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Via Electronic Filing

Ms. Betty McCauly Docketing Chief Public Utilities Commission of Ohio 180 East Broad Street, 11th Floor Columbus, OH 43215

Re: Rolling Hills Generating LLC Application for Amendment, OPSB Case No. 12-1669-EL-BGA

Dear Ms. McCauly:

With this letter, I am enclosing the following updates and supplemental information to the information that was contained in the Amendment filed on June 1, 2012 so that the record in this matter will be complete:

- Various pages from the Amendment that have been updated (the changes have been marked in redline). The pages provided can be substituted for the pages originally filed in the Amendment and in the filing dated October 11, 2012.
- New water balance diagrams for 4 cycles of concentration and 10 cycles of concentration. These diagrams replace Figure 02-1 that was filed with the Amendment on June 1, 2012. The plant is being designed to operate between 4 cycles of concentration and 10 cycles of concentration.
- A new construction laydown drawing that replaces Figures 04-5a and 04-5b that were filed with the Amendment on June 1, 2012. The laydown area now encompasses the abandoned baseball identified in Sections 4906-13-07 (D) (4) and 4906-13-07 (D) (5) of the Application.
- Five new site grading drawings that replace Figures 04-4a and 04-4b that were filed with the Amendment on June 1, 2012.

If you have any questions please call at the number listed above.

Sincerely, fally W Broomfule

Sally W. Bloomfield

Attachments

Based on air dispersion modeling and completion of the Ohio EPA PTI air permit application that was submitted to the Ohio EPA in May 2012, air emissions for the proposed converted facility will include the following pollutants:

- PM/PM₁₀/PM_{2.5}
- NO_X
- \bullet SO₂
- CO
- VOCs
- H₂SO₄
- CO₂e
- HAPs

A brief summary of the primary Best Available Control Technologies (BACT) to be used for the conversion of the RHGS is provided in Table 06-3 located in Section 4906-13-06 of this amendment application, along with other air emission details.

(e) Water Requirements

(1) Water Supply

Operation of the converted facility will require approximately 102 up to 12.1 million gallons per day (MGD) of water for heat rejection purposes in the cooling towers, to cool the inlet air entering the combustion turbines on warm days, and for make-up water associated with the steam-cycle (Figure 02-1). The majority of the water consumption will be for make-up to the cooling tower. The cooling tower provides heat rejection through evaporation of the circulating cooling water, and requires this evaporated water along with cooling tower drift to be replaced via make-up water. In addition, a portion of the circulating water is blown down and discharged as wastewater, and will require replacement via make-up water. The combustion turbines currently include inlet air fogging systems, which utilize water to increase the density of the turbine inlet air and increase performance on hot summer days.

The amount of water required is dependent upon the temperature and humidity during operations and the quality of water used. The better the water quality, the less water is required, and subsequently less wastewater is discharged. This is because the water can be cycled more times through the cooling towers without causing fouling or scaling.

Raw water will be supplied to the converted facility from the Ohio River, via a proposed approximate 16-mile, 30-inch diameter water pipeline to be installed and owned by Rolling Hills. Water will be stored at the RHGS site in one 350,000-gallon raw water tank to provide buffer and storage. In addition to the existing 700,000-gallon service water/fire protection water tank, a new 2,800,000-gallon service water/fire protection water tank will be installed for additional facility needs.

Currently, based on the quality of the raw water source, it is estimated that water can be cycled between four and ten times through the cooling towers prior to being discharged back to the Ohio River while meeting state water quality discharge standards. The estimated water requirements and flows for the conversion are presented in Figure 02-1 for average summer conditions. An on-site water treatment method (reverse-osmosis (RO) with demineralization polishing) will be used to produce demineralized water for steam-cycle make-up. A new 500,000-gallon demineralized water storage tank will be constructed on-site, in addition to the two existing 200,000-gallon demineralized water storage tanks.

Potable water is currently supplied to the RHGS by Leading Creek Conservancy District for staff use and sanitary facilities, along with other make-up water requirements. Potable water demand of the converted facility is expected to increase. However, through the current water supply contract with Leading Creek Conservancy District, it is anticipated that no additional permitting or agreements will be necessary for the conversion of the RHGS. The estimated potable water supply demand of the converted facility is 1,44072,000 gpd, which is shown Figure 02-1.

No new groundwater wells will be utilized for power production or for potable/sanitary requirements.

