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July 23, 2010

VIA ELECTRONIC FILING

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

RE: Appalachian Power Company
London/Marmet Project No. 1175
Winfield Project No. 1290
Application for New License
Initial Study Report

Dear Ms. Bose:

On behalf of Appalachian Power Company (Appalachian), please find the Initial Study Report Meeting Summary for relicensing of the London/Marmet (FERC No. 1175) and Winfield (FERC No. 1290) Projects located on the Kanawha River in West Virginia. Appalachian is using the Commission's Integrated Licensing Process (ILP). The meeting occurred on July 8, 2010 at 9:00 a.m. at Appalachian's Headquarters in Charleston, West Virginia. This meeting was conducted within 15 days of the Initial Study Report filing that occurred on June 23, 2010 in accordance with Commission regulations under 18 CFR §5.15.

A copy of this filing will be provided to the attached Project distribution list on CD via regular mail.

Any questions regarding the enclosed Initial Study Report and/or the scheduled meeting referenced above should be directed to the undersigned.

Sincerely,

Teresa P. Rogers

Teresa P. Rogers
Process Supervisor I
(540) 985-2441

Attachment - Initial Study Meeting Summary
cc: w/encls: Distribution List
Brandi Sangunett, FERC
Mike Hreben, Kleinschmidt
Mark Hutchins, Normandeau

APPALACHIAN POWER COMPANY

LONDON/MARMET HYDROELECTRIC PROJECT No. 1175
WINFIELD HYDROELECTRIC PROJECT No. 1290

INITIAL STUDY MEETING SUMMARY

DISTRIBUTION LIST	
Federal Agencies	
John Pomponio	Environmental Protection Agency, Division 3
Stephen Romero	U.S. Department of Agriculture, U.S. Forest Service
Kamau Sadiki	U.S. Army Corps of Engineers, Office of the Chief of Army Engineers
	Federal Emergency Management Agency
Malka Pattison	U.S. Bureau of Indian Affairs, Office of Trust Responsibilities
Senator Robert C. Byrd	U.S. Senate
	U.S. Bureau of Indian Affairs, Solicitors Office
David Densmore;	U.S. Department of the Interior, U.S. Fish & Wildlife Service
	U.S. National Park Service, U.S. Department of the Interior
	U.S. Army Corps of Engineers, North Atlantic Division
Lex Dixon	U.S. Army Corps of Engineers
Ida Doup	Bureau of Land Management, Lands and Renewable Resources
Colonel John D. Drolet	U.S. Army Corps of Engineers
Don Klima	Advisory Council on Historic Preservation, Eastern Office of Project Review
Michael Chezik	U.S. Department of the Interior
Carol Grundman	U.S. Bureau of Land Management, Eastern States
Maryanne Gerbauckas	National Park Service, Regional Office
Linda Everly	U.S. Army Corps of Engineers, State District Office, Regulatory Branch/Permits
	U.S. Army Corps of Engineers, Divisional Office, Regulatory Branch
James Kardatzke	U.S. Bureau of Indian Affairs, Eastern Regional Office
Kent Connaughton	U.S. Department of Agriculture, U.S. Forest Service, Regional Office
Ginger Mullins	U.S. Army Corps of Engineers, State District Office
Michael Thabault	U.S. Fish and Wildlife Service, Northeast Regional Office

DISTRIBUTION LIST	
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	NOAA Fisheries, Northeast Fisheries Science Office
Peter Lietzke	Federal Energy Regulatory Commission
Gary Frazer	U.S. Fish and Wildlife Service
Cynthia Wilkerson	National Park Service, Northeast Region
Senator John D. Rockefeller, IV	U.S. Senate
	Federal Energy Regulatory Commission, New York Regional Office
Deb Carter	U.S. Fish and Wildlife Service
Sean McDermott	NOAA Fisheries, Northeast Regional Office
Ken Halstead	U.S. Army Corps of Engineers, Huntington District
Gene Gruber	Federal Emergency Management Agency, Regional Office
Alan B. Mollahan	U.S. House of Representatives
	U.S. Department of Energy
Commander	U.S. Coast Guard, Eighth District
	U.S. Environmental Protection Agency, Regional Office
Aaron Smith	U.S. Army Corps of Engineers
State Agencies	
Ken Caplinger	WV Department of Natural Resources, Division of State Parks and Forest
Richard E. Hitt	WV Public Service Commission
Joe Scarberry	WV Department of Natural Resources, Division of Natural Resources, Office of Land and Streams
Curtis I. Taylor	WV Department of Commerce, Division of Natural Resources, Wildlife Resources Section
Susan Pierce	WV Department of Culture and History, Historic Preservation Unit
Michael Hohn	State of West Virginia Geological & Economic Survey
Richard Mulfinger	Pennsylvania Fish & Boat Commission
Frank Jezioro	WV Department of Commerce, Department of Natural Resources
Jeff Herholdt	WV Department of Commerce, Division of Energy
Shirley Stewart-Burns	WV State Historic Preservation Office, The Cultural Center
Kerry Bledsoe	WV Department of Commerce, Department of Natural Resources, Wildlife Resources Section
Stephanie Timmermeyer	WV Department of Environmental Protection
Lisa McClung	WV Department of Environmental Protection, Division of Water and Waste Management
Lyle B. Bennett	WV Department of Environmental Protection, Division of Water and Waste Management
Thomas L. Denslinger	Pennsylvania Department of Environmental Protection
Fred Cutlip	Intergovernmental Review Community and Industrial Development
Local Government	
Charlotte Holly, County Administrator	Fayette County

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Mayor	City of South Charleston
Mayor	Town of Winfield
Mayor	City of Nitro
Mayor	City of St. Albans
Mayor	City of Hurricane
Non-Governmental Organizations	
Shanda Minney	West Virginia Rivers Coalition
Marybeth Beetham	Endangered Species Coalition
Bruce Glabe	Appalachian Mountain Club
Rebecca Sherman	Hydropower Reform Coalition
Ron Scott	Izaak Walton League of America
	National Wildlife Federation
Serina McLean	American Rivers
Robert Proudman	Appalachian Trail Conservancy
Rodney Bartgis	The Nature Conservancy
Alan Wentz	Ducks Unlimited
	River Conservancy
	Sierra Club
	Wildlife Habitat Council
	The Conservation Foundation
	National Parks Conservation Association

ATTACHMENT

Initial Study Meeting Summary

APPALACHIAN POWER COMPANY

LONDON/MARMET

PROJECT No. 1175

WINFIELD

PROJECT No. 1290

INITIAL MEETING SUMMARY

July 23, 2010

Prepared by:

Kleinschmidt

Energy & Water Resource Consultants

APPALACHIAN POWER COMPANY

LONDON/MARMET HYDROELECTRIC PROJECT No. 1175
WINFIELD HYDROELECTRIC PROJECT No. 1290

INITIAL STUDY MEETING SUMMARY

INTRODUCTION

The existing license for the London/Marmet Project (No. 1175) was issued by the Federal Energy Regulatory Commission (FERC) on September 23, 1983 and expires January 31, 2014. The existing license for the Winfield Project (No. 1290) was issued on September 26, 1983 and has the same January 31, 2014 expiration date as that for the London/Marmet Project. Appalachian Power Company (Appalachian/Licensee) has elected to prepare and file the Application for New License for the London/Marmet and Winfield projects (Projects) in accordance with the Integrated Licensing Process (ILP) as described under the Code of Federal Regulations (18 CFR Part 5). On August 14, 2008, the Licensee filed with the FERC the Notice of Intent to File for New License (NOI) for both Projects along with a combined Pre-Application Document (PAD). Since that filing, the Process Plan for filing the Applications for New License has been followed.

Since the filing of the NOI and PAD, the Licensee filed with the FERC on January 26, 2009 the Proposed Study Plans as required under 18 CFR § 5.11. The proposed study plans filed included five studies on various resources and operations having a nexus to the projects, including: 1) cultural resources; 2) recreation management; 3) water quality; 4) effects of fish entrainment and impingement; and 5) transmission line corridor maintenance. After consultations with various stakeholders including State and Federal Agencies, local governments, and non-governmental organizations (NGOs), Appalachian filed revised study plans that incorporated comments and an additional study plan for assessing a tailwater fishing access feasibility study. By letter dated June 25, 2009, the Director of the FERC Office of Energy Projects issued the Study Plan Determination for the London/Marmet and Winfield hydroelectric projects. Study efforts began in 2009 and the Initial Study Update Report was filed on June 23, 2010. A Schedule for remaining components of the ILP is provided below.

FERC RELICENSING SCHEDULE

Date	Pre-Filing Milestones	Responsible Party
2009/2010	Conduct studies and gather information (first season)	Appalachian
7/23/2010	Meeting summary and study plan modification (if necessary)	Appalachian
8/22/2010	Comments on meeting summary	Participants
9/21/2010	Response to meeting summary comments	Appalachian
10/21/2010	Disagreement resolution and revisions of study plan	FERC
2010/2011	Conduct studies and gather information (second season as necessary)	Appalachian
6/23/2011	Update study report (as needed) and	
	Notice of Intent to file a Draft License Application (if so selected)	Appalachian
7/08/2011	Hold updated study report meeting (as needed)	Appalachian
7/23/2011	Updated study report meeting summary	Appalachian
8/12/2011	File Preliminary Licensing Proposal or Draft License Application	Appalachian
8/12/2011	File application for 401 WQ Certification from West Virginia DEQ	Appalachian
8/22/2011	Comments on meeting summary	Participants
9/21/2011	Response to meeting summary comments	Appalachian
10/21/2011	Director's study plan determination	FERC
11/10/2011	Comments on Preliminary Licensing Proposal	FERC/Participants
1/31/2012	File Application for New License	Appalachian

INITIAL STUDY UPDATE MEETING SUMMARY

The Initial Study Report Update Meeting for the London/Marmet and Winfield hydroelectric projects occurred on July 8, 2010 at Appalachian's office in Charleston, WV. The following people attended the meeting:

- Teresa Rogers, Appalachian
- Liz Parcell, Appalachian
- Kerry Bledsoe, West Virginia Department of Natural Resources (WVDNR)
- Gary Ryder, Appalachian Plant Supervisor
- Jeff Reece, American Electric Power (AEP) Service Corp,
- Jon Vanhassel, AEP Environmental
- Mike Hreben, Kleinschmidt
- Mark Hutchins, Normandeau Associates
- Aaron Smith, United States Army Corps of Engineers (USACOE) District Archaeologist
- Allyson Conner, FERC
- Brandi Sangunett, FERC

Teresa Rogers, Appalachian's Manager for the relicensing effort, welcomed all present and conducted introductions of all present. Ms. Rogers continued with an explanation of the Relicensing Process, milestones that have been achieved, and future steps in the process. Appalachian will follow up this meeting with a meeting summary to FERC by July 23, 2010. A comment period on the meeting summary will then occur until August 22, 2010. Ms. Rogers then introduced the consultants conducting the relicensing studies and they provided updates on each of the studies being conducted.

Mike Hreben of Kleinschmidt provided an overview of the Projects and relevant relicensing information with the aid of a PowerPoint presentation. A copy of the presentation is provided in Appendix A.

Mr. Hreben also identified the studies being conducted which include 1) Cultural Resources, 2) Water Quality, 3) Fish Entrainment, 4) London Tailrace Fishing Access, 5) Transmission Corridor Study, and 6) Recreation Assessment. There were no questions on the licensing process or background information. Mr. Hreben then proceeded to discuss study updates.

Cultural Resources

The PowerPoint presentation for the Cultural Resource Study is provided in Appendix A. The Cultural Resources Study has been completed and a draft report was distributed to the USACOE, the Eastern Band of Cherokee Indians (Eastern Band) and the State Historic Preservation Office (SHPO). The Eastern Band has asked to be kept apprised of the study efforts. Kerry Bledsoe questioned if he could obtain a copy of the report because the WVDNR is interested in site locations and potential work they may pursue in the future. Mr. Hreben stated that a Historic Properties Management Plan (HPMP) would be developed for the Projects and that such a plan would address protection of these areas. Also, all sites would be recorded with the State Historic Preservation Office. It was noted that the Area of Potential Effect (APE) is 300 feet above and below the powerhouse. Mr. Smith (USACOE) indicated that WVDNR should contact the SHPO at the time any projects are planned so as to obtain the most up to date information.

Purposes of the study included the need to identify significant resources and determine their eligibility of sources. It was questioned why a Phase 1 survey was conducted even though no construction has been proposed. Mr. Hreben responded that the Phase 1survey was conducted at the request of the USACOE.

The Phase I survey was done within the APE. Ultimately a HPMP will be developed which will address appropriate protection measures. A total of 18 small artifacts were obtained, cleaned and made available for curation. Mr. Smith suggested that a repository with the state would be appropriate. Mike Hreben noted that the USACOE has been contacted regarding curation. Mr. Smith indicated that the USACOE will have to do a memo and will most likely have to enter into a tri-agreement with the State of West Virginia and Appalachian. The USACE noted that for the future, it would be their suggestion not to do collection at all.

It was noted that the project areas have been heavily disturbed by historic development and there is not much integrity to the sites. Regarding study deliverables, a draft report is currently under review and will be finalized after comments are received. Mr. Smith noted that HPMPs are being developed by the USACOE for each of the dams and will be finalized this year. He suggested using the USACOE's HPMPs as a part of Appalachian's HPMPs.

Mr. Hreben continued with his presentation, noting that consultation had transpired with the USACOE and the SHPO. The study results were summarized within the ability of keeping location information confidential. Report recommendations were also reviewed.

All three powerhouses were determined to be eligible for National Register of Historic Places (NRHP) listing. Reasoning included the high degree of design and construction integrity including original footprint of the structures, pattern of incised lines on interior walls and the Woodward governor cases. Archaeological investigations identified one site but it was considered to be ineligible.

Mr. Smith noted that the USACOE prepared applications for the NRHP but didn't submit them; the applications included the powerhouses. Appalachian is undecided at this time as to whether or not it would make application for eligibility.

Water Quality

Ms. Rogers provided an update on the Water Quality Report. Per Ms. Rogers, a draft water quality report has been prepared and is available on the Appalachian website, draft copies were mailed to the USACOE and to the WVDNR (Kerry Bledsoe). Mr. Bledsoe indicated that he had not received a copy. Teresa provided her copy to him.

The Study was conducted by Mark Hutchins of Normandeau Associates. Mr. Hutchins provided a summary of the study via PowerPoint presentation which is included as Appendix B to this report. Mr. Hutchins noted that they have completed the studies and collected voluminous data. Study objectives of the study included: assembling and reviewing existing data; and characterizing existing dissolved oxygen (DO) and temperature conditions downstream of the projects.

Existing data came from four sources: West Virginia Department of Environmental Protection (WVDEP), United States Geological Survey (USGS), USACOE, and the Ohio River Valley Sanitation Commission. A map was shown identifying the locations of where existing data has been collected. Mr. Hutchins noted that state water quality standards on the Kanawha depend upon river location. At the 72 mile marker, the standard is 4 mg/liter. In other areas the standard is 5 mg/liter. At Winfield, the USACOE has not documented a DO violation in 10 years. The WVDEP has not recorded a violation within the last 10 years at river mile 31.7. Mr. Bledsoe questioned if these were surface collections and expressed an opinion that some of these impoundments may act more like lakes than rivers and therefore could stratify. Mr. Hutchins responded that the historic information is surface data.

The water quality data collection program was a weekly sampling program from 15 June to 17 October, 2009 for DO temperature, ph and conductivity at selected transects upstream and downstream of each development. While the study focus was on DO and temperature, conductivity and pH data were also collected.

Sampling locations consisted of five transects at each hydroelectric facility; two upstream and three downstream of each dam. Each transect was comprised of 3 sampling locations, equidistantly spaced across each transect. The actual locations were determined by field review and consultation with stakeholders.

Fifty-one sampling locations were visited once per week for 18 consecutive weeks. Data profiles were collected at 1- meter increments. Downstream transects were sampled in the pre-dawn to early morning timeframe and upstream stations were sampled in late morning to early afternoon. Sampling was conducted on three consecutive days.

Mr. Hutchins provided graphical examples and summaries of the data collected (see Appendix B). Observations included that water was generally cooler at London and warmer in Winfield but differences were relatively minor. In general there was virtually no horizontal or vertical variability or stratification within a transect at any time of year sampled.

Flow is another consideration that was discussed. The study plan was to sample during low flow, high temperature conditions. The summer of 2009 was relatively wet. However, during the end of June to end of July flows were below median flow levels which provide greater comfort that the data collected is representative of low flow, high temperature summer conditions.

The study also looked at methods of enhancing DO at hydroelectric facilities. These included: selective withdrawal, advanced hydropower turbine system design, auto-venting turbines, diffuser systems, and aerating weirs. While some of these methods may be suitable for these sites, available data does not support the need for DO enhancement at the projects.

Study conclusions are:

- There have been no documented violations of state water quality standards for DO anywhere in the study area since at least 1997 and probably longer.
- During 15 June – 17 October 2009 extensive longitudinal, horizontal and vertical DO monitoring did not document DO any values less than the state standards.
- Except for infrequent events at isolated sampling stations, there was little evidence of vertical or horizontal stratification or variability of DO or water temperature.

