



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 29, 2012

Michael J. LeValley
Kansas Ecological Services Field Office Supervisor
U.S. Fish and Wildlife Service
2609 Anderson Avenue
Manhattan, KS 66502

SUBJECT: ENDANGERED SPECIES ACT SECTION 7 CONSULTATION ON NEOSHO
MADTOM ASSOCIATED WITH OPERATION OF WOLF CREEK GENERATING
STATION IN COFFEE COUNTY, KANSAS

Dear Mr. LeValley:

The U.S. Nuclear Regulatory Commission (NRC) and U.S. Fish and Wildlife Service (FWS) have been in informal section 7 consultation in accordance with the Endangered Species Act of 1973, as amended (ESA), and the Fish and Wildlife Coordination Act of 1934, as amended, for Wolf Creek Generating Station (WCGS) since 2007. The NRC requested initiation of consultation in May 2007 in conjunction with its proposed Federal action of granting WCGS a renewed operating license that would allow the facility to operate for an additional 20 years. The WCGS facility is located in Coffey County in eastern Kansas approximately 75 miles southwest of Kansas City.

The NRC included its biological assessment as Appendix E of the draft Supplemental Environmental Impact Statement (SEIS) for renewal of the WCGS license, which the NRC published in May 2007. The biological assessment examined the potential effects of the continued operation of WCGS on two Federally listed threatened species: the Neosho madtom (*Noturus placidus*) and the Mead's milkweed (*Asclepias meadii*). In its January 2007 scoping comments for NRC's SEIS process, FWS had identified both species as threatened and noted that populations of Neosho madtom occur in the Neosho River both above and below John Redmond Reservoir and could be adversely affected by WCGS's water withdrawals, especially during drought years.

In its biological assessment, the NRC determined that continued operation of WCGS for an additional 20 years is not likely to adversely affect Mead's milkweed. The NRC also concluded that during periods with no water use conflicts, the proposed action is not likely to adversely affect the Neosho madtom. When water use conflicts exist during low-flow or drought conditions in the Neosho River, however, continued operation of WCGS may adversely affect the Neosho madtom by decreasing stream flow and consequently decreasing available aquatic habitat. NRC described water use conflicts then in existence and noted that actions to minimize such conflicts had not been proposed at that time to protect the Neosho madtom. In its September 20, 2007, letter to FWS, the NRC requested FWS concur with its assessment.

The FWS replied on December 21, 2007, that it concurred with NRC's conclusions that the project is not likely to adversely affect Mead's milkweed and that the project may adversely affect Neosho madtom during low-flow or drought conditions. The FWS believed that it and the NRC should remain in informal consultation to determine the need for formal consultation and to provide the FWS with the best scientific and commercial data available for the development of a

biological opinion if formal consultation was warranted. FWS pointed out that demand for water in the Neosho River Basin was projected to exceed supply by 2012, and that the Kansas Water Office, U.S. Army Corps of Engineers, or other entities may have relevant data on then present and future water depletions in the basin. The FWS requested further data and analyses of how WCGS make-up water withdrawals would affect seasonal stream flows and Neosho madtom habitat in the Neosho River to aid its assessment of potential measures to avoid or minimize adverse impacts to the Neosho madtom.

On May 15, 2008, NRC provided FWS with additional information and analyses on hydrogeology and water use conflicts in response to comments on the WCGS SEIS. Among other results, the analyses indicated availability of U.S. Geological Survey flow data but not stage data and a lack of seasonality in the WCGS withdrawals. From plots of flow at Iola and releases from the Redmond Dam, NRC staff concluded that that low precipitation and reduced releases from the dam—and not WCGS alone—correlated with low flow conditions in the Neosho River. WCGS withdrawals occurred during low flow conditions and likely added to the severity and duration of low flow conditions in the Neosho River. However, the NRC staff could not quantify the impact of WCGS withdrawals on the severity and duration of low flow conditions. Results further suggested that withdrawing water during periods of high flow, if possible, would be more desirable for supporting flow in the Neosho River, although NRC could not determine the extent to which WCGS could plan withdrawals in order to avoid low flow conditions in the Neosho River. Based on the available data, NRC staff could not verify that WCGS water withdrawals had no impact on Neosho madtom.

On May 16, 2008, NRC and FWS discussed these results in a teleconference. FWS had received the documents and sent them on to its hydrogeological staff for their review. FWS expressed a desire for information showing exactly how flows from the John Redmond Reservoir would affect Neosho madtom habitat over the expected duration of the license renewal, if approved. FWS expressed concern about the effects of withdrawals by WCGS on Neosho River flow during periods of protracted drought. FWS stated that although NRC analyses showed effects relative to the minimum desired streamflow (MDS), FWS was reconsidering whether MDS, which was developed in the 1980s, would be protective of Neosho madtom habitat and wanted to see a more extensive analysis. All agreed to hold requests for more information until FWS hydrogeologists had reviewed and determined the adequacy of the NRC analyses sent on May 15.

On July 18, 2008, FWS indicated that FWS hydrologists had finished their review of flow data provided by NRC and other sources. The FWS hydrologists agreed that WCGS withdrawals adversely affected Neosho madtom during low flow and drought conditions and found that, with the data presented to that date, the scope of those effects (e.g., frequency, magnitude, etc.) over the projected new license term could not be determined. The FWS Regional Office contacted the Tulsa District Army Corps of Engineers (COE), which operates the John Redmond Reservoir, about its capabilities to model river flows to help understand impacts to and develop protective measures for Neosho madtom. COE indicated they might be able to run the simulations FWS needed if NRC or WCGS provided it with additional data. FWS encouraged NRC and its applicant, Wolf Creek Nuclear Operating Corporation, to provide the data as soon as possible.