(2) <u>Wastewater Discharge</u>

It is estimated that average wastewater flow from the converted facility will be <u>up to</u> approximately <u>1.2 3.0</u> MGD, which consists of cooling tower blowdown, service water, water treatment wastewater, and sanitary wastewaters. The majority of wastewater will result from cooling tower blowdown, which accounts for over 99% of wastewater produced from the converted facility. Figure 02-1 shows the water balance for the facility, after the proposed conversion, based on estimated average daily flow rates on a 90°F and 45% humidity day. Wastewater will be discharged to the Ohio River via a

proposed approximate 16-mile, 1216-inch diameter pipeline that will be constructed by Rolling Hills. Based on preliminary design and cycling water through the system, the wastewater discharge will meet state water quality standards without significant treatment prior to discharge. The only pretreatment of wastewater will be for the service and fire water by using an existing oil/water separator. These wastewaters will pass through the oil/water separator prior to being combined with other facility wastewaters, excluding sanitary wastewaters, and then be discharged. The RHGS is currently operating under Ohio EPA National Pollutant Discharge Elimination System (NPDES) Permit No. 0IB00036*BD. NPDES permit coverage will also be required prior to operation of the converted facility.

Sanitary wastewater will be directed to an existing on-site septic tank then to an on-site leach field, which will be modified if necessary.

(3) Storm Water Discharge

For the discharge of storm water associated with construction and operation of the converted facility, NPDES permit coverage must be obtained through the Ohio EPA. The NPDES permits require the preparation and implementation of a Storm Water Pollution Prevention Plan (SWP3) for construction activities, as well as for operation because the converted facility will be considered a steam electric generating plant. The SWP3 addresses best management practices (BMPs), erosion control measures, monitoring and inspection requirements, etc. Ohio EPA construction and post-construction storm water management, permitting, and SWP3 requirements will be adhered to for this project.

(2) Description of Major Equipment

(a) Generating Equipment

The major generating equipment already installed at the RHGS that will be incorporated in the converted facility includes five Siemens 501FD2 gas combustion turbines and five generator step-up transformers. Each combustion turbine generator package is equipped with inlet air filter, outdoor enclosure, exhaust stack, fuel, lubrication, starting, and fire protection systems. Fogging-type evaporative coolers currently provide inlet air cooling for increased power and efficiency during hot weather operation, and will remain in operation as part of the conversion. The electrical output of each combustion turbine generator is stepped up to the utility distribution voltage by dedicated 18- to765-kilovolt (kV) step-up transformers. Each transformer is oil-filled and air-cooled. The primary side of each step-up transformer is

- Ohio EPA Section 401 water quality certification
- U.S. Fish and Wildlife Service (USFWS) Endangered Species Act (ESA) Section 7
 Consultation
- Ohio Department of Natural Resources (ODNR) Protected Species Consultation
- Section 106 NHPA Consultation
- Ohio EPA Section 316(b) Compliance for Cooling Water Intake Structures
- ODNR Water Withdrawal Registration
- NPDES General Permit for Storm Water Discharges Associated with Construction Activities (including preparation and implementation of a SWP3)

(d) Water Discharge Pipeline

An approximate 16-inch diameter wastewater pipeline will also be required to discharge wastewater to the Ohio River. This pipeline will be constructed to discharge approximately 1.2 up to 3.0 MGD, mostly comprised of cooling tower blowdown as shown in the preliminary water balances for the converted facility (Figure 02-1). The location of this pipeline will likely be within the same easement as the water supply pipeline as described above, thus the general corridor is shown on Figure 02-2. The exact location of the pipeline is not provided in this CECPN application because easement negotiations have not been initiated along the corridor. However, it is anticipated that approximately 1/3 of the pipeline route will cross one landowner. The construction of this pipeline will likely be covered under the same or similar permits as discussed above for the water pipeline. Because the converted facility will be required to obtain coverage under an NPDES permit for industrial discharges from the Ohio EPA, the outfall location and quality of discharge will be addressed as part of the NPDES permitting process, which will be required prior to the converted facility being able to discharge wastewaters to the Ohio River. Wastewater discharges to the Ohio River will be permitted to comply with Ohio's surface water quality standards.