Appalachian has distributed some copies of the report but will also will send out a notice that says the report is available for review on their website.

Fish Impingement and Entrainment

Mr. Hreben then provided an update on the Fish Impingement and Entrainment study. The PowerPoint is included in Appendix A.

The literature review was discussed. Kerry Bledsoe indicated that most evaluations are based on water velocity avoidance but he noted that some fish may be attracted to flows. He cited Tygart Dam as an example of a site that the state has looked at where fish do not avoid the flows. He also stated that some tailwater fisheries depend on entrainment. Fish shouldn't be disqualified from being entrained based on swim speed ability because they may not try to avoid

it. Mr. Bledsoe suggested that fish movement studies be reviewed to capture this type of activity. Mr. Hreben agreed that this information would be included to the extent it was readily available.

Due to concerns with leaf drop and debris loading, the field work for this study was rescheduled from fall 2009 and completed in May 2010. The intake velocity data is currently being processed. All data was collected using Acoustic Doppler Current Profiler (ADCP) Technology and preliminary examples of the data were displayed. The ADCP unit collected data within 10 feet of the trash racks and in front of each unit. Mr. Smith questioned why this location was chosen. Mr. Hreben responded that data was collected at the mouth of the intake where the trash racks are located. Study plan proposed for velocities to also be collected beyond the log boom, however, it was noted that the trash rack location represents the worse case (i.e. highest velocity location).

The list of species occurring in the project vicinity has been developed and will be reviewed with Kerry Bledsoe of WVDNR to ensure that nothing has been omitted. These species are being researched to obtain available information on habitat preferences, swimming speed, intake avoidance and seasonal movements.

Empirical entrainment data at similar projects has been identified and is being reviewed for applicability. Likewise, turbine mortality data is being reviewed for projects with similar turbines. In addition, theoretical turbine blade-strike probabilities are being calculated based on turbine parameters and fish size. These calculations are based on formulas developed by the Department of Energy as part of Fish Friendly Turbine Research.

A draft report is anticipated to be available for review later this summer.

London Tailrace Fishing Access Feasibility Study

A summary of this effort is provided in the PowerPoint included in Appendix A. Ms. Rogers provided an overview of the progress Appalachian has made regarding establishment of a crossing with the railroad. Appalachian anticipates that these negotiations will be successful and result in a crossing that can be utilized by the public. Resolution of this issue is anticipated

during the current license at which time, Appalachian will request relief from conducting this study effort.

Ms. Sangunett (FERC) questioned if the lease is agreed to in August when would the "at grade crossing" be installed so that the public can access the facility? Ms. Rogers indicated that she would find out and let her know. Mr. Bledsoe also asked to be included in the response. Ms. Sangunett asked that it be included in the report. According to Appalachian staff, upon execution of the lease agreement, it would take approximately 8-10 weeks to install the at-grade crossing.

Transmission Corridor Study

Mr. Hreben provided an update on the Transmission Corridor Study. A copy of the PowerPoint is provided in Appendix A. The study is currently ongoing. Wildlife and botanical surveys are scheduled for mid-July.

As part of the study, the length of the Winfield Transmission Line needs to be identified. Kleinschmidt engineering staff met with Appalachian staff and conducted an on-site review of the facilities. A draft report of the results has been prepared and will be distributed to FERC and will be filed as CEII.

Ms. Sangunett questioned whether the document entitled "Identifying Transmission Lines" was reviewed and Mr. Hreben responded that the document had been reviewed.

Ms. Sangunett questioned when the surveys would be completed. Mr. Hreben responded that they will be conducted next week and the areas under the transmission lines will be excluded. Ms. Sangunett suggested contact be made with the FERC engineer on the project, Tim Looney. Mr. Hreben provided a copy of the study to Ms. Sangunett to provide to Mr. Looney. Additional discussion occurred regarding both the Winfield and Marmet lines.

Regarding the Indiana Bat Research, an Appendix was included in the Initial Study Report. In general, there are neither documented hibernacula nor maternity colonies in the

vicinity of the Projects. There is likely some foraging habitat just because of the proximity to the river and summer roosting habitat.

Ms. Sangunett questioned the distance beyond the transmission lines to be surveyed? Mr. Hreben responded the adjoining properties will be characterized. For example, one transmission line goes through a neighborhood and a qualitative assessment will be done in the field. Ms. Sangunett noted that the question remains on how the right of way habitat is managed. For example, is there drift from spraying?

Kerry Bledsoe also questioned whether or not research on the Virginia Big Eared Bat was conducted. It was noted that the same people contacted regarding the Indiana Bat should be contacted regarding the Virginia Bat. It was questioned if there had been any official type of consultation filed with U.S. Fish and Wildlife Service (FWS). Mr. Hreben responded that if there had not, then documentation of the consultation would be filed. Mr. Hreben noted that it probably would have been done during the Pre-Application Document (PAD) stage.

Mr. Bledsoe also questioned the inventory of species of special concern which would be considered endangered if West Virginia had such a law. These species would include more than just Virginia spirea and running buffalo clover. These species are limited in the range and in number but are not federally listed. Mr. Bledsoe indicated that he had provided someone the list but was unsure who it was. The list includes both flora and fauna. According to Mr. Hreben, they will not be inventorying everything but characterizing the species and habitats present with specific searches for Virginia spirea and running buffalo clover. If available, he asked for a distribution map for other species. Mr. Bledsoe indicated that P.J. Harmon may say that it is not necessary and if he does, that is fine but let Kerry know. Mr. Hreben agreed to contact Mr. Harmon. Nick Morgan is the Kleinschmidt botanist/terrestrial biologist conducting the survey.

Recreation Assessment and Angler Use Study

Mr. Hreben provided an update on the Recreation Assessment and Angler Use Study. A copy of the PowerPoint is provided in Appendix A. Mr. Hreben noted that the Recreation Assessment and Angler Use Study is ongoing. The goal is to characterize regional and project recreation opportunities and their use. The methods include an inventory of traffic and spot

counts, visitors and creel surveys, and literature review. The deliverables will include a draft report and final report.

Surveys started in March and occur during 5 weekend days and 5 weekdays per month at each site. Survey clerks collect information on a predetermined schedule. Data collected include vehicle and angler spot counts and exit surveys. Several survey days were missed during April but were rescheduled. Through the end of May, 51 total surveys have been completed; 30 at Marmet and 21 at Winfield. Traffic counter data for the month of March and April indicates an hourly average vehicle count of three at the Winfield site. Discussion occurred as to why traffic counters are only being used at Winfield. It was discussed that this was decided at the kick-off meeting and that there really isn't a suitable location at the Marmet site. Data would include all plant staff and usage by the adjoining school sports fields.

Ms. Sangunett questioned who maintains the signage; it is faded and needs replaced. Ms. Rogers responded that the pier and steps are Appalachian's and Mr. Ryder discussed the signage and the plans for replacement.

Additional discussion occurred on the need for trash and bathroom facilities. In general, the discussion centered on both the need and the acknowledgement that they are often abused at locations where they are provided.

Ms. Sangunett questioned the operations of the plants and specifically, which sites are manned. Mr. Ryder responded that Appalachian keeps two staff at each plant for 40 hours and then whatever overtime is necessary. On occasion, it is necessary to have all six staff at one plant. Ms. Sangunett question who monitors operation. The plants are operated remotely from Roanoke/Columbus; if communication is lost, then someone is immediately dispatched to the plant.

Allison Conner (FERC) indicated that a clear definition of what recreation areas are within the project boundary area and which are not needs to be included in the study report and application. Also include whether the sites are on leased land or not.

Meeting Wrap-up

In summary, Ms. Rogers reviewed the schedule. A meeting summary will be filed with the FERC and copies distributed. There is a comment period through August 22. Ms. Sangunett requested the opportunity to review the filing dates of the studies.

Anticipated availability of reports are:

- Cultural Resources – Final Report in September
- Water Quality – Final Report in October
- Fish Entrainment – Draft ready by end of August
- Transmission Corridor – Draft report ready by end of August
- Recreation Assessment – Draft report in early 2011

APPENDIX A

Initial Study Report Meeting Presentation

London/Marmet (FERC No. 1175) & Winfield (FERC No. 1290) Hydroelectric Projects

Initial Study Report Update

AEP APPALACHIAN POWER
A unit of American Electric Power

Kleinschmidt
Energy & Water Resource Consultants

Background: London-Marmet Project

- 2 Developments on Kanawha River
- London Development at RM 82.8 near Handley, WV
- Marmet Development at RM 67.7 in Marmet, WV
- Developments located at USACE Locks and Dams
- Generating facilities constructed in 1935
- London = 14,000 kW
- Marmet = 14,400 kW
- Current FERC License Issued on September 23, 1983 – expires January 31, 2014

Background: Winfield Project

- On Kanawha River at RM 31.1 in Winfield, WV
- Located at USACE Lock and Dam
- Generating facilities constructed in 1937
- Winfield = 14,760 kW
- Current FERC License Issued on September 26, 1983 – expires January 31, 2014

Project Locations

ILP Process Plan & Schedule

Milestones Accomplished to Date

3/25/2008	Begin consultation with participants and public
8/15/2008	File Notice of Intent and PAD
8/15/2008	Issue public notice of NOl and PAD
10/14/2008	Notice NOI/PAD and issue Scoping Document l (SD1)
11/13/2008	Hold scoping meeting and site visit
12/13/2008	Comment on PAD and SD1; request studies
1/27/2009	Scoping Document No. 2 (SD2) issued (if necessary)
I/27/2009	File proposed study plan
2/26/2009	Hold initial study plan meeting
4/27/2009	Comment on proposed study plan
5/27/2009	File revised study plan
6/11/2009/	File reply comments (to revised study plan)
6/26/2009	Issue study plan determination
2009/2010	Conduct studies and gather information (first season)
6/23/2010	File Initial Study Report
7/8/2010	Hold Initial Study Report meeting

ILP Process Plan & Schedule

Forthcoming Milestones

7/23/2010	Meeting summary and study plan modification
2010/2011	Conduct studies and gather information (second season)
6/23/2011	Updated Study Report
7/8/2011	Hold Updated Study Report meeting
8/12/2011	File Preliminary Licensing Proposal or Draft License Application and 401 WQC
11/10/2011	Comments on Preliminary Licensing Proposal
1/31/2012	File Application of New License

Initial Study Results

From the following studies:

- Cultural Resources Study
- Water Quality
- Fish Entrainment Study
- London Development Tailrace Fishing Access Feasibility Study
- Transmission Corridor Study
- Recreation Assessment and Angler Use Study

Cultural Resources Study

- **Goal**: Identify significant archaeological resources and NRHP eligibility of the Project Area of Potential Effect
- **Methods**:
  - Literature review – WVSHPO files, NRHP info, etc.
  - GIS analysis of archaeological/historic resources
  - Phase I archaeological survey
    - Pedestrian survey and shovel testing
  - Historic architectural survey
    - Visual inspection (interior, exterior & appurtenant facilities)
    - Photographs
    - Staff interviews
  - Artifacts were cleaned, identified, analyzed and prepared for curation.

Cultural Resources Study

- **Deliverables**:
  - Technical Report (in compliance with the NHPA, et. al.)
    - Draft Report (for agency review and comment)
    - Final Report
  - Artifact Curation and Delivery
  - Historic Properties Management Plan (as necessary)

Cultural Resources Study

- **Update:**
  - Consultation with WV SHPO and USACOE
  - Phase I studies complete
  - Studies included architectural investigations and project area field work
  - Draft study report to be distributed by the end of Summer 2010

Cultural Resources Study

- **Study Results:**
  - Previously Recorded Sites
    - London Development Vicinity
      - Five Archaeological Sites – Archaic Period thru 20th century
      - Four aboveground historic resources & one historic complex
      - Booker T. Washington High School is NRHP listed

    - Marmet Development Vicinity
      - Seventeen Archaeological Sites – Late Paleoindian Period thru 20th century
      - Five are NRHP eligible
      - Fourteen aboveground historic resources
      - Ebenezer Chapel is NRHP listed – seven sites eligible, one potentially eligible

    - Winfield Development Vicinity
      - Nineteen Archaeological Sites – Late Paleoindian thru Fort Ancient Periods
      - Thirty-four aboveground historic resources – 18 are NRHP eligible

Cultural Resources Study

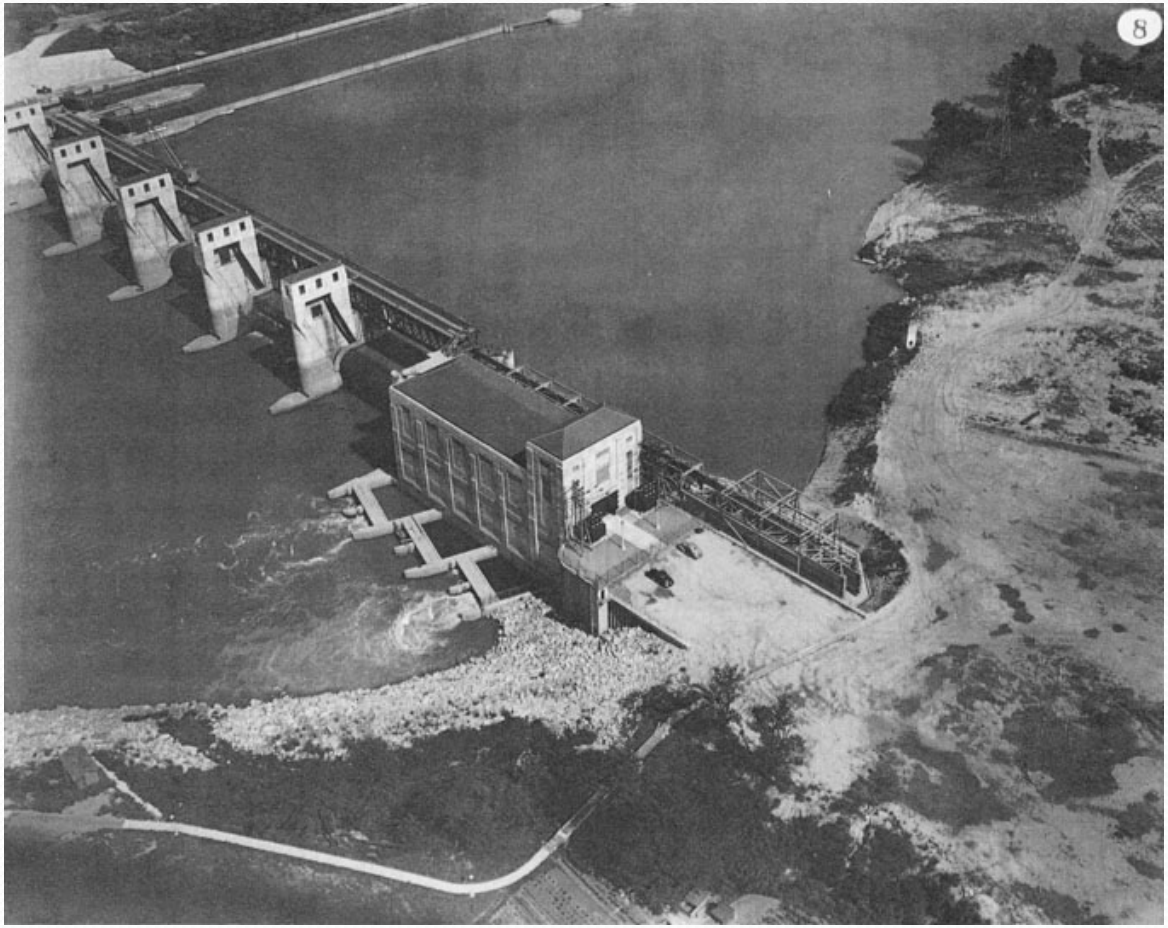
- **Study Results:**
  - Area of Potential Effect- 300 ft upstream/downstream
  - National Register of Historic Places (NRHP) Investigations:
    - Components contributing to the NRHP eligibility of the projects' powerhouses include:
      - The existing original footprint of the powerhouses
      - Key design aspects of the powerhouses
      - The function of the buildings as serving to provide hydroelectric power
    - Specific electrical generating equipment of the Projects do not contribute to NRHP eligibility

