From:	Vojin Janjic
To:	Elizabeth Rorie
Cc:	Kim Laster; Debbie Arnwine
Subject:	FW: 02222024 Fall 2023/Winter 2024 Seasonal Progress Report for the Y-12 National Security Complex Biological Monitoring and Abatement Program
Date:	Thursday, February 22, 2024 11:20:55 AM
Attachments:	image001.png image002.png

Beth: please process.
Debbie and Kim - FYI

From: Hall, Eleanor Lynn [CONTR] <eleanor.hall@pxy12.doe.gov>
Sent: Thursday, February 22, 2024 11:10 AM
To: Vojin Janjic <Vojin.Janjic@tn.gov>
Cc: Mathews, Teresa J (ORNL) <mathewstj@ornl.gov>; Water Permits <Water.Permits@tn.gov>; EC_DMC <EC_DMC@pxy12.doe.gov>
Subject: [EXTERNAL] 02222024 Fall 2023/Winter 2024 Seasonal Progress Report for the Y-12 National Security Complex Biological Monitoring and Abatement Program

Attached is a letter from Diane R. McDaniel to Vojin Janjic dated February 22, 2024, "Fall 2023/Winter 2024 Seasonal Progress Report for the Y-12 National Security Complex Biological Monitoring and Abatement Program". The attached .pdf file is an executed original.
Thank you,

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Eleanor L. Hall
Administrative Assistant
Mission Assurance, Y-12 ES&H
Contractor to the Department of Energy
eleanor.hall@pxy12.doe.gov
Office: (865) 241-0506

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301 Bear Creek Rd.
P.O. Box 2009
Oak Ridge, TN 37831-8111

Office 865.576.9867
Fax 865.241.4533

February 22, 2024

Mr. Vojin Janjic, Manager
Tennessee Department of Environment and Conservation
Division of Water Resources
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1534

Dear Mr. Janjic:

Fall 2023/Winter 2024 Seasonal Progress Report for the Y-12 National Security Complex Biological Monitoring and Abatement Program

Enclosed is the fall 2023/winter 2024 seasonal progress report for the Y-12 National Security Complex Biological Monitoring and Abatement Program. The information contained in the report pertains to East Fork Poplar Creek sampling conducted in the fall 2023/winter 2024 period. These reports are submitted twice a year to summarize each of the spring and fall sampling periods.

If you have any questions or comments concerning this document, please contact Stacey E. Loveless at 865.576.9657.

Sincerely yours,

Samuel D (SE2) Easterling
Digitally signed by Samuel D (SE2) Easterling
Date: 2024.02.21 15:01:32 -05'00'

Diane McDaniel, Senior Director
Y-12 Environment, Safety and Health

DRM:jps

Enclosure: As stated

c/enc: D. Arnwine
C.L. Ashley, NPO
K. K. Kinder
T. J. Mathews, ORNL
J. P. Stinnett
S. M. Stone, NPO
Water.Permits@tn.gov
EC DMC – 1971352.5203 – RC

c: S. D. Easterling
C. Hoch-Nussbaum
S. E. Loveless
D. R. McDaniel
G.C. Smolens, NPO

C-2259

Enclosure
Letter, Diane R. McDaniel to Vojin Janjic
Dated: February 22, 2024

OAK RIDGE NATIONAL LABORATORY

MANAGED BY UT-BATTELLE FOR THE DEPARTMENT OF ENERGY

ENVIRONMENTAL SCIENCES DIVISION
P.O. Box 2008
Oak Ridge, TN 37831-6351
(865) 241-9405
FAX: (865) 576-9938
EMAIL: mathewstj@ornl.gov

Date: February 12, 2024

To: J. Stinnett

From: T. J. Mathews, Bldg 1504, MS-6351 (241-9405) (NoRC)

cc: A. Bunch, K. Hanzelka, K. Kinder

RE: **Seasonal Progress Report on the Oak Ridge Y-12 National Security Complex Biological Monitoring and Abatement Program for East Fork Poplar Creek, Fall/Winter 2023-2024**

This progress report for the Oak Ridge Y12 National Security Complex Biological Monitoring and Abatement Program (BMAP) for East Fork Poplar Creek (EFPC) covers field sampling performed in accordance with the Y-12 Complex BMAP Plan during the fall and early winter of the 2023-2024 field season.

The BMAP is a requirement of the Y-12 Complex's NPDES permit and is described in the TDEC-approved Y-12 BMAP Plan. The BMAP consists of three primary tasks that reflect complementary approaches to evaluating the effects of Y-12 Complex discharges on the biotic integrity of EFPC: (1) bioaccumulation monitoring, (2) benthic macroinvertebrate community monitoring, and (3) fish community monitoring. Toxicity testing is also conducted using effluent from Outfall 200.