(B) PROJECT SCHEDULE

(1) Schedule

Figure 02-3 presents the proposed implementation schedule for the conversion of the RHGS. The key milestones are as follows:

Prepare Air Permit Application
 September 2011 – May 2012

• Preparation of the CECPN Application January – May 2012

Figure 02-1: Preliminary Water Balances for the Converted Facility

existing structures (no gas or oil wells are located within the site). This information was compiled from USGS topographic maps, aerial photographs, and field surveys.

(4) Geology and Seismology

The RHGS has been in operation since June 2003 and has not experienced any issues with geology and seismology; thus, it is anticipated that the converted facility will also experience no adverse effects, however new construction associated with the converted facility will follow current codes. Site geology and seismology information was provided in the original RHGS application in Case No. 00-1616-EL-BGN.

(5) Hydrology and Wind

(a) Water Budgets

It is estimated that the converted facility would require approximately 10 up to 12.1 MGD, during average summer daytime conditions. Most of this water requirement is for make-up water for the steam turbines and cooling towers, which will be provided from the Ohio River. As obtained from an Ohio EPA NPDES Fact Sheet (dated October 29, 2008) for the Ohio Valley Electric Corporation (NPDES Permit No. 0IB00005*MD) the estimated 7Q10 OF the Ohio River is 6,700 cubic feet per second (cfs) or 4,330 MGD. This Ohio Valley Electric Corporation facility is located approximately four miles downstream from the general location of the potential intake/outfall location, and as a result, it is assumed that the flows would be similar at each location. Based on these flows, the design intake rate of 10 12.1 MGD would be approximately 0.279% 0.23 % of the 7Q10. The fact sheet also indicated that the harmonic mean flow of the Ohio River at that location was 26,000 cfs (16,804 MGD), thus the intake would be about 0.072% 0.06% of the mean flows.

Other water requirements, including potable water, will continue to be provided by the Leading Creek Conservancy District Service. This entity will provide the total potable water demand for the converted facility, which is estimated to be approximately 72,000 1,440 gpd for an average day. A Ppreliminary water balances for the converted facility is provided as Figure 02-1.

(b) Flood and Winds

The RHGS has not experienced issues with flooding or high winds; thus, it is anticipated that flooding or high winds will also not be an issue for the converted facility. Flood and high winds information provided in the original RHGS CECPN application, indicates that the proposed converted facility footprint is not located within a Federal Emergency Management Agency

reduction (SCR) systems will be installed in the HRSGs to further reduce NO_x concentrations to 2 ppm at 15% O₂. For control of CO and VOC, good combustion practices will be used to maintain emissions to BACT levels. PM/PM₁₀/PM_{2.5} and SO₂ will be controlled through the use of low-sulfur natural gas fuel.

(b) Equipment Reliability and Partial Failure

The combustion turbines are equipped with DLN burners along with water injection to reduce NO_x emissions from this source, while each HRSG will be equipped with an SCR system to further reduce NO_x emissions. The HRSG stacks will also be equipped with CEMS to monitor NO_x and CO emissions. In the event of a failure of any of the emissions equipment, the emissions levels will be evaluated to determine the appropriate course of action. The appropriate action could be any combination of an adjustment to a portion of the emissions equipment operations, such as the SCR system, to a shutdown of one or more combustion turbines, or discontinuing duct firing operations. A single turbine, as part of a 2x1 combined cycle power block, could be shut down with the remainder of the equipment continuing to operate in 1x1 combined cycle mode. Additionally, an entire 2x1 power block could be shut down, without impacting the operation of the other 2x1 power block, or the operation of the single combustion turbine that will operate in simple-cycle mode.

The Siemens 501FD2 is a proven technology that has a long operating history and high reliability standards. Over the past four years, the RHGS has achieved an availability factor of over 94%.

The step-up transformers and associated electrical equipment are also expected to have very high reliability performance. The inlet air fogging system is not required for power production. The inlet air foggers are designed to enhance performance, but a failure of the inlet air fogging system will not require a shutdown of the facility. Emissions will not increase in the event the inlet air foggers are not functioning.

(c) Effluent Control

As the current design of the wastewater indicates, raw water from the Ohio River will be cycled ten between four and ten times through the cooling tower system and be discharged back to the Ohio River, while still meeting NPDES water quality discharge standards. Cooling tower blowdown is estimated to be approximately 1.2 up to 3.0 MGD. Final design could include water treatment options to allow for more cycling of water through the system, which in return

could necessitate wastewater treatment prior to discharging to the environment. Wastewater effluent will need to be permitted through the Ohio EPA, thus the proposed design and any changes to design would need to be approved by the Ohio EPA. The RHGS is currently operating under Ohio EPA NPDES Permit No. 0IB00036*BD, which will need to be modified for the converted facility.