London Development

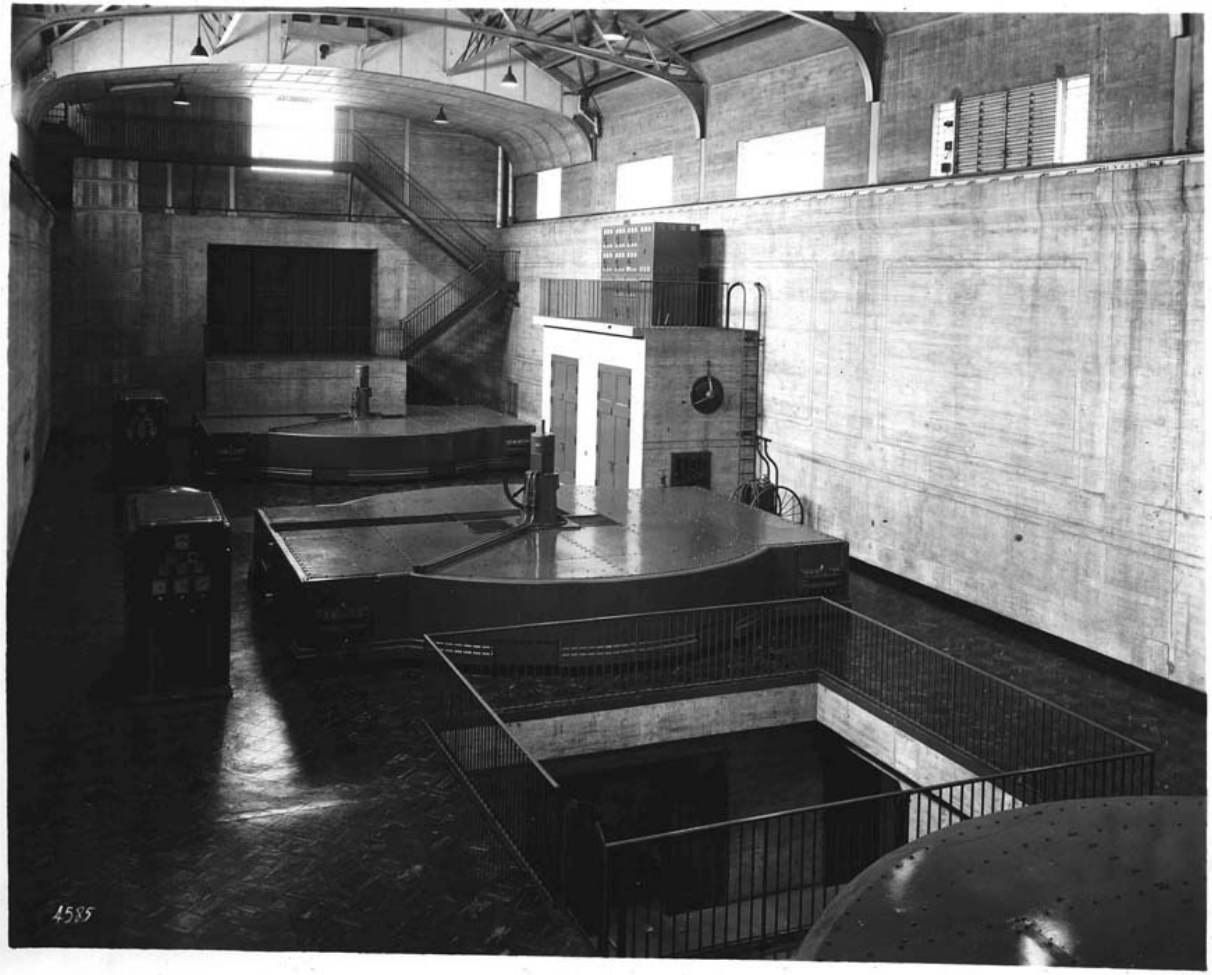
London Development (downstream)

London Development (interior)

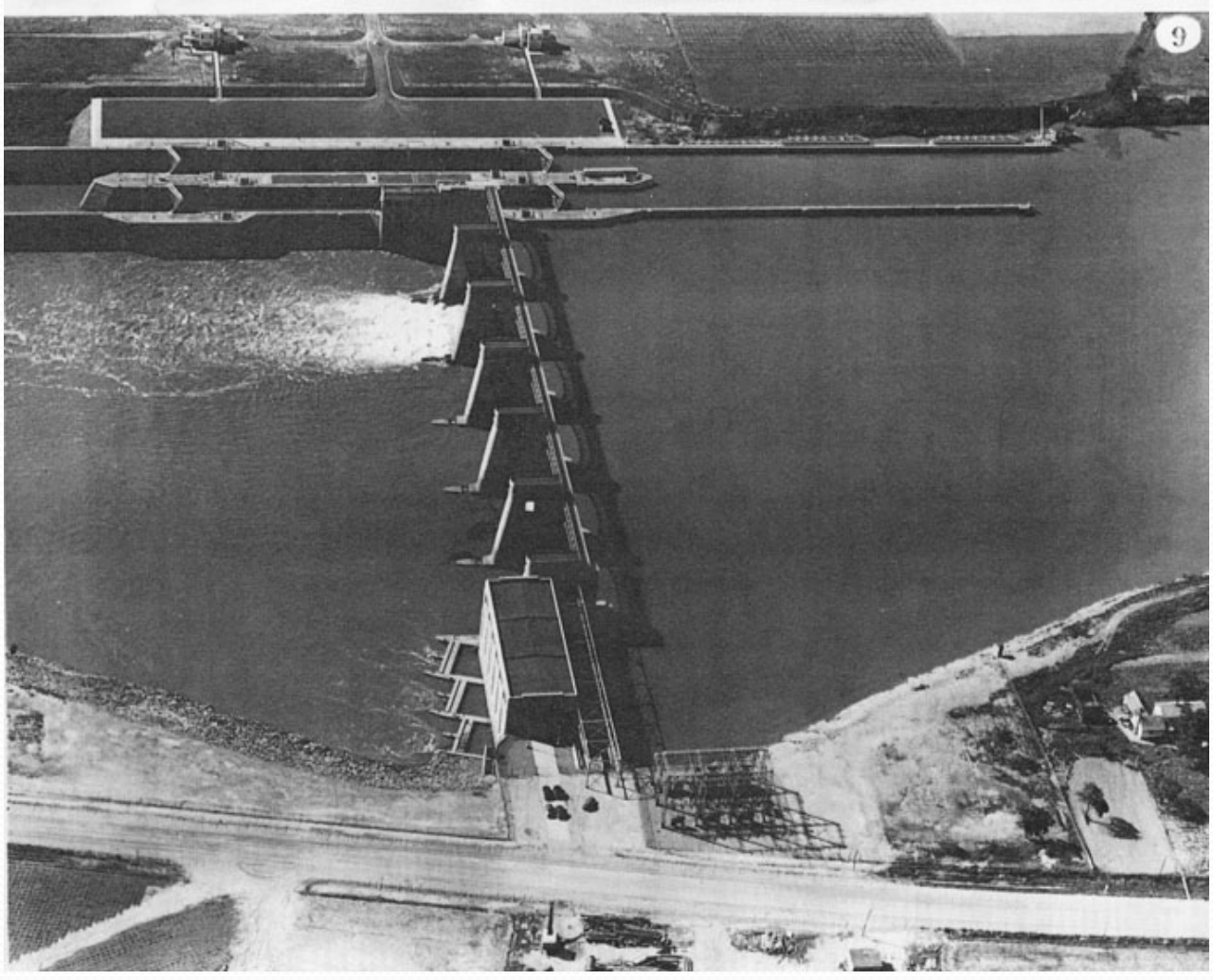
Marmet Development



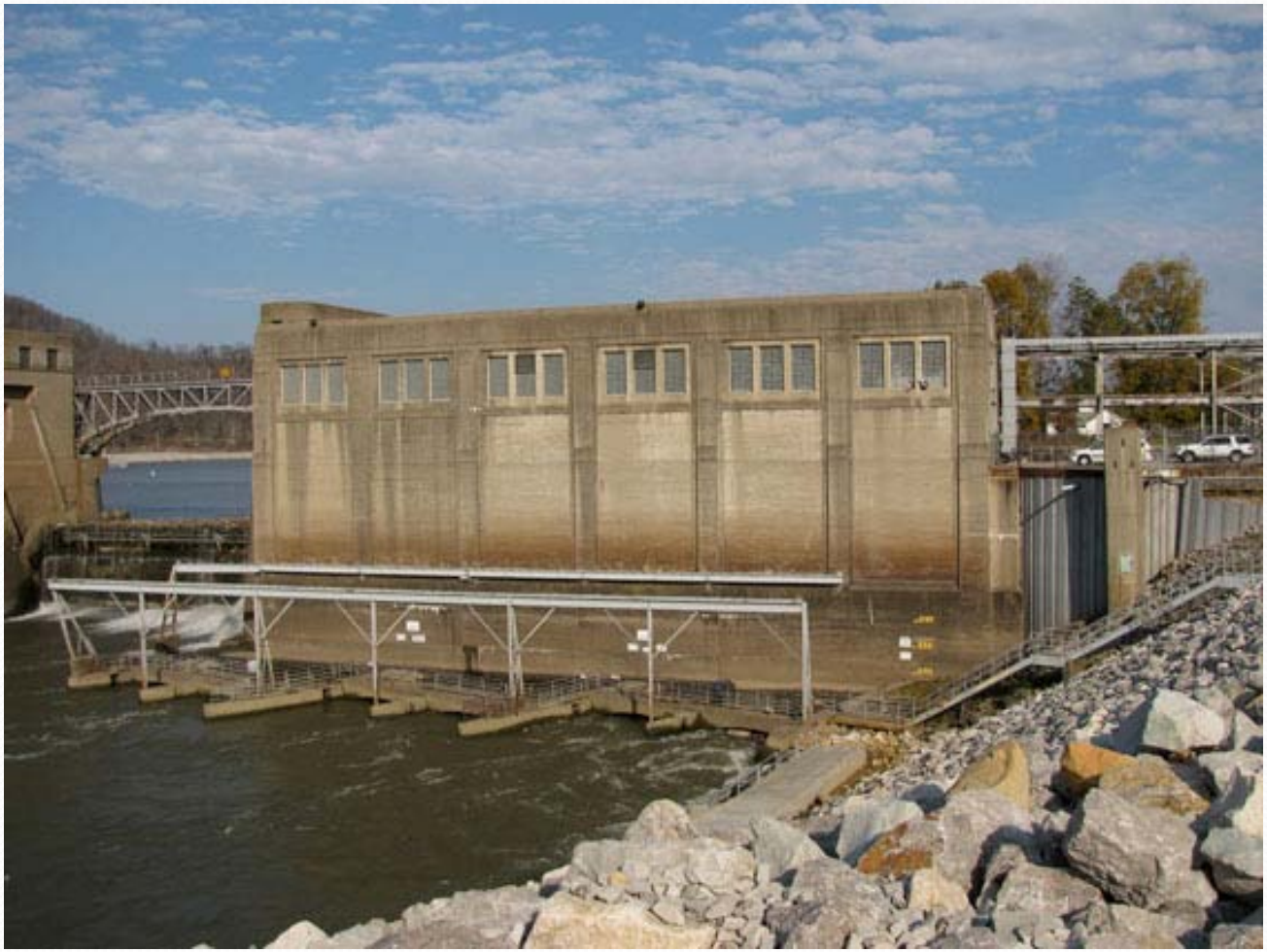
Marmet Development (interior)



Winfield Development



Winfield Development (downstream)



Winfield Development (interior)

Cultural Resources Study

- **Study Results: (continued)**
  - Field investigations of the project areas:
    - All project areas were heavily disturbed from previous construction activities
    - Only one cultural resource site was found, however it was recommended ineligible for inclusion in the NRHP
    - Subsequently, it is recommended that no further archaeological investigations are necessary within the project areas

Cultural Resources Study

- **Summary and Recommendations**
  - NRHP Investigations
    - All three powerhouses were previously determined as eligible
    - High degree of design and construction integrity including:
      - Original footprint
      - Pattern of incised lines on interior walls
      - Woodward governor cases
      - Identification of generator shape in the Winfield tile floors
  - Archaeological investigations identified one site
    - Recommended ineligible
  - The HPMP will include the results of these investigations

Fish Entrainment Study

- **Goal:** Evaluate entrainment and turbine mortality
- **Methods:**
  - Literature Review – swimming speeds, intake avoidance behavior, spatial/temporal use of river upstream
  - Identification of existing entrainment issues at Projects
  - Comparative analysis of similar projects
  - Intake velocity profile measurements and analysis
  - Evaluation of other contributing injury/mortality factors
- **Deliverables:**
  - Draft Report (for agency review and comment)
  - Final Report

Fish Entrainment Study

- **Update:**
  - Field work originally scheduled for Fall 2009 was rescheduled for Spring 2010 to limit complications in data collection
  - Study is ongoing:
    - Currently reviewing evidence for existing entrainment issues at the Projects
    - Similar projects being reviewed for potential entrainment issues
    - Intake velocity data currently being processed

Fish Entrainment Study

- **Initial Study Results**:
  - Literature review on species of interest:
    - A list of 35 species occurring in the projects' vicinity has been compiled.
    - Investigations completed on life history characteristics such as:
      - habitat preferences,
      - swimming speeds,
      - intake avoidance, and
      - seasonal movements

Fish Entrainment Study

- **Initial Study Results:** (continued)
  - Review of entrainment at similar projects:
    - Similar facilities to the Projects where empirical data exists have been identified
    - These studies are being reviewed to identify trends in entrainment that may be applicable
    - Entrainment patterns are typical of other facilities in the EPRI database.
      - Most entrained fish are small (< 6 in TL) and YOY
      - Entrainment is episodic
      - Year class strength is likely a primary influence

Fish Entrainment Study

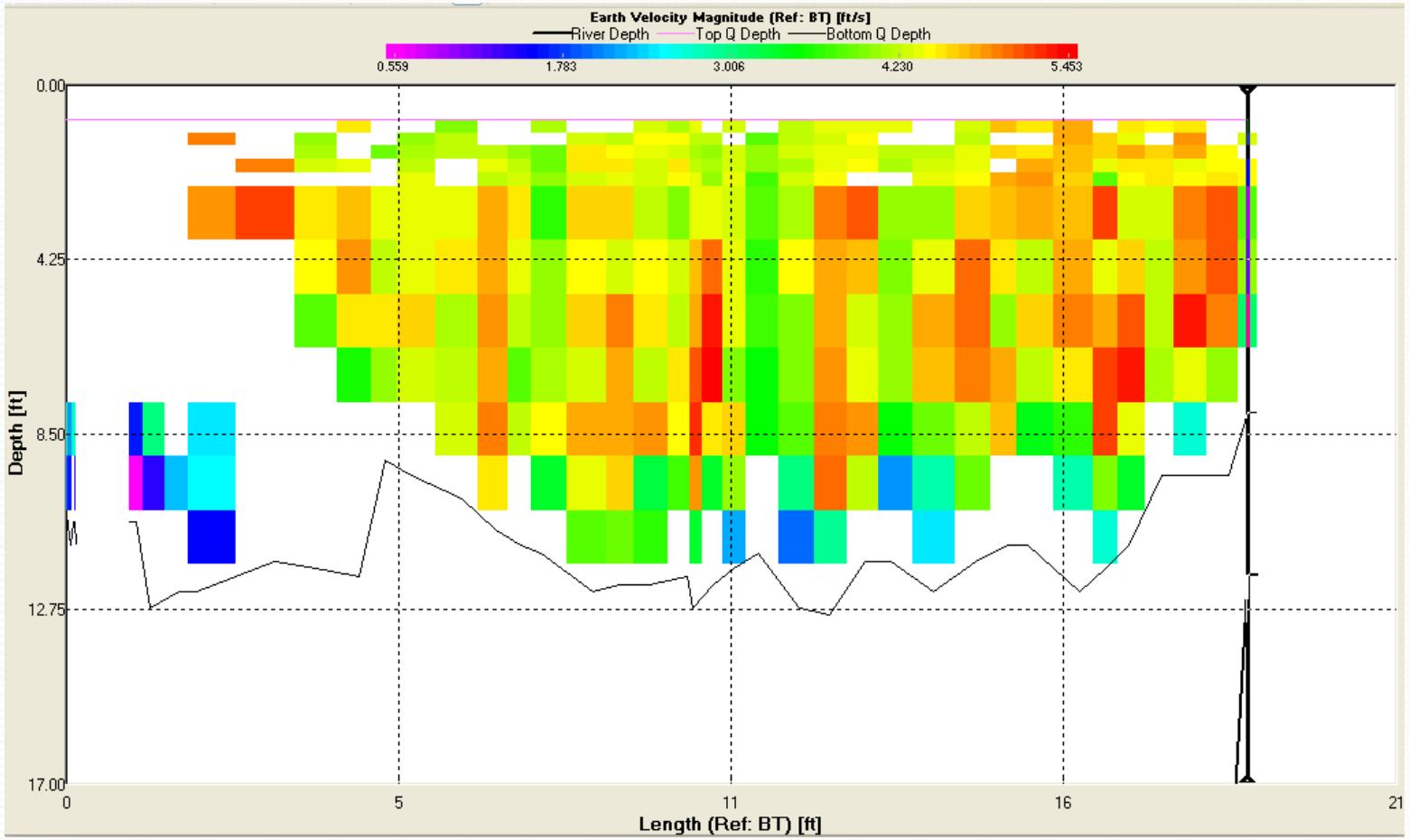
- **Initial Study Results:** (continued)
  - Review of turbine passage survival rates at similar turbines:
    - Empirical data from other sites has been identified
    - Blade strike probabilities are being calculated based on fish size (Franke et al).
    - Fish size is the primary driver compared to species or body shape
    - Indications are that blade strikes are the primary source of mortality (i.e. low head does not promote decompression related injuries).

