



DEC 8 2003

SERIAL: HNP-03-140

United States Nuclear Regulatory Commission  
ATTENTION: Document Control Desk  
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT  
DOCKET NO. 50-400/LICENSE NO. NPF-63  
NOTIFICATION OF NPDES PERMIT PROPOSED CHANGE

Ladies and Gentlemen:

In accordance with Section 3.2 of the Environmental Protection Plan (Nonradiological) issued as Appendix B to the Operating License (NPF-63) for the Harris Nuclear Plant, Progress Energy Carolinas, Inc. is providing notification of a proposed change to the facility's National Pollutant Discharge Elimination System (NPDES) Permit # NC0039586 by providing the enclosed copy of the proposed change. The proposed change has been forwarded to the State of North Carolina permitting agency.

If you have any questions regarding this submittal please contact me at (919) 362-3137.

Sincerely,

A handwritten signature in black ink that reads 'John R. Caves'.

John R. Caves  
Supervisor, Licensing/Regulatory Programs  
Harris Nuclear Plant

MGW

Enclosure

c: Mr. R. A. Musser (NRC Senior Resident Inspector, HNP)  
Mr. L. A. Reyes (NRC Regional Administrator, Region II)  
Mr. C. P. Patel (NRC Project Manager, HNP)

Progress Energy Carolinas, Inc.  
Harris Nuclear Plant  
P.O. Box 165  
New Hill, NC 27562

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DEC 8 2003

SERIAL: HNP-03-132

Mr. Mark McIntire  
NCDENR – Division Water Quality, NPDES Unit  
1617 Mail Service Center  
Raleigh, North Carolina 27699-1617

Subject: Shearon Harris Nuclear Plant; NPDES #NC0039586  
Wastewater Treatment Facility Upgrade  
Authorization to Construct

Dear Mr. McIntire:

We are pleased to submit this request for Authorization to Construct improvements to the Shearon Harris Wastewater Treatment Facility. The requisite documentation has been enclosed as follows:

- Three (3) sets of Detailed Design Plans and Specifications
- Two (2) sets of Design Calculations
- Two (2) copies of the Process Flow Schematic and Hydraulic Profile
- Construction Sequence Plan (included below)

Existing Facility

The Harris Plant currently owns and operates two extended aeration, package wastewater treatment plants, each rated with a hydraulic capacity of 25,000 gpd. The Harris Plant is permitted to discharge up to 0.05 MGD of treated wastewater effluent from these plants to Harris Lake in accordance with NPDES Permit #NC0039586 via Combined Outfall 006.

Treatment Plant #1 was constructed in 1984 and was in operation until 1988 when all flow was diverted to Treatment Plant #2. Since that time Treatment Plant #1 has deteriorated and is no longer operable due to age and deferred maintenance. Recently Treatment Plant #2 has begun to degrade and is nearing the end of its useful life.

Current wastewater influent flow to the facility averages only 6,500 gpd as indicated in Table 1.

Table 1 – Effluent Daily Flow Rates

YEAR	FLOW (GPD)												AVG.
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	
2001	4,600	5,500	5,400	5,900	7,500	10,400	9,600	11,600	13,000	12,000	11,600	7,700	8,717
2002	5,600	4,100	3,900	4,700	3,600	5,000	6,800	6,100	4,600	4,000	-	6,000	4,945
2003	5,600	5,400	6,300	8,800	4,700								5,360

Total Average = 6,500

Background

Treatment Plant #2 was designed to accommodate average daily flows of 25,000 gpd. Since current flows are only 25% of the design capacity, Harris Plant has experienced operational problems due to hydraulic and organic under-loading. We have implemented several measures to contend with these problems over the years including the addition of dry dog food, an increase in sludge wasting rate, and a decrease in recycled sludge return rate. However, since we have no plans for expansion of the Harris Nuclear Facility at this time, we propose to reduce the capacity of the treatment facilities in order to achieve higher effluent quality and improved system reliability.

Proposed Facility Improvements

McKim & Creed was retained in August 2000 to complete an evaluation of the existing treatment facilities and to make recommendations for system replacement or refurbishment.