Service wash wastewaters, estimated to be approximately 2,88028,800 gpd will pass through an existing oil/water separator to treat the water before it is combined with the cooling tower blowdown and be discharged to the Ohio River. The oil/water separator will have oil waste periodically pumped out and hauled offsite by a licensed contractor, and will be maintained to continue proper equipment function.

A combination of filtered Ohio River water and potable water from the Leading Creek Conservancy will be treated with two pass_RO a reverse osmosis (RO) system followed by with a demineralizing polishing before up to approximately 400,320 259,200 gpd is being sent to demineralized water storage tanks. The Ohio River water will be passed through a filtering system prior to going through the RO treatment process. Demineralized water will then be used with the HRSGs, boilers, cooling towers, NO_x injection, NOx injection and fogging. The only wastewater discharges from the demineralized water will be from the portion that is used in the cooling towers. Up to Approximately 100,800 102,240 gpd of RO process effluent will be combined with cooling tower blowdown and treated wash wastewater prior to being discharged to the Ohio River.

Failure of treatment or storage equipment could require the RHGS to shut-down or reduce operations until the system can be repaired in order to operate the equipment as designed and to comply with pertinent permit effluent discharge requirements.

Sanitary effluent, estimated to be <u>up to approximately 1,3201440</u> gpd, will be controlled through a septic and lateral field system, which is currently under operation. Equipment failure could result in short-term closure of sanitary facilities until the system can be repaired.

(d) Public Safety Equipment

The public will not have access to the RHGS site. A security fence will be installed around the perimeter of the converted facility to prevent access for unauthorized persons.

The converted RHGS will be constructed, operated and maintained in accordance with applicable safety regulations, including Occupational, Safety & Health Administration (OSHA)

- 3. Ohio Isolated Wetlands Permit: based on current design and construction measures it is anticipated that state jurisdictional wetlands could be impacted, potentially requiring an Ohio Isolated Wetland Permit from the Ohio EPA. Isolated wetlands permitting requirements for the converted facility or as part of constructing ancillary facilities will be coordinated with the Ohio EPA.
- 4. NPDES General Permit for Storm Water Discharges Associated with Construction Activities: Permit coverage under the NPDES General Permit for construction activities will be required through the Ohio EPA prior to conducting earth disturbing activities for constructing the converted facility and ancillary facilities. Permit coverage is granted by submitting a Notice of Intent (NOI) to the Ohio EPA along with the pertinent application fee at least 21 days prior to commencing construction. As part of the requirement, a SWP3 also needs to be prepared prior to submitting the NOI and be on-site during construction.
- 5. NPDES General Permit for Storm Water Associated with Industrial Activities:

 Storm water discharges during operations may be authorized under the Ohio General Permit for storm water discharges associated with industrial activity (steam generating plant). This permit requires the development and implementation of a SWP3 that includes BMPs, inspection and reporting requirements, and other pertinent general permit requirements. Rolling Hills will need to obtain NPDES permit coverage and develop a SWP3 prior to discharging storm water associated with operating the converted facility. It is anticipated that Rolling Hills will initiate Ohio EPA NPDES consultations in spring or summer of 2012 and timing of application submittal will be based upon those consultations and prior to necessary Ohio EPA application review requirement timeframes. Alternatively, Rolling Hills may seek to have coverage for storm water associated with industrial activities at the converted facility included in its individual NPDES Industrial Discharge Permit described below.
- 6. Section 402 NPDES Industrial Discharge Permit: Up to An estimated 1.2 3.0 MGD of wastewater will be discharged to the Ohio River, thus requiring an NPDES Industrial Discharge Permit prior to discharging the wastewater to the environment. RHGS is currently operating under Ohio EPA NPDES Permit No. 0IB00036*BD. Rolling Hills will need to obtain NPDES permit coverage prior to discharging industrial wastewater to the Ohio River from operating the converted facility. In

Section 303(d) list of impaired waters and is identified as impaired for aquatic life use. Impairment to this watershed is caused by mining, agriculture, and industrial point sources.