Fish Entrainment Study

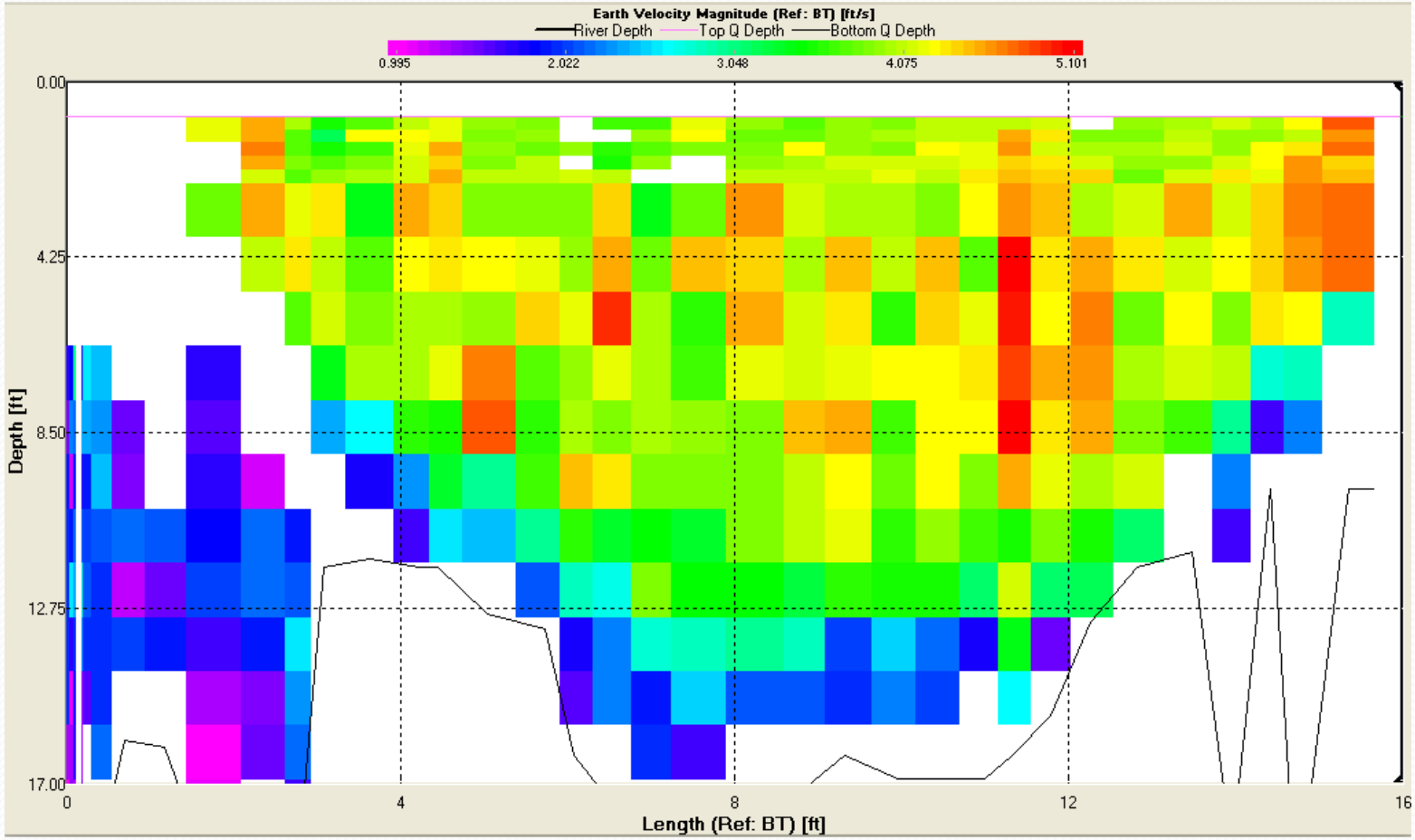
- **Initial Study Results:** (continued)
  - Velocity Profile Measurements:
    - Intake velocity field data at Projects collected May 10, 2010
    - Data is still being processed
    - Field and engineering work will be used to develop velocity profiles at the Projects' intakes
    - Intake velocities will be compared to life history data of target species to aid in entrainment/impingement assessments

ADCP Unit Deployed

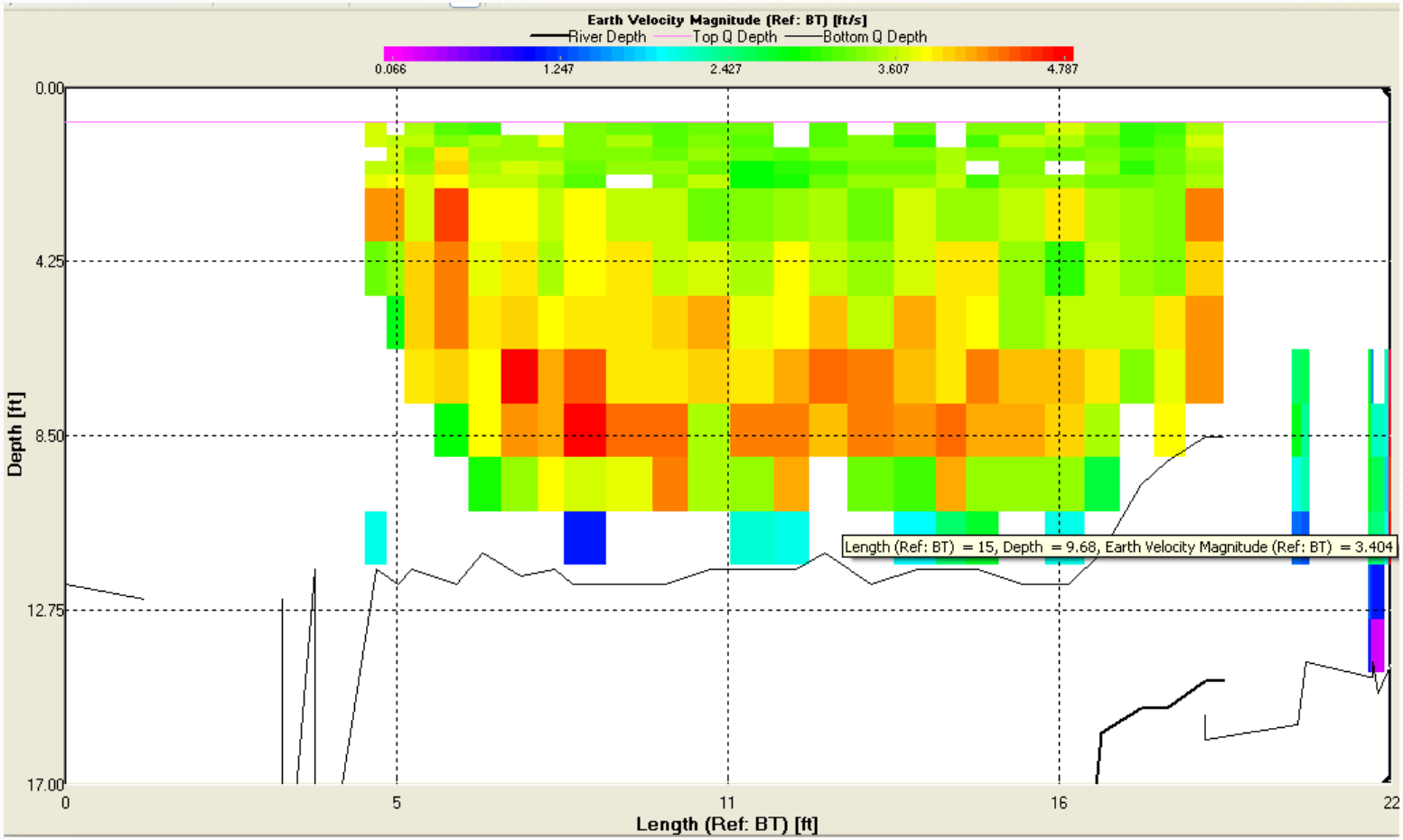
London – Unit 2 – Full Gate



Marmet – Unit 2 – Full Gate



Winfield – Unit 2 – Full Gate



Recreation Assessment and Angler Use Study

- **Goal:** Characterize regional and Project recreation opportunities
- **Methods:**
  - Recreation Facility Inventory
  - Traffic counts
  - Spot counts
  - Visitors/Creel Survey
  - Literature Review – recreation trends, population estimates, etc.
- **Deliverables:**
  - Draft Report (for agency review and comment)
  - Final Report

Recreation Assessment and Angler Use Study

- **Update:**
  - First survey day occurred on March 4, 2010 at the Marmet Tailrace Angling Site
  - Clerks are stationed at the Marmet and Winfield Tailrace Angling Sites and perform the following:
    - Vehicle and angler spot counts
    - Administer exit surveys
  - 1 weekday at each of the sites, 2weekend days at Winfield, and 1 weekend day at Marmet were missed during the month of April due to extenuating circumstances
  - To extent possible, these dates were rescheduled consistent with final approved study plan

Recreation Assessment and Angler Use Study

- **Initial Study Results:**
  - As of the end of May, the following schedule has been completed at the recreation sites:

	Winfield			*Marmet*		
Month	**Weekdays**	**Weekends**	**Holidays**	**Weekdays**	**Weekends**	**Holidays**
March	5	5	N/A	5	5	N/A
April	4 (1 study day rescheduled to May)	3 (1 study day rescheduled to June)	N/A	4 (1 study day rescheduled to May)	4 (1 study day rescheduled to May)	N/A
May	6	4	1	6	5	1

  - As of June 1st, 30 survey days have been completed at the London/Marmet Project, with 28 days completed at the Winfield Project.

Recreation Assessment and Angler Use Study

- **Initial Study Results:** (continued)
  - As of June 1, 2010, 51 total surveys have been completed for the study:
    - 30 at Marmet, and
    - 21 at Winfield.
  - Traffic counter data for the month of March and April indicates an hourly average vehicle count of three at the Winfield site.

Transmission Corridor Study

- **Goal**: Identify wildlife and botanical communities of the Winfield Project transmission line corridor
- **Methods**:
  - GIS analysis and determination of primary transmission line
  - Staff interviews
  - Literature review – RTE species, conservation plans, etc.
  - Field Environmental Resources Survey
- **Deliverables**:
  - Draft Report (for agency review and comment)
  - Final Report

Transmission Corridor Study

- **Update:**
  - Study is currently in progress
    - Wildlife and botanical community surveys to be conducted this month
    - Timing was chosen to include the flowering seasons of Running Buffalo Clover and Virginia spiraea
  - Expected to be completed by mid-summer 2010
  - Draft report anticipated to be distributed by late-summer 2010

Transmission Corridor Study

- **Initial Study Results:**
  - Primary Winfield Project transmission lines, and associated lengths, identified:
    - Primary transmission line terminates at the substation immediately adjacent to the powerhouse

Transmission Line Determination

- Determine if the two 69-kV lines terminate at the: (1) substation immediately adjacent to the Winfield powerhouse; (2) point where the line splits for the Bancroft and Teays substations (as shown on Exhibit G-2 filed with the PAD); or (3) Bancroft and Teays substations.
- The primary transmission line is the line that carries project power to the point of inter-connection with the grid, or the point where (a) a distribution line exists to carry project power to a customer(s) (wholesale or individual), or (b) a switching station exists that would facilitate energy routing to and from various sources and/or regions.
- The length of the primary transmission line would be that part of the line running from the powerhouse identified above.

Determination continued

- The Winfield Project power is stepped up to 69kV through a single step-up transformer in the substation directly adjacent to the plant.
- The 69kV side of the transformer is connected to a single bus.
- Two transmission lines are connected to this bus via circuit breakers. One line goes to the Teays Station where it is tapped for distribution circuits and then continues to the Milton Station.
- The other line goes to the Bancroft Station where it can be connected to a common 69kV bus which also connects to a breaker and connects to a transmission line to the Nitro Station.

Determination continued

- The Winfield station serves the purpose of switching two transmission lines (the Teays and Bancroft circuits) in addition to simply connecting the Winfield Project power to the grid.
- While the Winfield substation acts as a connection point for the Winfield Project, it is also an isolation and switching point for transmission and distribution.
- The Winfield substation would exist independently of the hydroelectric project and would continue to function even if the Winfield Project were decommissioned.

Determination continued

- The Teays and Bancroft transmission lines themselves serve a purpose for the operation of the regional utility grid and should not be considered as a part of the Winfield hydro project for FERC relicensing.

- The Primary Transmission line for the Winfield Project ends at the Winfield Station located directly adjacent to the Project

Transmission Corridor Study

- **Initial Study Results:** (continued)
  - Initial (non-field) investigations into known occurrences of Indiana Bat completed and communication records documented:
    - In West Virginia, Indiana bat hibernacula are limited to the eastern portion of the State
    - Some forested areas near the Projects may provide summer roosting habitat for Indiana bat
    - No local hibernacula or maternity colonies are known near the project or the associated primary transmission lines
    - Additional habitat information will be collected during July field surveys

London Development Tailrace Fishing Access Feasibility Study

- **Goal**: Re-establish access to the London tailrace fishing access
- **Methods**: Investigate methods for providing public access to the tailrace fishing area that have minimal adverse impacts and intrusion on the environment, and have acceptable capital and maintenance cost implications

London Development Tailrace Fishing Access Feasibility Study

- **Update:**
  - The final study is due May 2011
  - Appalachian considered the following options:
    - replacing the bridge
    - providing an at-grade crossing for the public
  - Appalachian is pursuing an at-grade crossing that could be installed during the term of the current license
  - Upon successful installation of the at-grade crossing, Appalachian will provide to FERC documentation of public access and request that the London Development Tailrace Fishing Access Feasibility Study be dismissed

Questions?

APPENDIX B

Water Quality Presentation

London/Marmet Hydroelectric Project No. 1175 Winfield Hydroelectric Project No. 1290: Water Quality Study

Draft Interim Report

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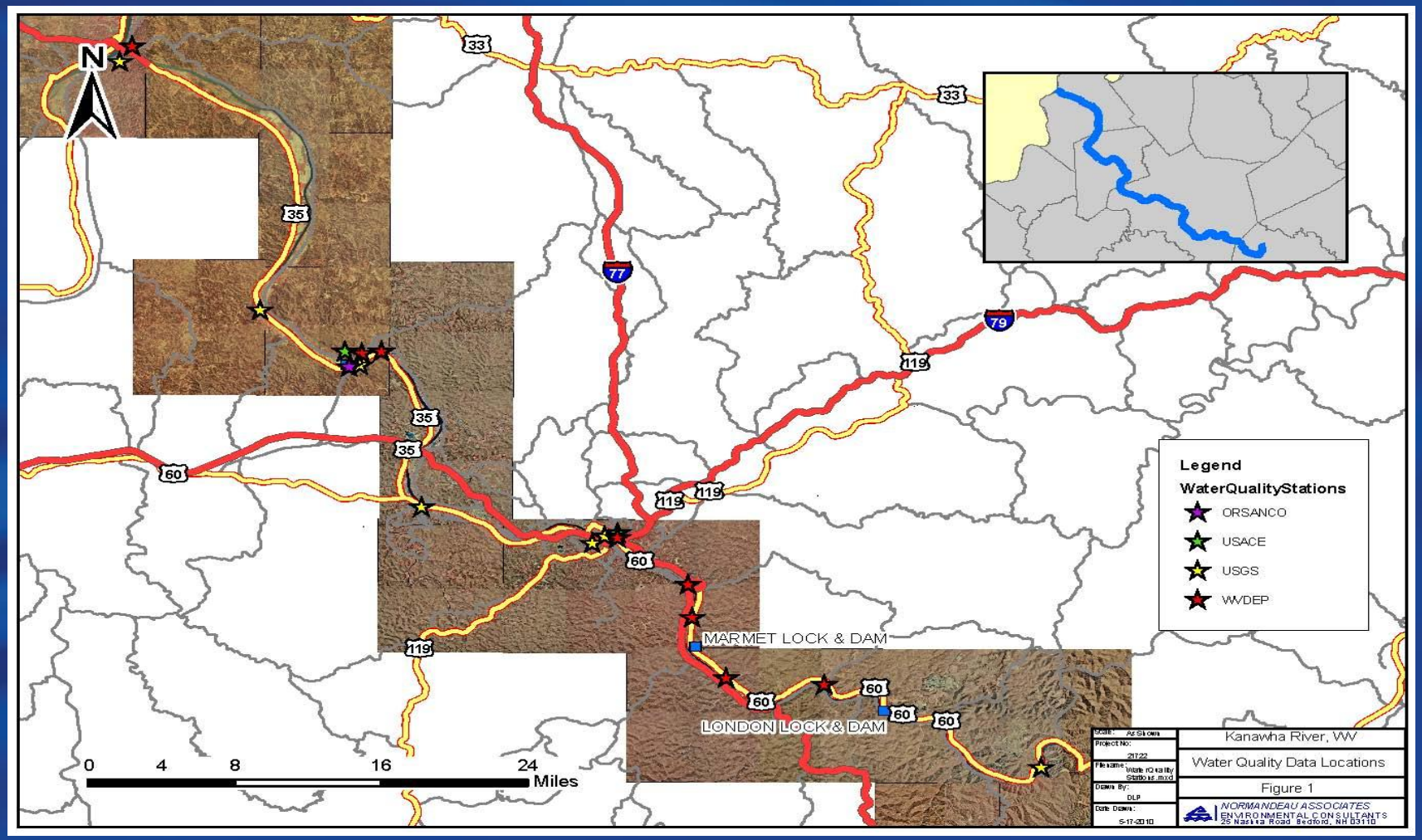
Study Objectives

1. Assemble and review existing water quality data for the Kanawha River in the study area.
2. Characterize existing dissolved oxygen (DO) and temperature conditions within and downstream of the Projects.
3. Collect new water quality data.
4. Identify Projects' impacts to water quality, if any.
5. Identify measures that could enhance DO .