The BMAP Plan requires bi-annual sampling of sunfish for bioaccumulation from four locations in EFPC [namely East Fork kilometer (EFK) 23.4, 18.2, 13.8, and 6.3] and Hinds Creek kilometer (HCK 20.6), a local reference site. Fish are also collected from EFK 24.4 and EFK 13.0 on an annual basis. In fall-winter 2023, EFPC redbreast sunfish and rock bass were collected for mercury and PCB analyses. Offsite, bluegill was collected from Poplar Creek kilometer (PCK) 1.6 and Clinch River kilometer (CRK) 15.0 for mercury analysis. Largescale stonerollers were collected from upper EFPC at EFK 24.5 and HCK 20.6 for analyses of total mercury, other metals, and PCBs, as well as EFK 23.4 and 6.3 for total mercury. All bioaccumulation sampling activities in the fall-winter season were conducted in December through mid-January.

Fall-winter 2023 bioaccumulation fish collections were difficult to complete throughout all of EFPC despite multiple collection trips. Typically, 6 fish for each site-season-species combination are collected. We were able to get a full collection of 6 fish from EFK 6.3, EFK 13.0, EFK 18.2 and EFK 24.4. Samples at the remaining sites (EFK 13.8, EFK 23.4) were partial collections. Many of the collected redbreast sunfish and rock bass were not sacrificed. A tissue biopsy sample was taken for total mercury analysis. A passive integrated transponder (PIT) tag was implanted in case of future recapture. Biopsied and tagged fish were returned to the site of collection after a recovery and observation period. Tissue preparation and analyses are ongoing. In 2023, the fish community data was assessed to find any evidence of reduced sunfish densities in upper EFPC, and the results suggest that large rock bass (age ≥ 4 years) have become more common than large redbreast sunfish (age ≥ 3 years) at EFKs 18.7 and 13.8,

whereas at EFKs 24.4 and 23.4 redbreast sunfish of all age cohorts have become less common and rock bass have remained uncommon or entirely absent. It is unclear what is responsible for the decline in redbreast sunfish populations in EFPC; further investigation would be required to better understand the site-specific shifts in dominant sunfish species and what is preventing the increase of redbreast sunfish population size at sites in upper EFPC.

Monitoring of the fish community is required on a biannual frequency at four East Fork locations and one reference site (EFK 23.4, EFK 18.7, EFK 13.8 and EFK 6.3) and on an annual frequency (in spring) from a fifth location (EFK 24.4). Historically, Brushy Fork (BFK 7.6) has been sampled as a reference site, however since 2022 an additional reference site at Hinds Creek (HCK 20.6) was added due to landowner access restrictions at the Brushy Fork site. All fish are collected in approximately 100 meters of stream at each site using electrofishing equipment. Each fish is identified to species and enough length/weight data are collected to estimate population density and biomass at each location. All fish community monitoring task activities required under the Plan were successfully completed in fall 2023. Data processing and analysis is ongoing.

Monitoring of the benthic invertebrate community is required by the Y-12 BMAP Plan at four locations [EFK 24.4, EFK 23.4, EFK 13.8, and HCK 20.6] on an annual frequency using Tennessee Department of Environment and Conservation (TDEC) semi-quantitative protocols and on a biannual frequency using BMAP quantitative protocols. As stated above, Brushy Fork kilometer (BFK) 7.6, was historically sampled for invertebrates, but access was restricted, and invertebrates were not sampled at BFK 7.6 in 2023. Fall invertebrate sampling was completed with TDEC and BMAP protocols in August and October 2023, respectively. Benthic macroinvertebrate samples have been submitted to a local contract laboratory for identification and enumeration.

ORNL staff conducted the first quarterly toxicity test under the new Y-12 NPDES permit November 1-8. Effluent from Outfall 200 did not reduce fathead minnow survival or growth or *Ceriodaphnia* survival or reproduction by 25% or greater at any of the tested concentrations. Therefore, the results for all endpoints were within permit limits. ORNL staff have scheduled the quarter 2 toxicity test to be conducted February 21-28.

Y-12 BMAP data from 2023 for the 2024 RER was submitted in a ready-to-load format to OREIS on January 4, 2024. BMAP staff are also contributing to the writing of the 2023 Annual Site Environmental Report (ASER). Animal care and use permits were renewed in January, as were TWRA scientific collection permits that allow BMAP staff to survey and collect fish and invertebrate species on the Oak Ridge Reservation.

Should you have questions regarding the content of this report, please do not hesitate to call.

Sincerely,

Teresa J. Mathews
Leader, Biodiversity and Ecosystem Health Group