By using BMPs, and operating in compliance with the appropriate NPDES permits for storm and wastewater discharges associated with construction and operation of the converted facility and ancillary facilities, it is anticipated that storm water and wastewater discharges will not create adverse effects to surface water quality in nearby streams or in the Ohio River.

(e) Data

To generate a preliminary water balance (Figure 02-1) for the converted facility and to estimate potential wastewater effluent concentrations, a variety of water source data were obtained. Water quality data were obtained for the Ohio River from private sources as well as from an Ohio EPA NPDES Fact Sheet (dated October 29, 2008) for the Ohio Valley Electric Corporation (NPDES Permit No. 0IB00005*MD), from discussions with the Ohio EPA, and from private sources. Leading Creek Conservancy District water supply quality was also considered.

As indicated in Table 06-8, the effluent will meet the water quality criteria of the Ohio River when considering the proposed discharge quality and volume within a mixing zone of the Ohio River. The estimated effluent concentrations are based on cooling water being circulated tenfour times through the cooling tower system and 1.21.0 MGD of wastewater discharge. These data will also be used to design the intake and outfall structures to comply with NPDES requirements.

Table 06-8: Estimated Wastewater Discharge Effluent Concentrations at Ten Cycles

Parameter	Instream Conc. (mg/L)	Regulatory Limit (mg/L)
Chlorides	62.0	250
Sulfate	76.0	250
Mercury	< 125.3 ng/L	12 ng/L
Silica	10.5	No Limit
Total Dissolved Solids	473.4	750

(e) Water Conservation Practices

Water conservation practices for the converted facility include using DLN burners and cycling water through the cooling tower system four times. The DLN burners currently installed at the RHGS include limited water injection for emissions control. The conversion of the RHGS is currently designed to incorporate tenbetween four and ten cycles of concentration in the cooling tower within industry accepted chemistry limits to avoid chemical scaling of critical heat exchanger systems. Additionally, boiler water blowdown and RO reject water are recovered and recycled in the cooling tower makeup. Utilizing ten cycles through the cooling water system, as compared to a lesser number of cycles uses extensively less water.

(D) SOLID WASTE

(1) Pre-construction

RHGS is currently a simple-cycle combustion turbine facility; however, some facilities and equipment will be removed or relocated on the premises during construction to convert the RHGS to operate in combined-cycle mode. It is anticipated that no solid waste will be generated during the pre-construction phase, since any demolition required will be performed as part of the construction phase. Brief descriptions of the facilities that will be relocated or removed from the site as part of the construction phase are described below.

(2) Construction

During the anticipated 30 month construction period, some facilities and equipment will be relocated or removed from the premises. Items that will likely be relocated include:

- Modular Office Building
- Electrical switchyard dead-end structure (north end of facility)
- End and top of four of the existing stacks
- Various on-site roadways

If any of these items are removed from the premises, it is possible that they could be reused at other power generation facilities, be sold within the power generation industry, or be disposed of in an approved manner (in accordance with federal, state, or local regulations).

Solid wastes that will be generated from construction will be typical of construction activities associated with power generation construction, such as packing materials, office wastes, scrap lumber, excess concrete, metals, cables, glass, cardboard containers, and other miscellaneous debris. It is anticipated that because much of the equipment already exists at the site, that solid waste generation from construction of

During construction, each contractor will be responsible for providing their own potable water supply. During operation, the converted facility it will require approximately 72,0001,440 gpd of potable water for staff use, sanitary purposes, and for using within portions of the power generation process. This potable source is currently and will be supplied by Leading Creek Conservancy District. Wells will not be constructed at the RGHS site, thus there should be no impacts to any private wells in the area.