Existing Water Quality Data

- Data Sources:
  - WV Department of Environmental Protection
  - U.S. Geological Survey
  - U.S. Army Corps of Engineers
  - Ohio River Valley Water Sanitation Commission

Existing Data Sampling Locations



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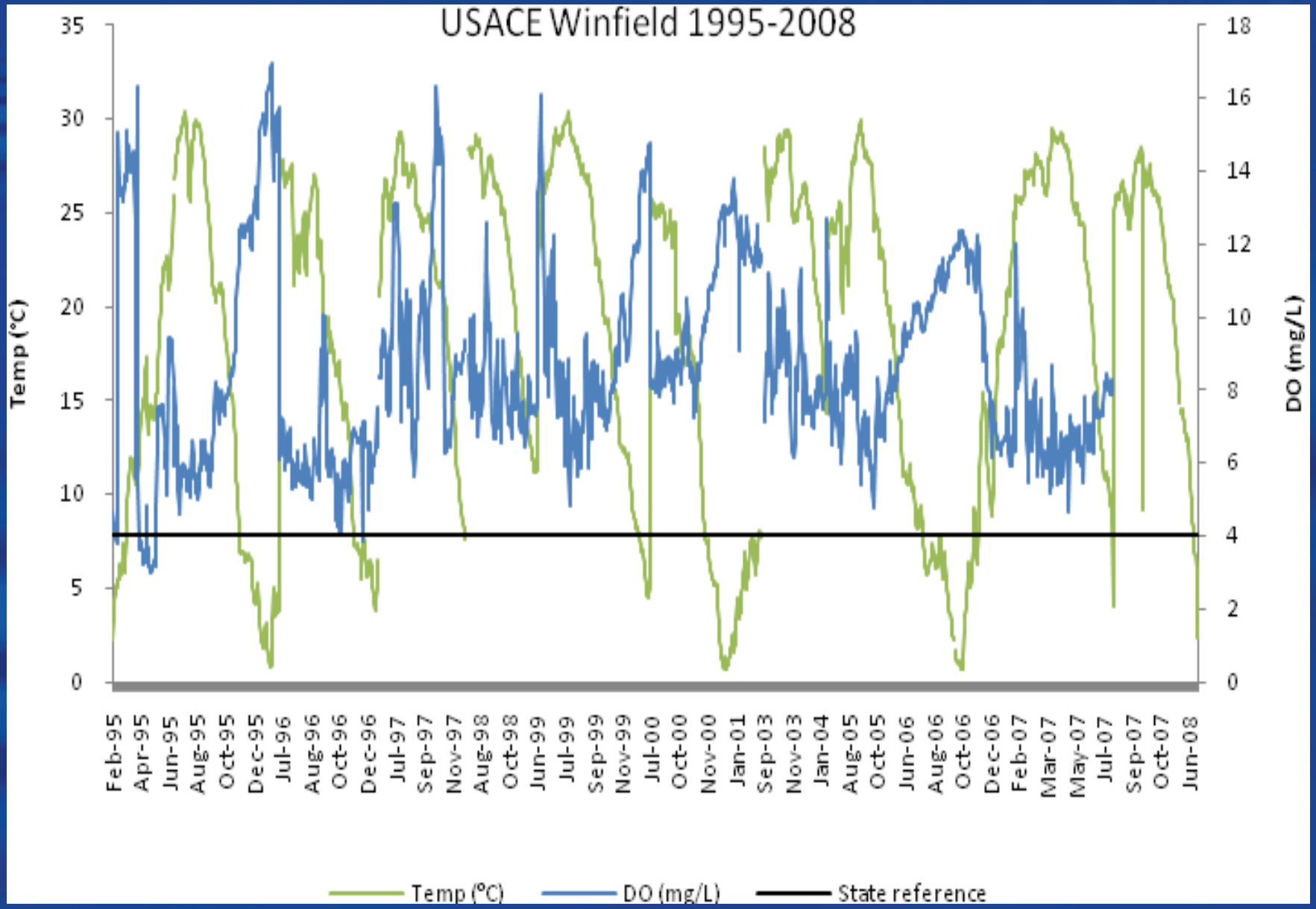
Results

- Focus on Dissolved Oxygen (DO)
  - State Water Quality Standard
    - Kanawha River – main stem
      - River Mile 0 to 72 (Zone 1), DO not less than 4.0 mg/l at any time
      - River Mile 72 to source (Zone 2), DO not less than 5.0 mg/l at any time



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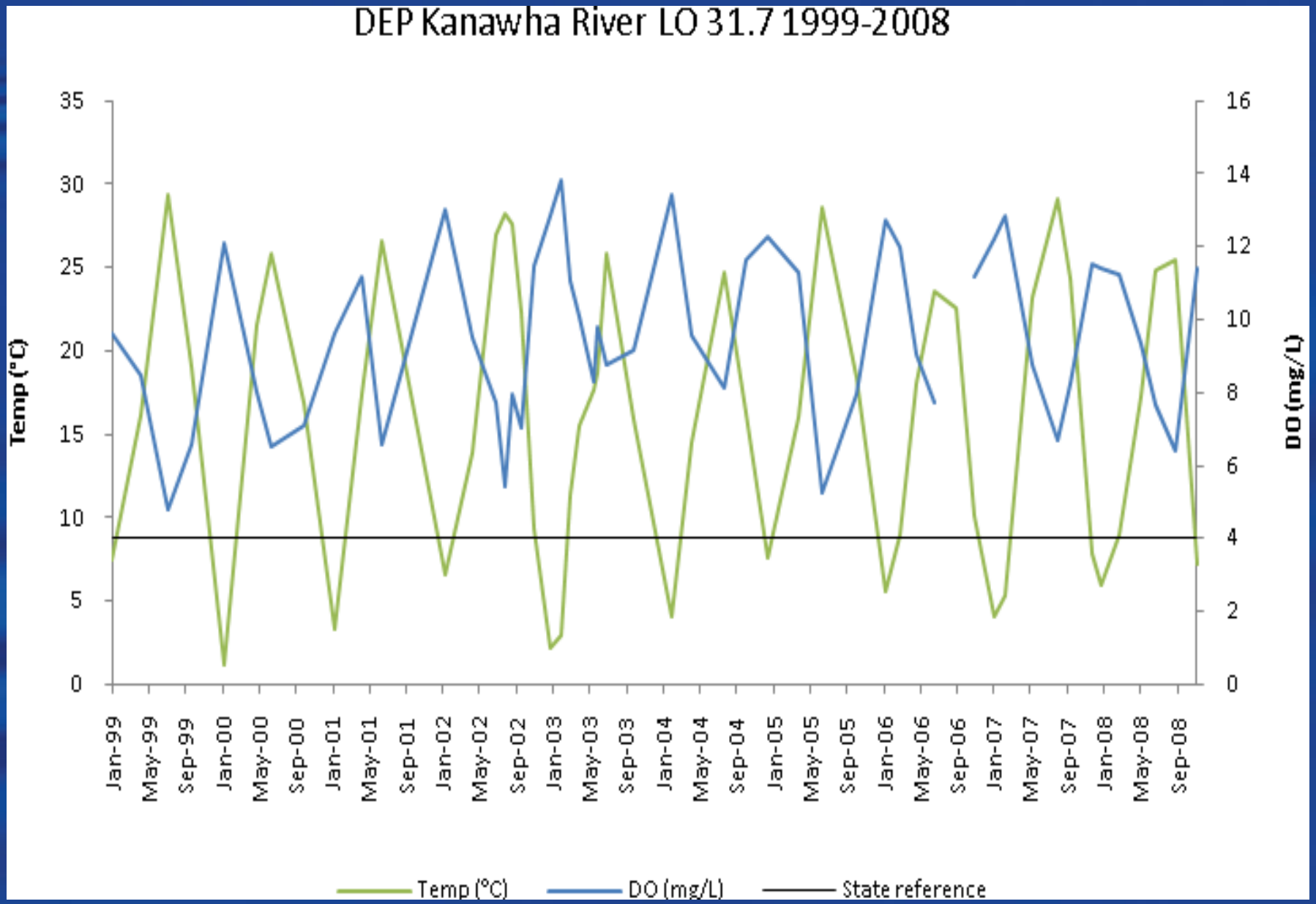

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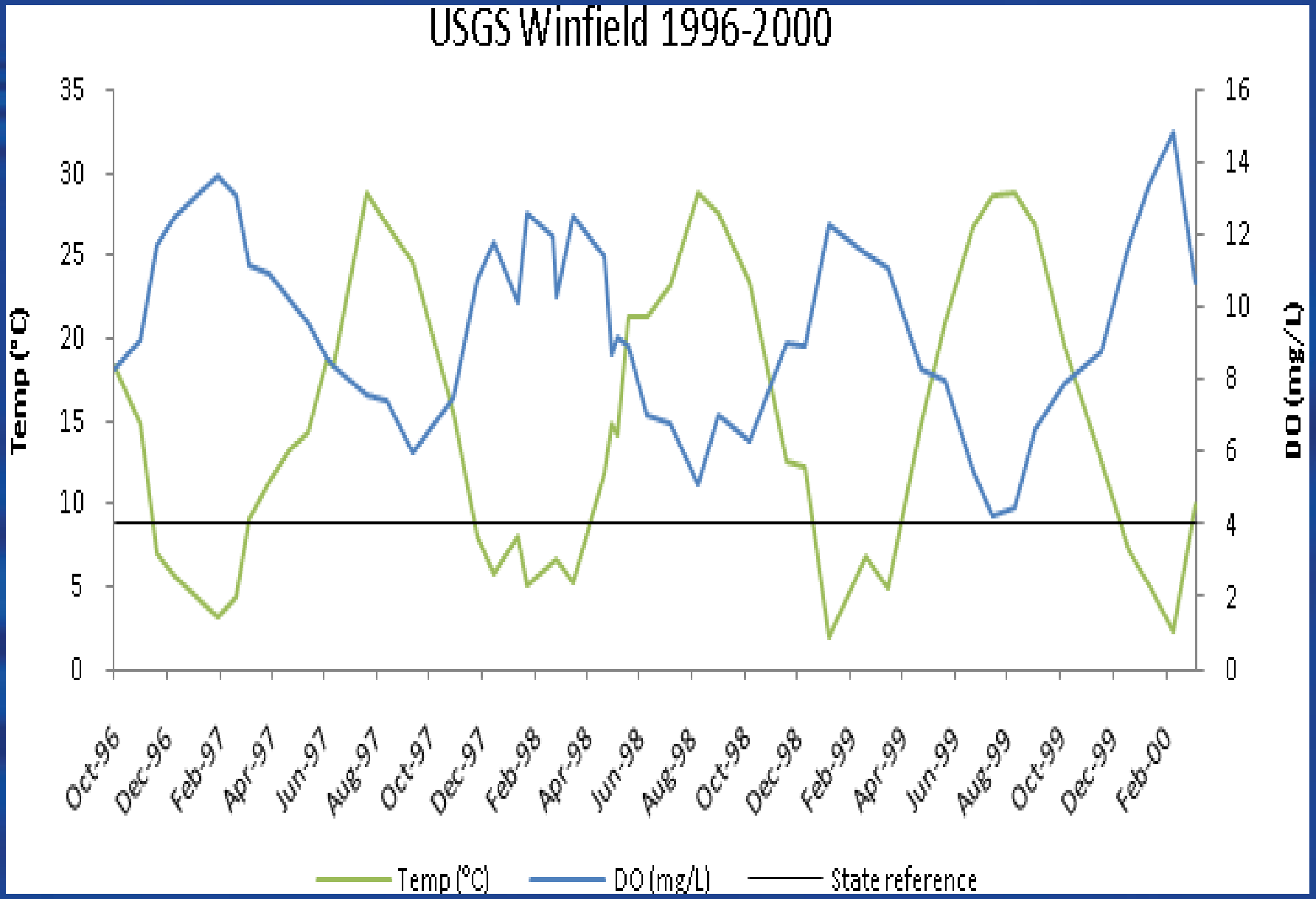

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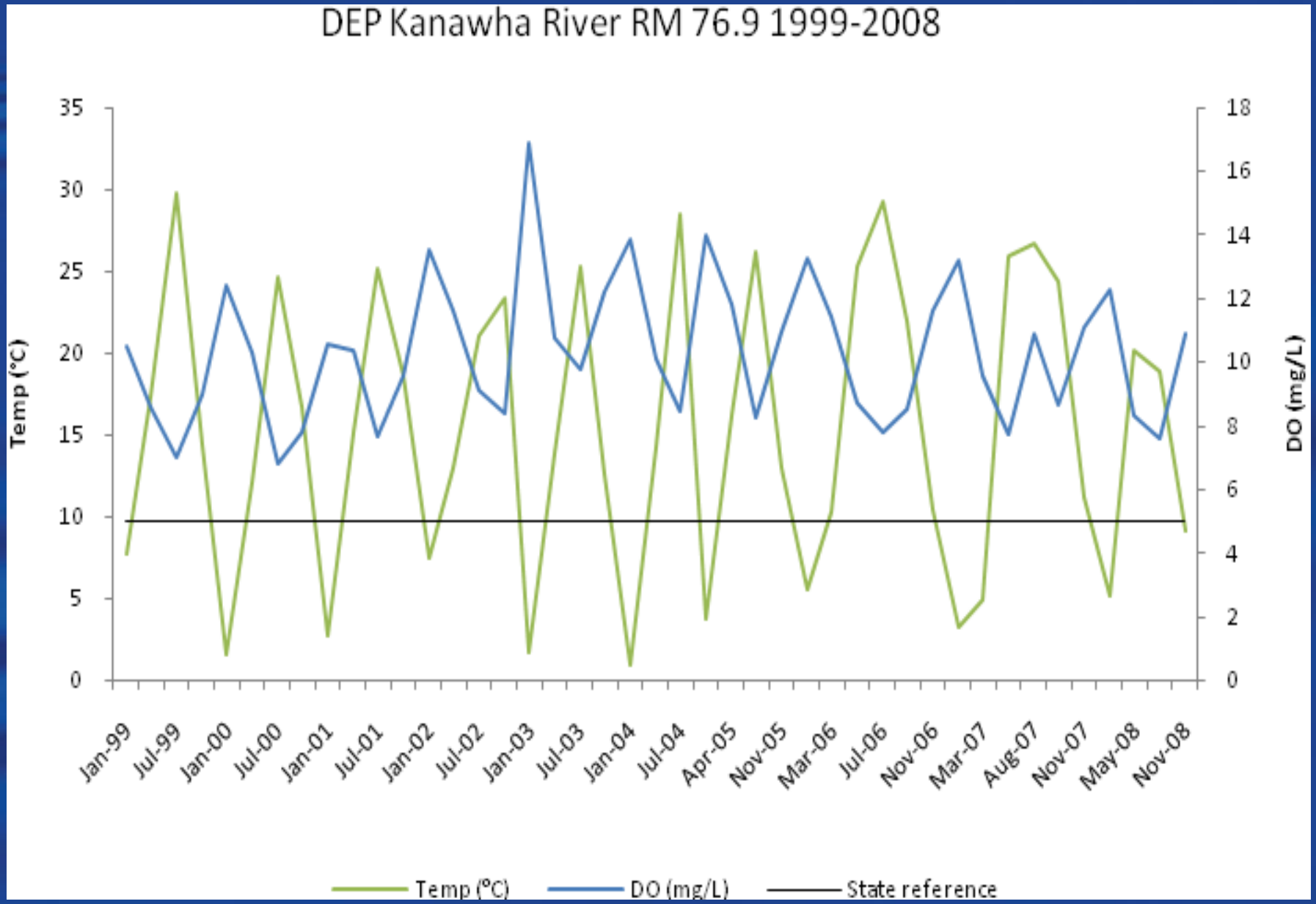

