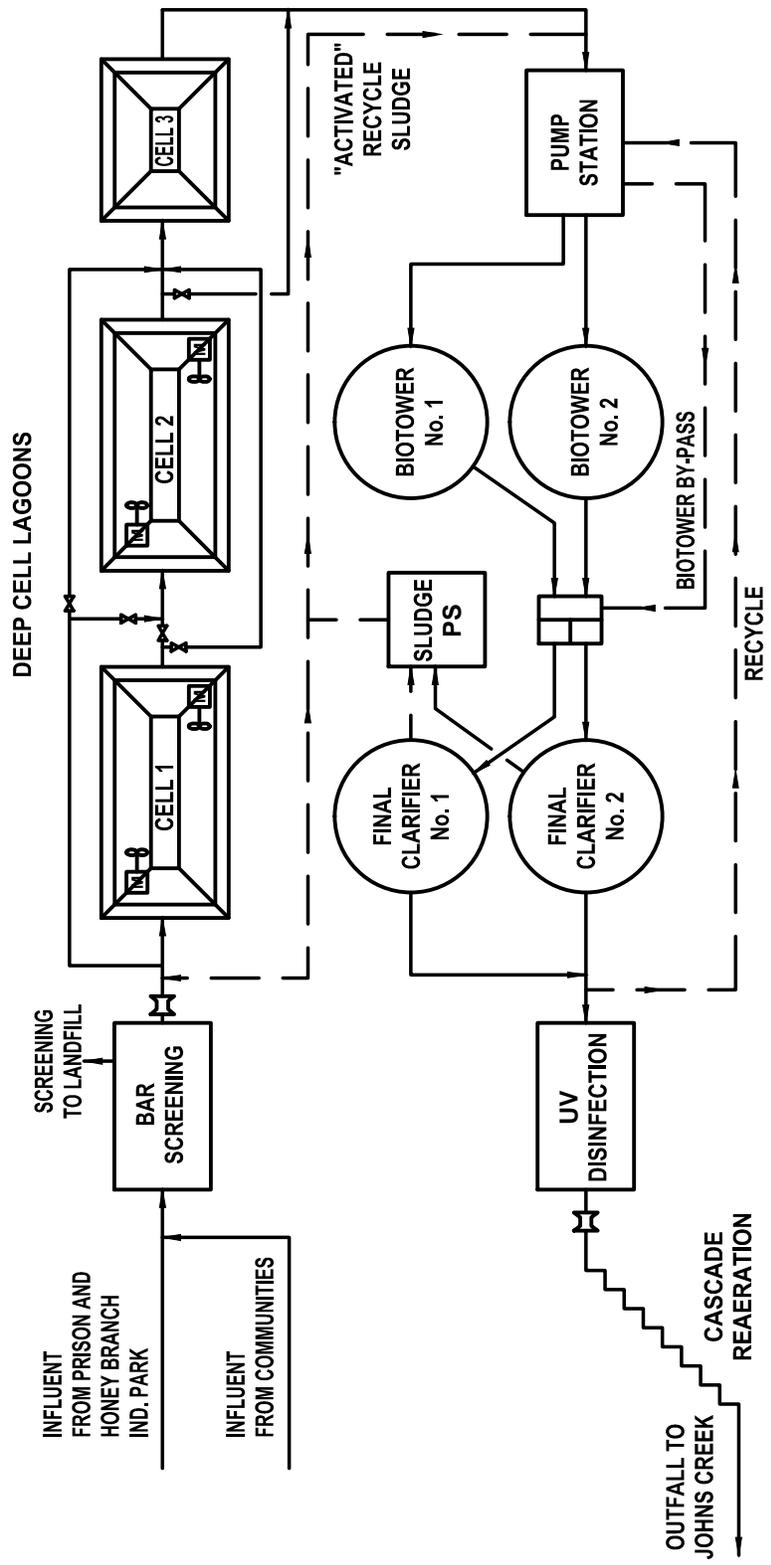
The Honey Brach Wastewater Treatment Plant consists of deep cell lagoon extended aeration, biotowers and clarifiers followed by U.V. disinfection. **Figure 6.04-1** is a process schematic of this facility. The treatment units and buildings consist of the following:

1. Wastewater screening facility contains manual and mechanical bar screening, flow measuring, sampling and odor control facility.



**Figure 6.04-2 - HBWWTP Screening Facility**

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FLOW MEASUREMENT

<b>FIGURE 6.04-1</b>	
<b>PROCESS SCHEMATIC PAINTSVILLE CITY UTILITIES JOHNSON COUNTY, KENTUCKY</b>	
 <b>Cann-Tech, LLC</b> <small>1120 Glensboro Road Laurensburg, KY 40342</small> <small>(502) 253-0901 Fax (502) 253-0668</small>	
<b>SCALE: N.T.S.</b>	<b>DATE: 6/2014</b>

2. Deep cell aerated lagoons for BOD removal.



**Figure 6.04-3 – HBWWTP Deep Cell Lagoon #1**

3. Bio-tower feed pump station to pump lagoon effluent to the bio-towers. This pumping station also contains RAS/WAS pumps.
4. Flow recirculation control box to control split of biotower recycle flow.
5. Biotowers for BOD removal and nitrification.



**Figure 6.04-4 – HBWWTP Bio-Towers**



**Figure 6.04-5 HBWWTP Clarifier Flow Controls**

6. Final clarifiers for sedimentation



**Figure 6.04-6 – HBWWTP Final Clarifiers**

7. Sludge/Scum pump station to remove sludge/scum from the clarifiers and return it back to the deep cell lagoons for enhanced treatment.



**Figure 6.04-7 – HBWWTP Return Activated Sludge Pumps**

8. Ultraviolet light disinfection and effluent sampling.



**Figure 6.04-8 – HBWWTP UV Facilities**

9. Administration building with offices, laboratory, SCADA system/computer monitoring and housing of maintenance equipment.

10. Emergency generator.



**Figure 6.04-9 – HBWWTP Emergency Generator**

11. Post aeration ladder, flow monitoring and effluent sampling equipment.



**Figure 6.04-10 – HBWWTP Post Aeration Ladder**



**Figure 6.04-11 – HBWWTP Deep Cell Lagoons/Bio Towers**

The design average daily flow is 1.0 MGD, with a peaking factor of 3.5, giving a peak hourly flow capacity of 3.5 MGD. The total volume of the 3 lagoons during normal conditions is 6,980,000 gallons and the max operating volume is 8,261,000 gallons. This allows the plant a built in equalization of approx. 1,280,000 gallons if needed to facilitate peak flow conditions should they ever occur.

### **6.05 Other Existing Systems**

For those residents living outside of the Paintsville Sewer System boundary, individual septic tanks systems or package treatment plants are utilized to treat sewage throughout the planning area.

Paintsville Utilities currently operates 4 package treatment plants. They operate the River Road Disposal System, Lee's Trailer Court, Thelma Waste Control #1 and #2. These plants are well maintained and meet discharge limits. In 2010, five existing package plants were eliminated by Paintsville Utilities and meet discharge limits. In 2010, five existing package plants were eliminated by Paintsville Utilities by the construction of pumping stations to transfer the sewer to their collection system for treatment.

Approximately 20 additional privately owned and operated package plants are within the planning area.