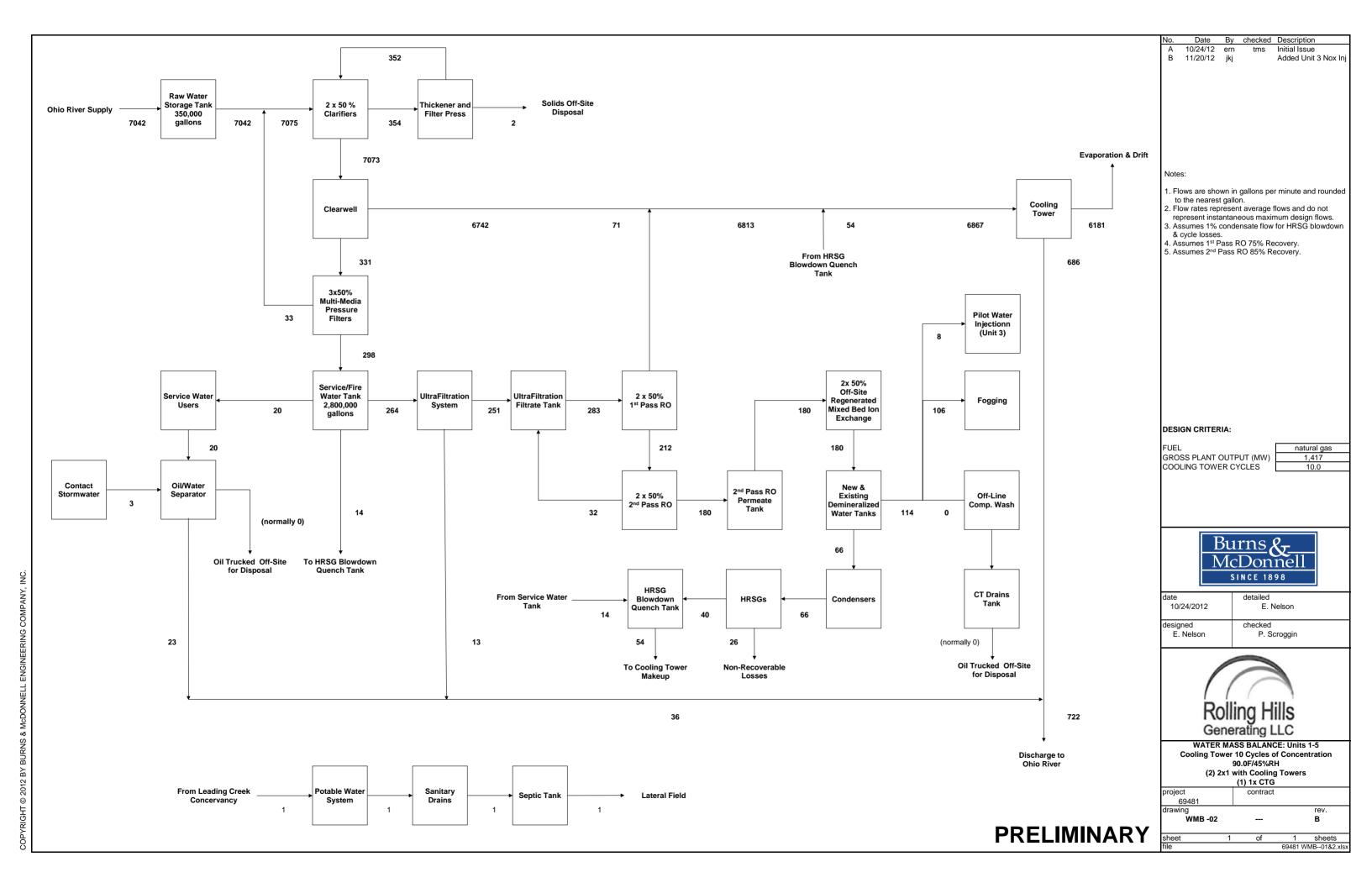
The operational raw water supply will come from the Ohio River. The amount of water required for operation of the converted facility is dependent upon the temperature and humidity during operations and the quality of water used. The better the water quality, the less water is required and the less is discharged. This is because the water can be cycled more times through the facility. Based on the preliminary water quality data of the Ohio River, the raw water can be cycled between four andat least ten times, while still meeting to meet Ohio's surface water quality discharge standards. As a result, the raw water supply demand for operation the converted facility is estimated to be between 10 10.1-12.1 MGD.