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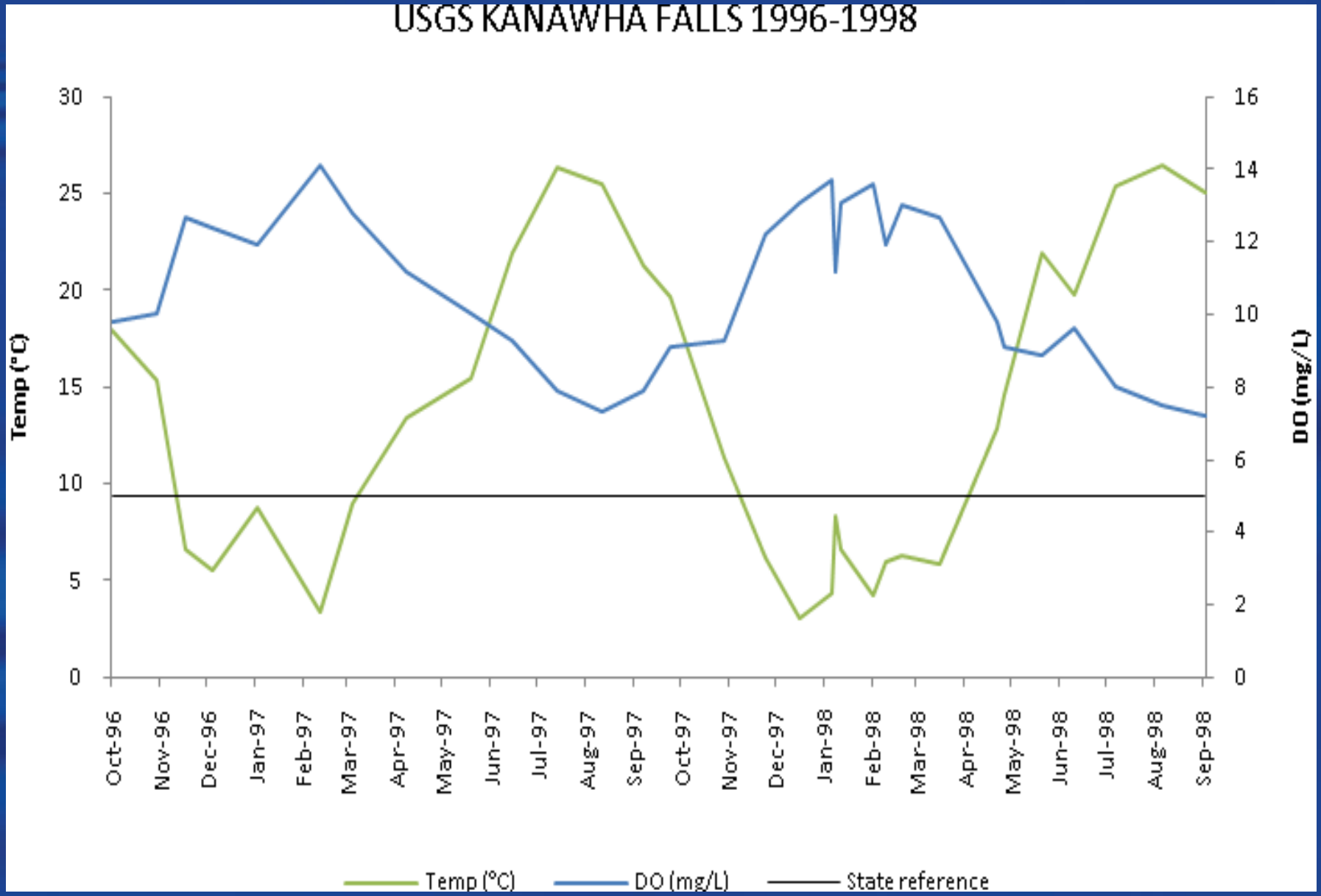

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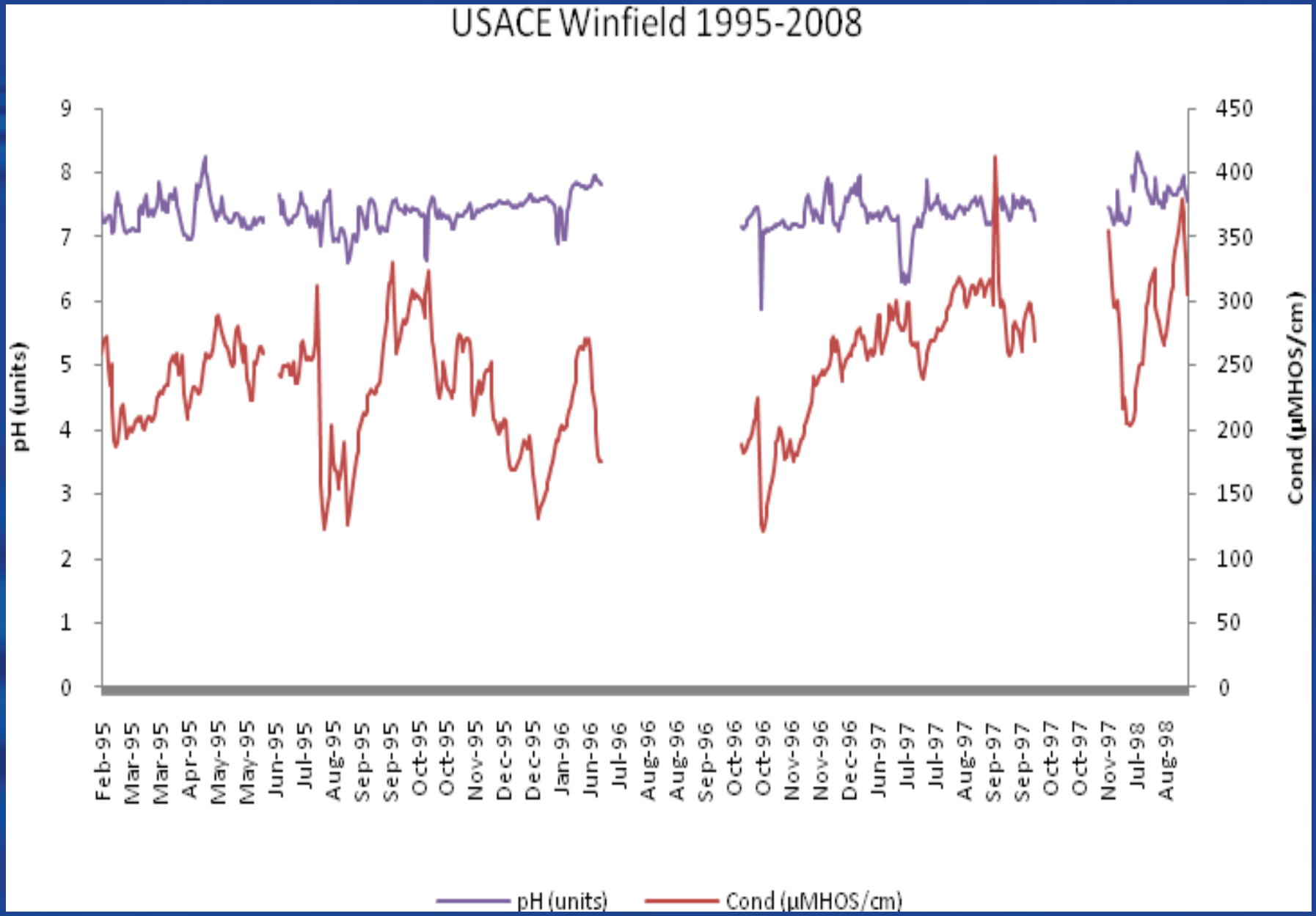
Additional Parameters

- Conductivity
  - Winfield; 125 – 425 µmhos/cm
  - Kanawha Falls; 100 – 225 µmhos/cm
- pH
  - Winfield; 6.5 – 8.5
  - Kanawha Falls; 7.0 – 8.5



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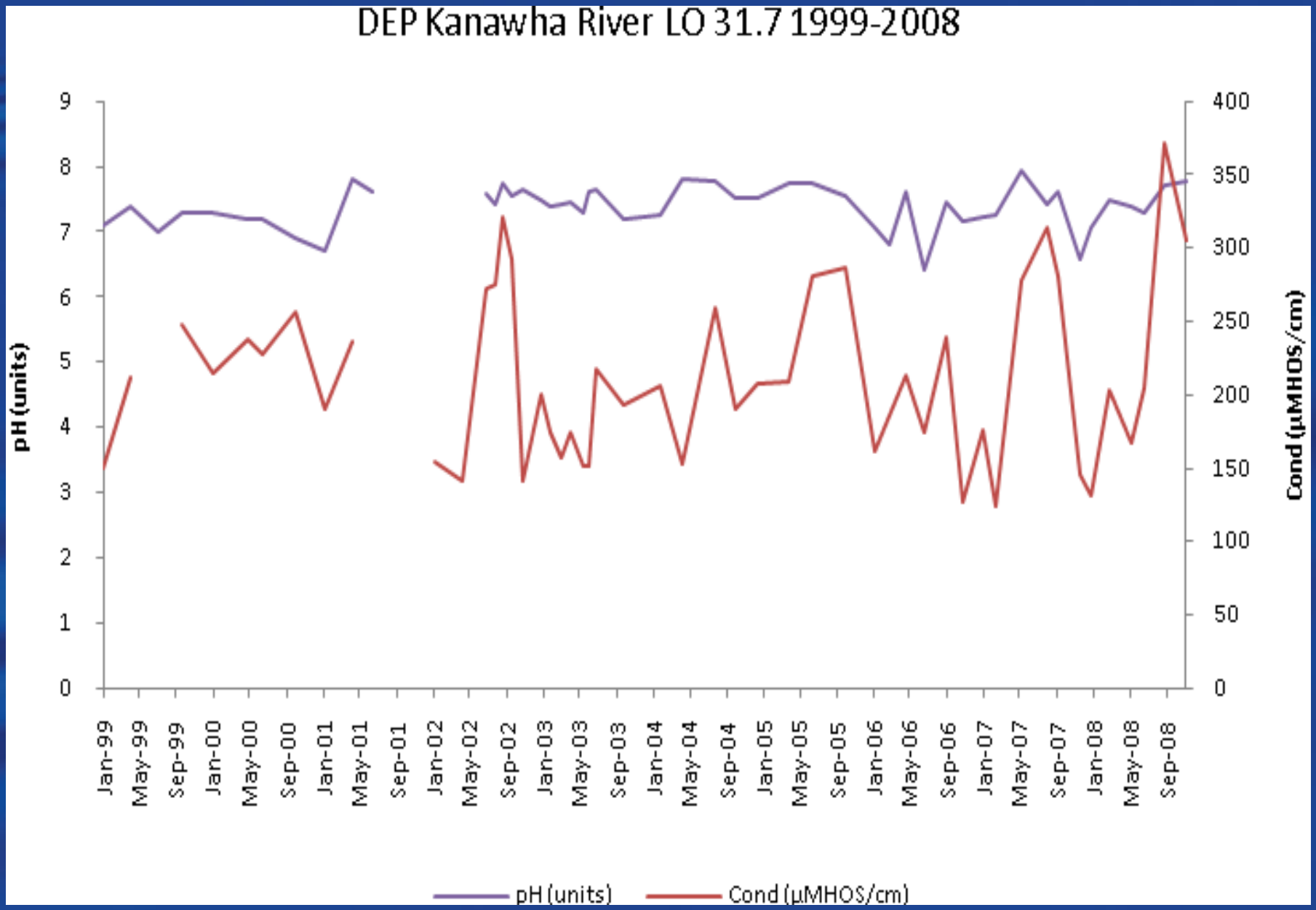

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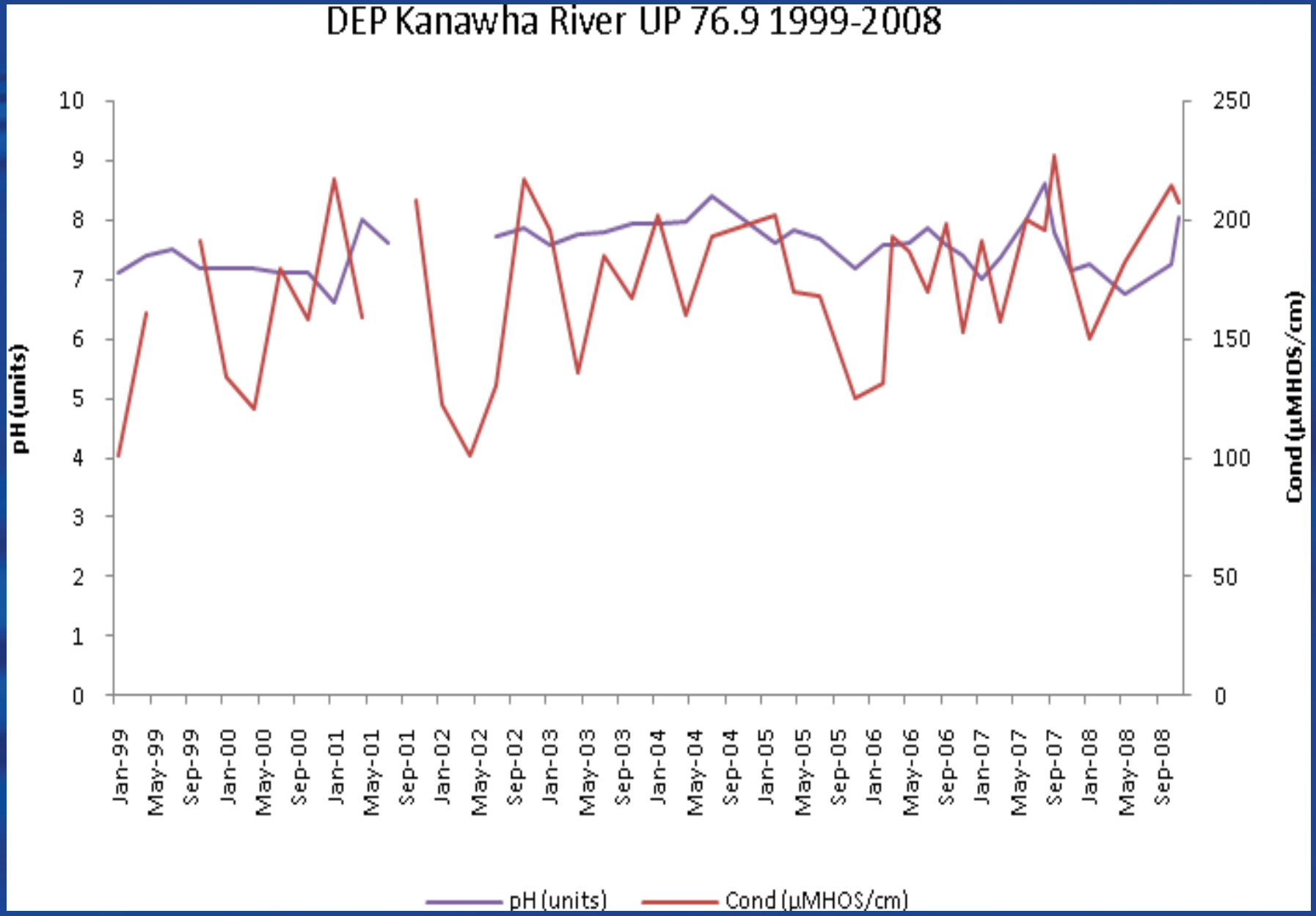

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Kanawha River
EPA Impaired Water Status

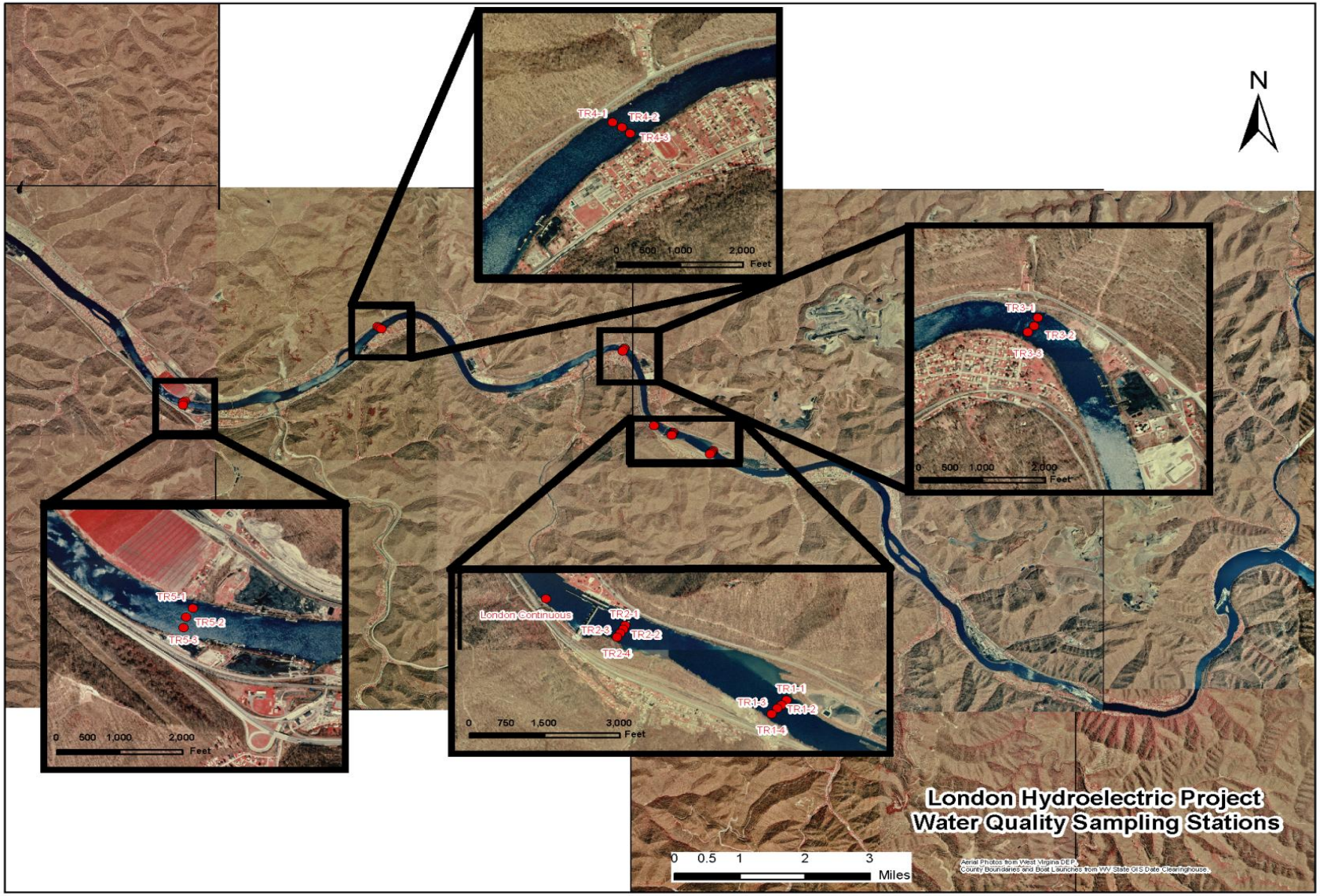
- Fecal Coliform, unknown source, from RM 1.5 to RM 57.9 at confluence with Elk River
- Mercury, unknown source, from RM 32.2 at Winfield Locks to RM 57.9 at confluence with Elk River
- PCBs, unknown source, from the mouth at confluence with Ohio River to RM 57.9 at confluence with Elk River
- A TMDL for dioxin was prepared for the lower Kanawha (from the mouth at confluence with Ohio River to RM 45.5 at confluence with Coal River)

New Water Quality Data Collection Program

- Conducted a weekly sampling program from 15 June to 17 October, 2009 for DO, temperature, pH and conductivity at selected transects upstream and downstream of each hydroelectric facility
- Collected continuous DO, temperature, pH and conductivity in the tailrace of each facility

Water Quality Sampling Locations

- Five transects at each hydroelectric facility
  - Two upstream transects, one immediately upstream of the dam (opposite the upstream entrance to the locks) and a second ~ ½ mi upstream. Each transect was comprised of 4 sampling stations, equi-spaced across the transect
  - Three downstream transects, one approximately 1 mi below the dam, a second approximately 5 to 10 mile downstream and a third about 10 to 20 miles downstream, depending on the facility. Each transect was comprise of 3 sampling locations, equi-spaced across the transect.
  - Each transect location was determined by field review and in consultation with the Stakeholders.