On August 11, 2008, NRC, FWS, and COE conducted a conference call to coordinate and to identify data that COE needed to conduct simulations and to clarify model output that FWS

would need. NRC began to provide FWS and COE data soon afterward. On November 13, 2008, the NRC wrote to assure FWS of NRC's intent to comply with Section 7(a)(2) of the ESA with respect to its review of the WCGS license renewal application "in the event that the Corps of Engineers results are not available prior to the NRC's license renewal decision which is currently scheduled for November 21, 2008." Communications between NRC and FWS continued while COE completed its flow simulations.

In May 2011, NRC received COE's modeling results from FWS. In September 2011, FWS communicated to NRC that it had an agreement with the COE and WCGS to insure sufficient water flow to support the downstream Neosho madtom population during all rainfall conditions including extreme summer drought. With this information, FWS could conclude the informal section 7 consultation. NRC requested WCGS's plan for water level management of Coffee Lake to support the downstream population of Neosho madtom, and in October 2011, WCGS sent NRC an overview of it (enclosed).

With this information, NRC requests FWS conclude the informal section 7 consultation on the effects of WCGS on the downstream population of Neosho madtom in the Neosho River. If you have any questions or comments, please contact me by telephone at 301-415-2327 or by e-mail at Andy.Imboden@nrc.gov, or contact Dennis Logan, Aquatic Biologist, by telephone at 301-415-0490 or by e-mail at Dennis.Logan@nrc.gov.

Sincerely,



Andrew S. Imboden, Chief
Environmental Review and
Guidance Update Branch
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosure:
As stated

cc w/encl: Listserv

**Wolf Creek Generating Station Cooling Lake
(Coffey County Lake)
Water Level Management**

Optimization of cooling lake water levels at Wolf Creek Generating Station (WCGS) will minimize potential for impacts to the Neosho madtom. The level in the cooling lake is partially maintained using two sources of water that are regulated by the State of Kansas. Assessment of water withdrawals from the Neosho River during severe drought conditions indicates that downstream flows could be influenced, and by extension, potentially impacting the Neosho madtom. Wolf Creek Nuclear Operating Corporation (WCNOC) assessed future withdrawal scenarios compatible with station equipment to maximize lake levels and potentially reduce dependence on the Neosho River during such low flow conditions.

Precipitation runoff is insufficient during drought periods to maintain the water level in the cooling lake, thus makeup water is pumped from two sources regulated by the State of Kansas. The first source is from natural flows within Neosho River, which can be pumped as long as at least 250 cubic feet per second (cfs) are allowed to pass downstream. The second source is from stored water in John Redmond Reservoir (JRR), of which 9,672 million gallons have been contracted for use at WCGS. This stored water is used during times when natural flows of the Neosho River are insufficient to allow the 250 cfs minimum to pass downstream of the makeup pumps.

As flows within the Neosho River decline during drought periods, riffle areas can be reduced, which is an important habitat for the Neosho madtom, a fish species federally listed as threatened. Assessments of the influences of water withdrawals during periods of drought on downstream flows have concluded that the duration and severity of low-flow conditions could be extended (USNRC 1982), and that impacts from habitat reductions could be small to moderate (USNRC 2008). Flow simulations completed by the U.S. Army Corp of Engineers for the U.S. Fish and Wildlife Service also support these conclusions (USACE 2011).

WCNOC reviewed future withdrawals compatible with station equipment and determined that opportunities exist in which lake levels can be maximized during periods of higher river flows. Previous lake performance and makeup water modeling factored in a cooling lake elevation of 1087' msl. The lake can store water up to 1088' msl, which is the spillway elevation. This one-foot freeboard typically stored storm runoff, which is not present during drought situations. WCNOC determined it advantageous for multiple reasons to attempt to keep the lake closer to 1088' msl by withdrawing water from the Neosho River during periods of higher flows. Opportunistic withdrawals during water releases from JRR completed by wildlife agencies for fish and wildlife management purposes were also identified. Cooling lake management to 1088' msl would store an additional 5000 acre-feet when Neosho River flows are more plentiful, and could be expected to buffer the volume of water withdrawals at the onset of droughts as modeled in the impact assessments.

Consequently, maximizing the cooling lake level during higher Neosho River flows will prepare the lake for drought periods as much as practical, and serve to lessen potential impacts to the Neosho madtom due to dependence on withdrawals solely during low-flow periods.

Literature Cited

USACE 2011. John Redmond Reservoir Diversion and Impacts to Downstream Conditions, System Simulation Modeling. Corps of Engineers, Tulsa District, March 2011.

USNRC 1982. Final Environmental Statement related to the Operation of Wolf Creek Generating Station, Unit No. 1. NUREG 0878. June 1982.

USNRC 2008. Generic Environmental impact Statement for License Renewal of Nuclear Plants, Supplement 32 Regarding Wolf Creek Generating Station final Report. NUREG-1437. May 2008.

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Sincerely,

/RA/

Andrew S. Imboden, Chief
Environmental Review and
Guidance Update Branch
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosure:
As stated

cc w/encl: Listserv

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Letter to M. LeValley from A. Imboden dated February 29, 2012

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