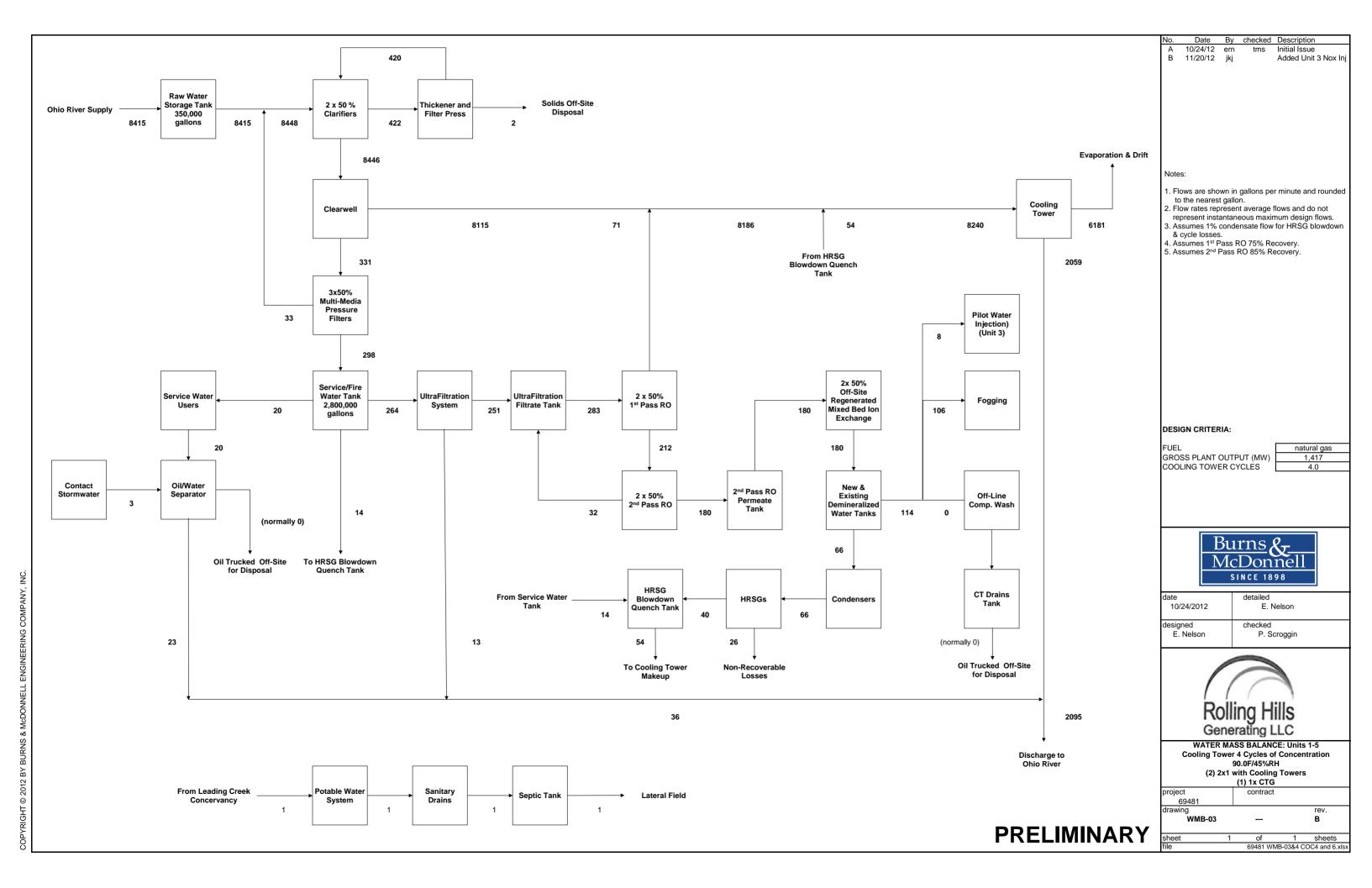
As obtained from an Ohio EPA NPDES Fact Sheet (dated October 29, 2008) for the Ohio Valley Electric Corporation (NPDES Permit No. 0IB00005*MD), the estimated 7Q10 of the Ohio River is 6,700 cfs or 4,330 MGD. The Ohio Valley Electric Corporation facility is located approximately four miles downstream from the general location of the potential intake/outfall location considered for the proposed conversion of the RHGS, and as a result, it is assumed that the flows would be similar at each location. Based on these flows, the design intake rate of 10/12.1 MGD would be approximately 0.230.28 % of the 7Q10. The fact sheet also indicated that the harmonic mean flow of the Ohio River at that location was 26,000 cfs (16,804 MGD), thus the intake would be about 0.076% of the mean flows. Because the raw water demand is less than 1 % of the 7Q10 of the Ohio River, adverse impacts to the river are not anticipated.