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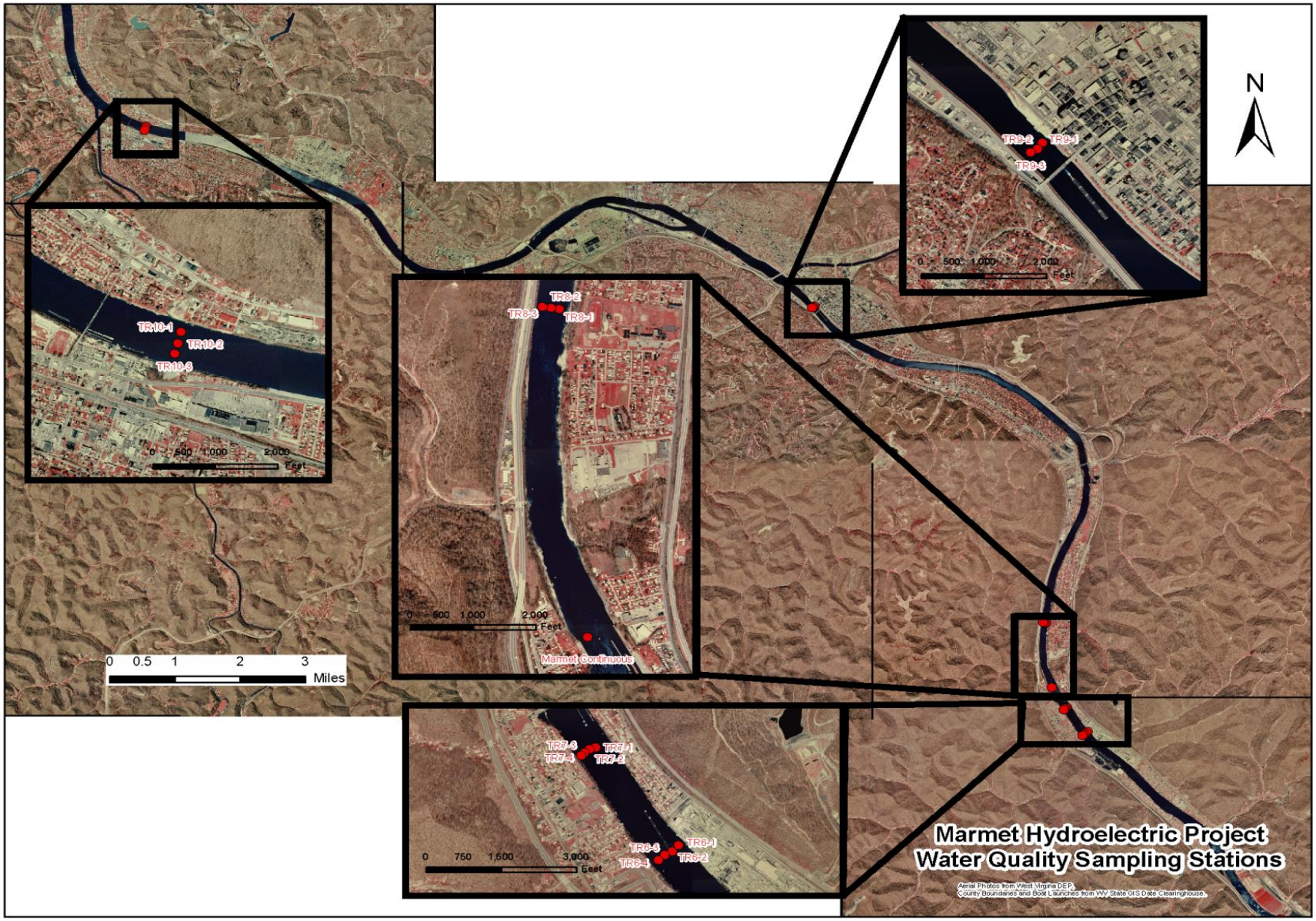

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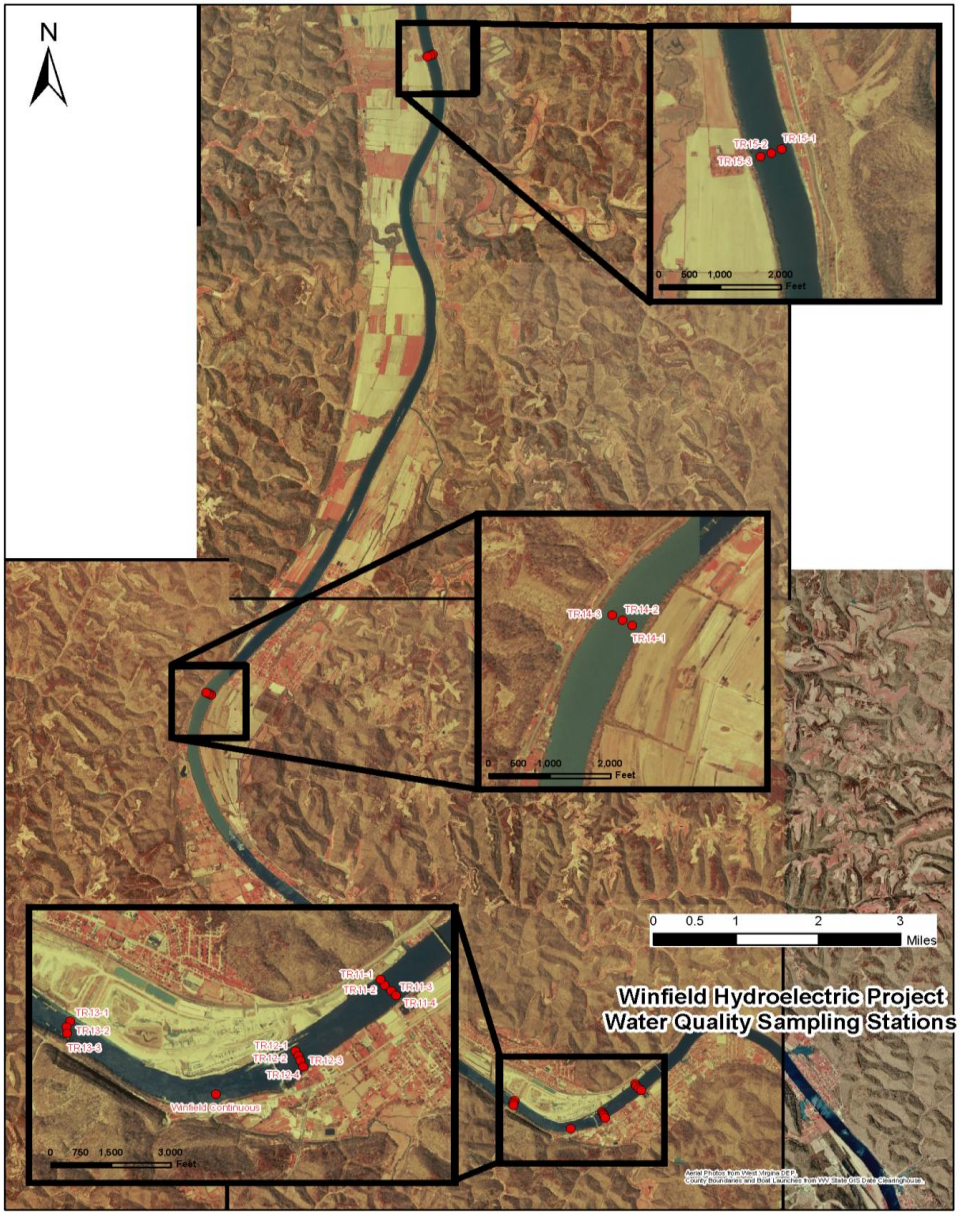

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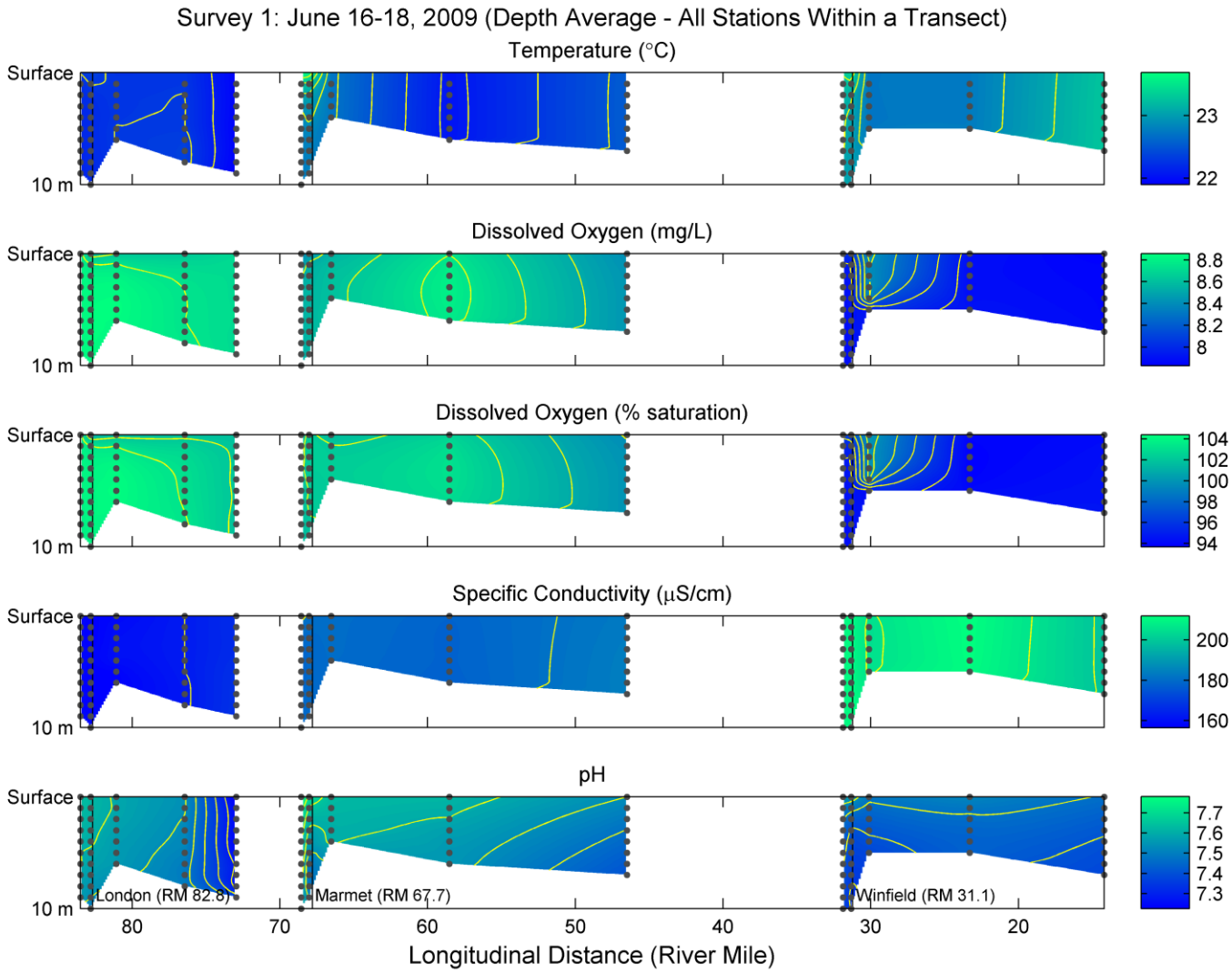
Sampling Protocol

- Each sampling location (51 total) was visited once per week for 18 consecutive weeks.
- Water quality measurements were taken by one-meter profile for the entire depth at each location.
- Downstream stations were sampled in the pre-dawn to early daylight hours. Upstream stations were sampled in late morning to early afternoon.
- Sampling was conducted on three consecutive days each week, with the first day devoted to London sampling stations, the second to Marmet and the third to Winfield.
- Continuous monitors were visited weekly for maintenance, calibration and data download.

Results

- Data presentation
  - Graphical
    - Vertical profiles
    - Horizontal profiles
  - Tabular
      - » Data CD

Figure 2. London/Marmet and Winfield Hydroelectric Projects Relicensing Water Quality Study



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General Conclusions

- Temperature and specific conductivity generally increased from upstream to downstream
- Dissolved oxygen and pH generally decreased from upstream to downstream
- During most sampling events, there was little indication of vertical or horizontal stratification/ variability anywhere in the study area

Exceptions

- All parameters showed some level of stratification occasionally and at specific sampling locations

Figure 3. London/Marmet and Winfield Hydroelectric Projects Relicensing Water Quality Study

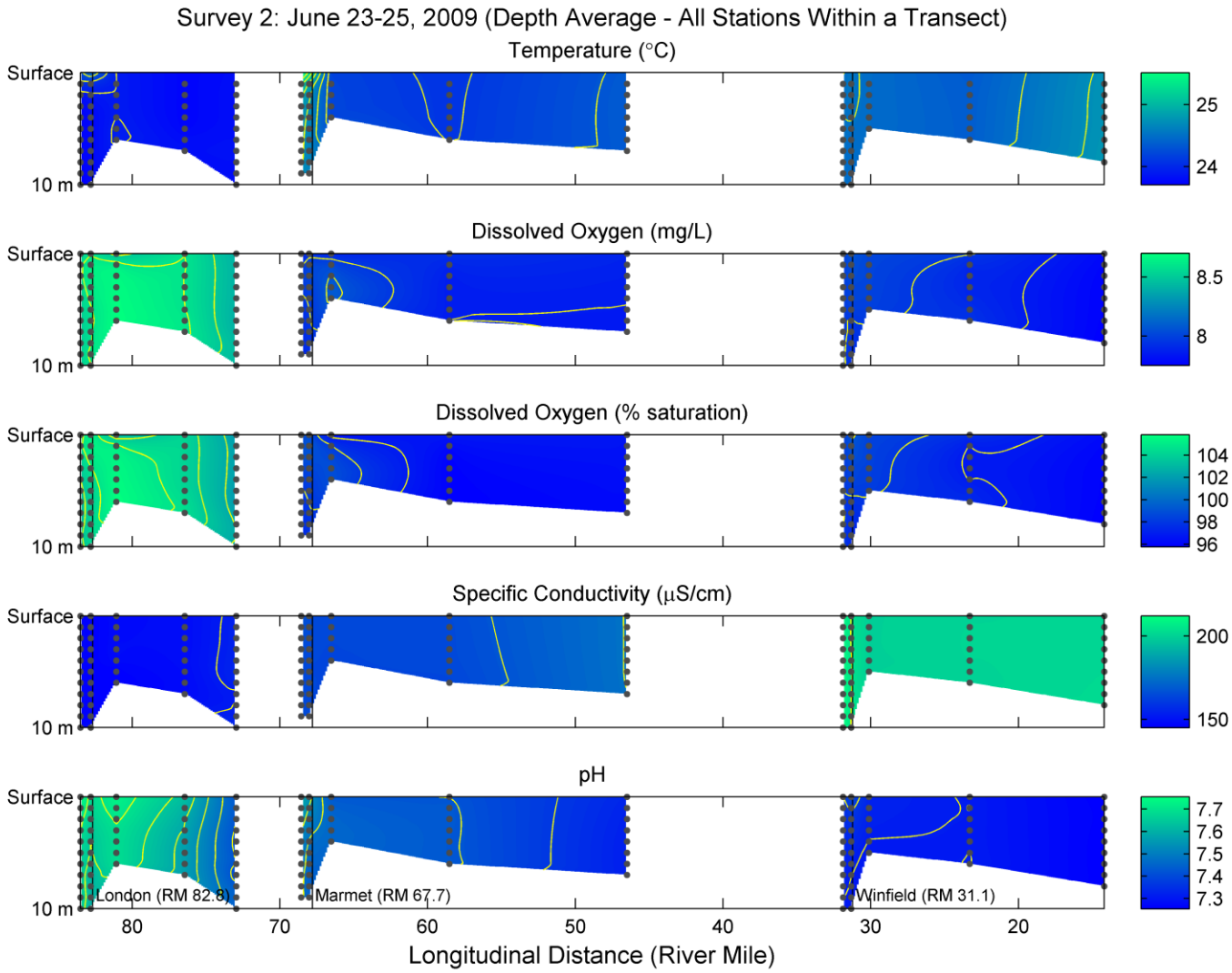

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Figure 5. London/Marmet and Winfield Hydroelectric Projects Relicensing Water Quality Study