Recommendations developed as part of that study formed the basis for the proposed system improvements including:

1. Installation of one new 15,000 gpd factory-built extended aeration package wastewater treatment facility to replace the two aging 25,000 gpd plants.
2. The new plant will be designed with a design average day flow capacity of 15,000 gpd, but with provision to handle peak flows of up to 25,000 gpd during refueling outages.
3. Retrofit Treatment Plant #1: Existing tankage will be refurbished and converted into sludge storage tanks to provide 48,000 gallons of supplemental sludge storage and to enhance aerobic digestion prior to disposal. Based on current sludge production of 0.5 lbs per 1.0 lb BOD (6.5 dry pounds per day or 5,420 gallons per day @1% TS) this volume represents an additional 9 days of sludge storage capacity. With the new provision to allow the Operator to gravity thicken waste sludge up to 3% TS, the additional storage volume represents 26.5 days of sludge storage. The retrofit will include removal of tank partitions, replacement of aeration system, and provision for sludge transfer.
4. Retrofit Treatment Plant #2: Existing tankage will be refurbished and converted to raw sewage storage. The 40,000 gallon volume represents 7 days of storage at the current average daily flow of 6,500 gpd. The raw sewage storage facility will be utilized for emergency raw sewage storage in the event the new treatment facility were to experience a mechanical failure or need to be temporarily taken off-line for routine maintenance. Diversion will be possible via a new set of manual yard valves. The retrofit will also include removal of tank partitions, replacement of aeration system, and provision for raw sewage transfer.
5. Construction of a new modular analytical laboratory and office building.
6. Construction of a duplex sodium hydroxide chemical feed and bulk storage system for pH control in the new treatment process. Specifically, this was to include new chemical metering pumps, heated bulk storage tank with spill containment, and pH feed-back control system using a submersible pH probe in the flow equalization basin to modulate pumping rate.
7. Construction of new sodium hypochlorite chemical feed and bulk storage system for disinfection of the secondary effluent from the new treatment process. Specifically, this was to include new chemical metering pumps, bulk storage tank with spill containment,

and flow-paced control system to automatically adjust chemical feed rate in response to effluent flow rate.

8. Relocation of the existing polymer storage tank and construction of a new duplex polymer feed system for enhanced flocculation and settling in the clarification process.
9. Construct slope stabilization and enhanced Operator access (i.e. concrete steps).
10. Install (4) new yard lights to improve site lighting.
11. Demolish and/or replace all existing mechanical equipment and electrical wiring, conduit, panels and appurtenances.

#### Construction Sequence Plan

1. Complete demolition of existing lab/office building and construct new building.
2. Provide temporary electrical service to lab/office building and existing electrical panels.
3. Installation of new 15,000-gpd wastewater package treatment plant including all air blowers, chemical feed systems, piping and electrical wiring.
4. Transfer mixed liquor from the existing Wastewater Treatment Facility to new treatment process.
5. Start up new system and operate until effluent quality satisfies NPDES limits.
6. After new facility is producing a complying effluent, divert all flow to the new package treatment plant.
7. Slowly pump all flow contained in Tanks #3 and #4 to new treatment plant.
8. Sand blast, prime and paint Tanks #3 and #4 and finish all improvements; including pipe connections, pump installations, painting and other miscellaneous improvements.
9. Divert all sludge into Tank #1 and dewater Tank #2 completely, sand blast, and paint.
10. Proceed with improvements to Tank #2 including pipe connections, pump installation, painting and other miscellaneous improvements.
11. Dispose of stored sludge from Tank #1, sand blast, and paint all components.
12. Complete improvements to Tank #1 including all pipe connections, pump installation, painting and other miscellaneous improvements.
13. Provide slope stabilization to existing and proposed backfill material surrounded existing tanks and new treatment plant.
14. Complete all site restoration.

Construction is currently planned to begin in January 2004 and scheduled for completion in May 2004.

#### NPDES Permit Modifications

Under our current NPDES Permit #NC0039586, we are permitted to discharge 0.05 MGD from the sanitary wastewater treatment plant from Outfall 002 via Combined Outfall #006. As part of this *Authorization To Construct*, Harris Plant requests that this permit be modified as follows to accommodate the new and refurbished facilities:

#### Part I

1. Section A(2): Reduce Monthly Flow Average in the *Effluent Limitations* column from 0.05 MGD to 0.025 MGD.

Division of Water Quality

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If you have any questions or require additional information, please do not hesitate to contact Mr. Bob Wilson at (919) 362-2444 or Mr. Steve Cahoon at (919) 362-3568.

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

Sincerely,



B. C. Waldrep  
Plant General Manager  
Harris Nuclear Plant

MGW

Enclosures

cc: Kevin Eberle, P.E., McKim & Creed  
Brian White, McKim & Creed  
Steve Cahoon, Progress Energy