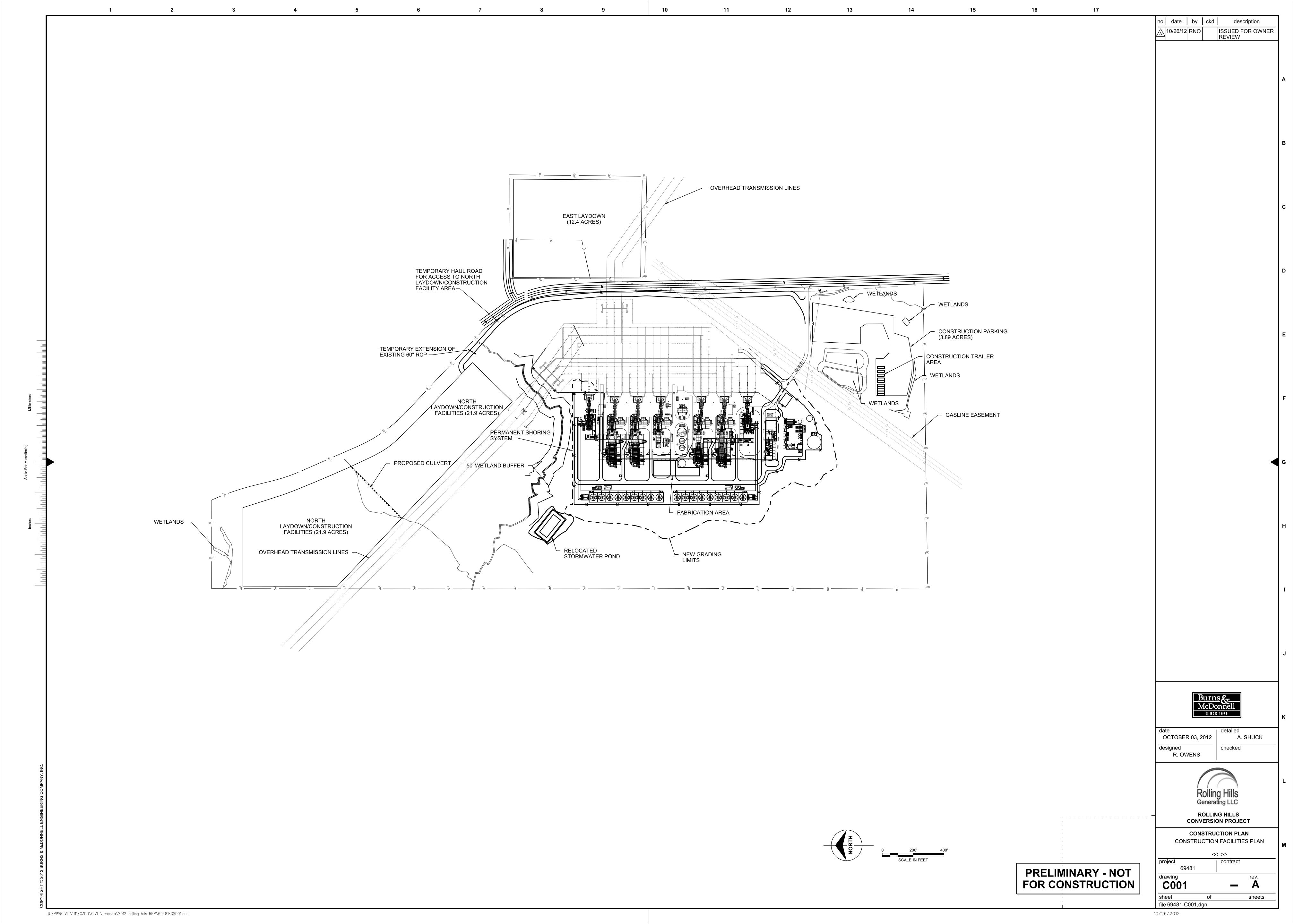
Since the converted facility will require an approved Ohio EPA NPDES Industrial Discharge Permit to discharge wastewaters to the Ohio River, it is anticipated that wastewater discharges will not have an adverse effect on the water quality of the Ohio River, thus have no adverse effects on public or private water supplies.

(b) Pollution Control Equipment Failures

A detailed summary of the effluent and treatment process are provided in Sections 4906-13-4 (C) (2) (c) and 4906-13-03 (C) (3) (b) of this application. Failure of treatment or storage equipment could require the facility to shut-down or reduce operations until the system can be









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Summary: Text Supplemental Information and Updates to Application, Part 1 of 2 electronically filed by Teresa Orahood on behalf of Rolling Hills Generating, L.L.C.