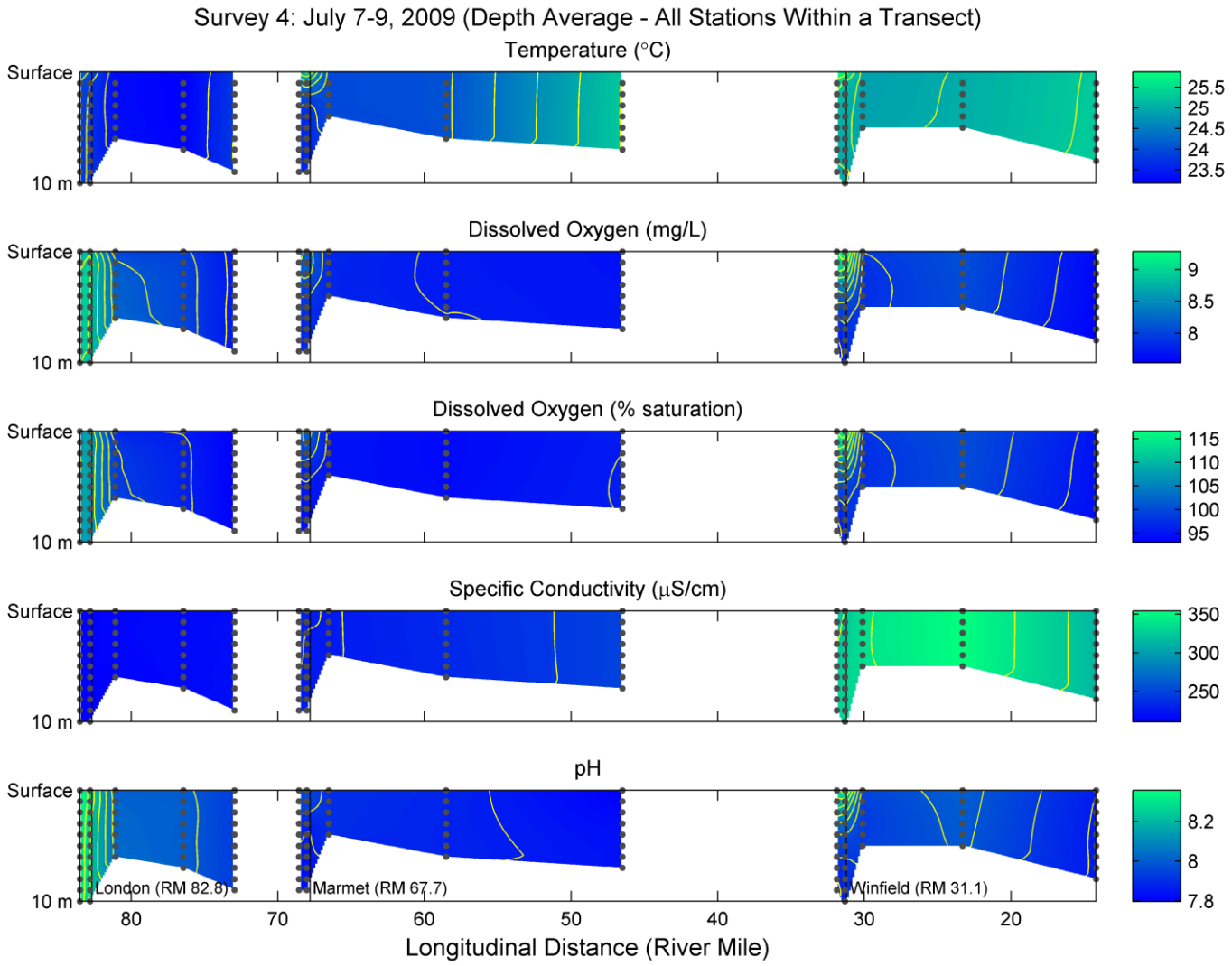

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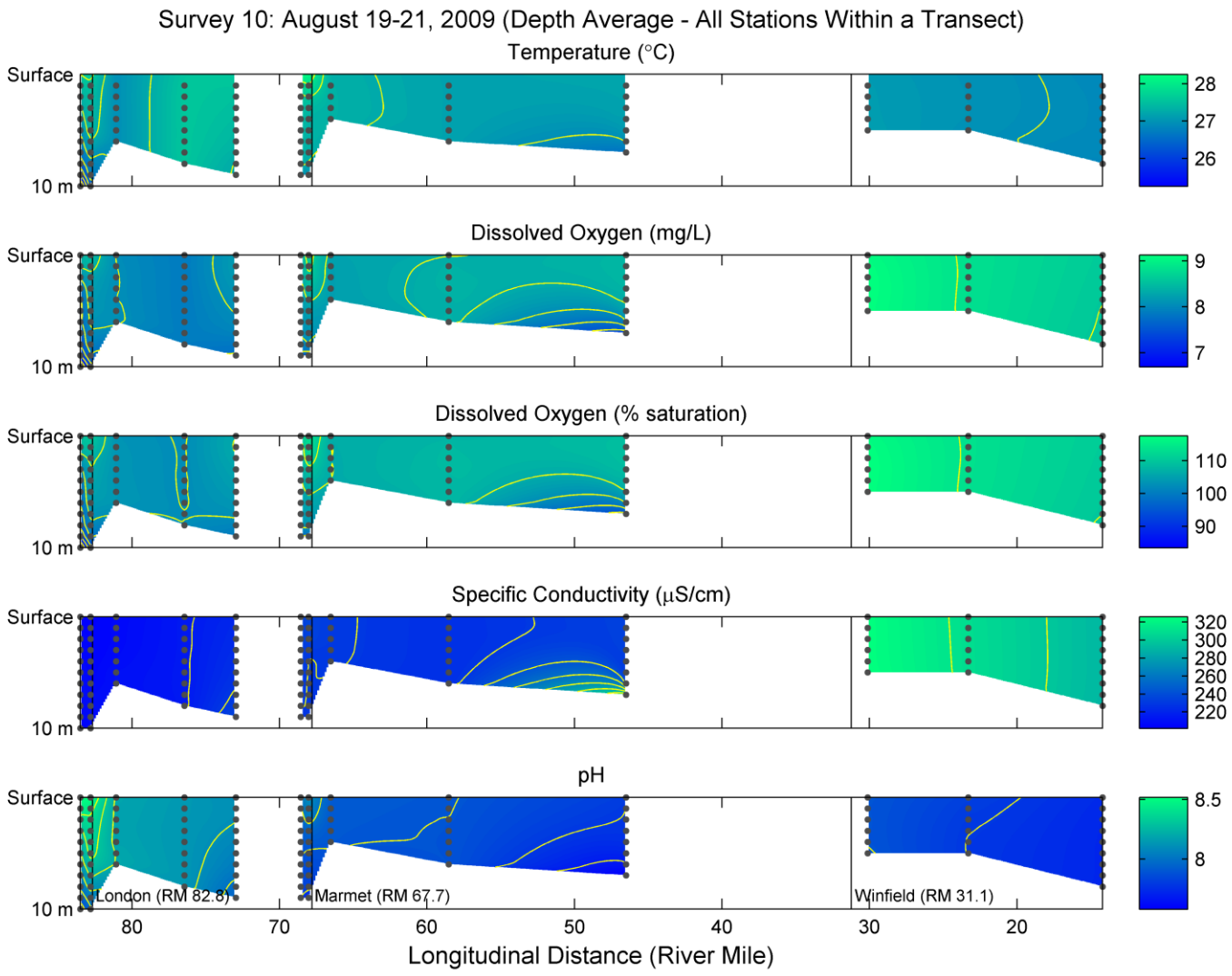
Figure 11. London/Marmet and Winfield Hydroelectric Projects Relicensing Water Quality Study



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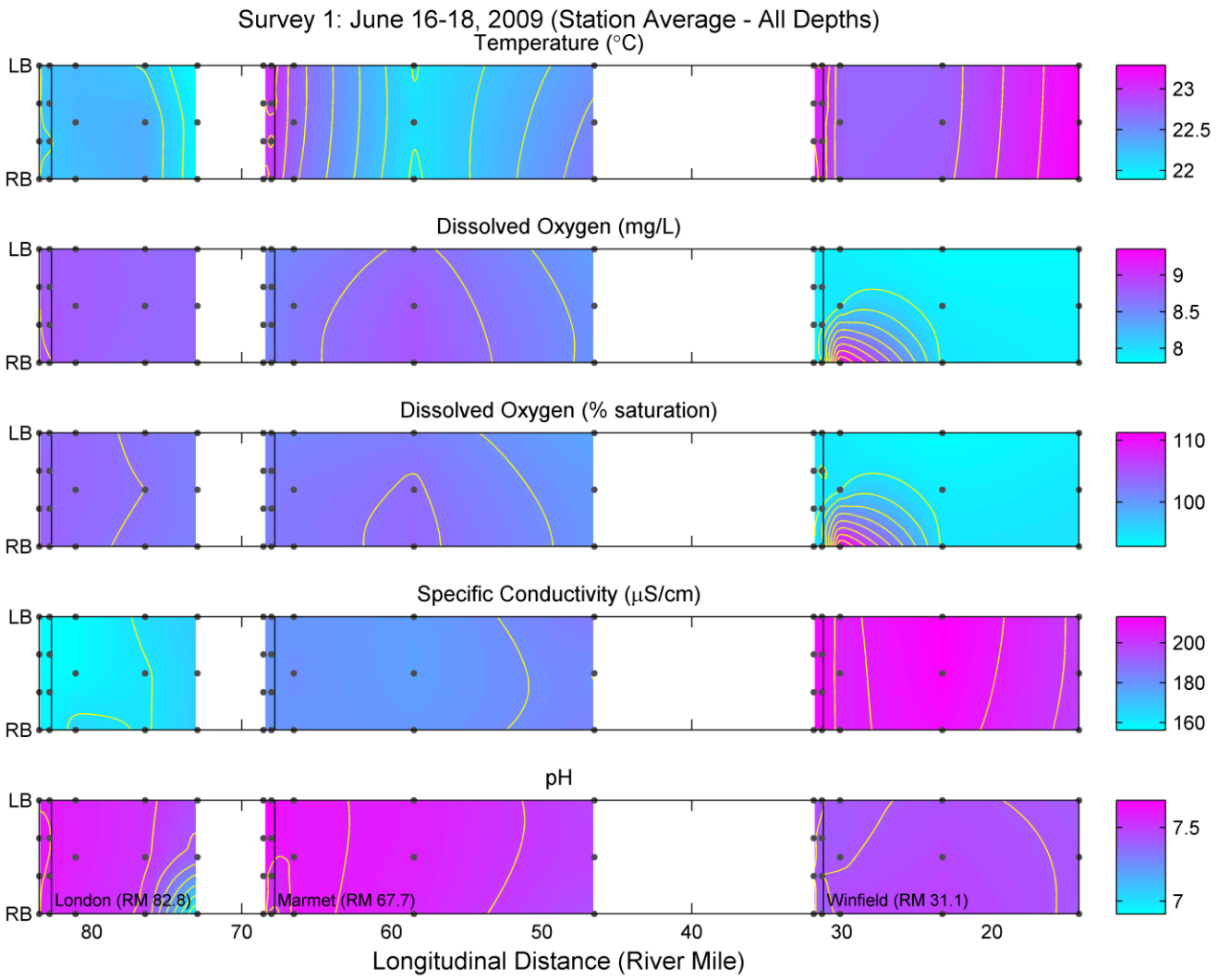
Causes of vertical variability

- Temperature
  - Likely related to sampling protocol – we sampled below dams in early AM and above dams in early PM
- Dissolved Oxygen and pH
  - Likely related to algal growth because parameters were often coincidentally stratified
- Conductivity
  - Probably related to tributary/wastewater discharges under lower Kanawha River flow conditions

Figure 20. London/Marmet and Winfield Hydroelectric Projects Relicensing Water Quality Study



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Causes of horizontal variability

- Temperature and Conductivity
  - Little horizontal variability noted
- Dissolved oxygen
  - Unknown, isolated to right bank station immediately downstream of Winfield and apparently related to high flow conditions
- pH
  - Unknown, isolated to a couple of right bank stations, waste/stormwater related?

Figure 38. London/Marmet and Winfield Hydroelectric Projects Relicensing Water Quality Study

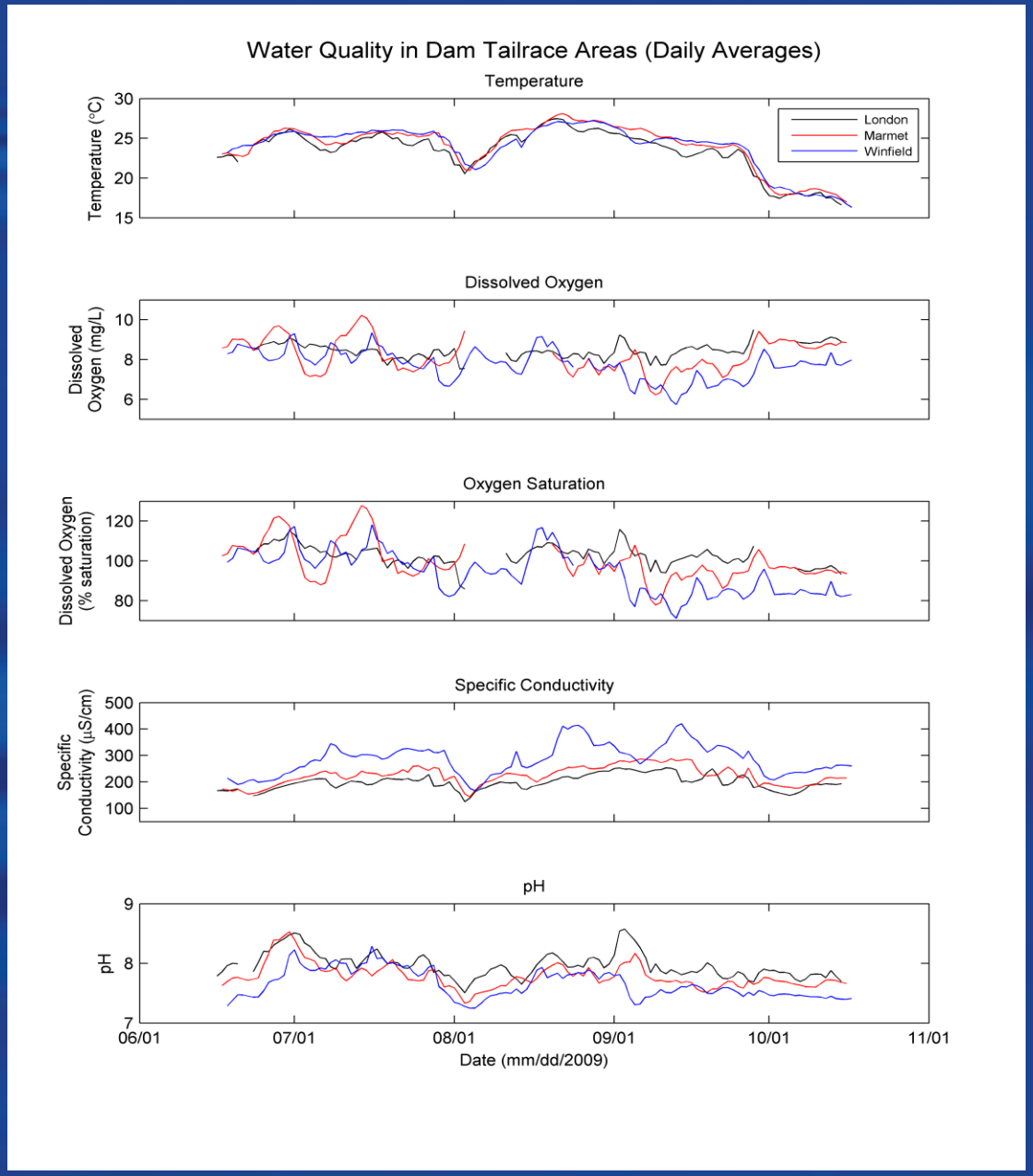

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Figure 39. London/Marmet and Winfield Hydroelectric Projects Relicensing Water Quality Study

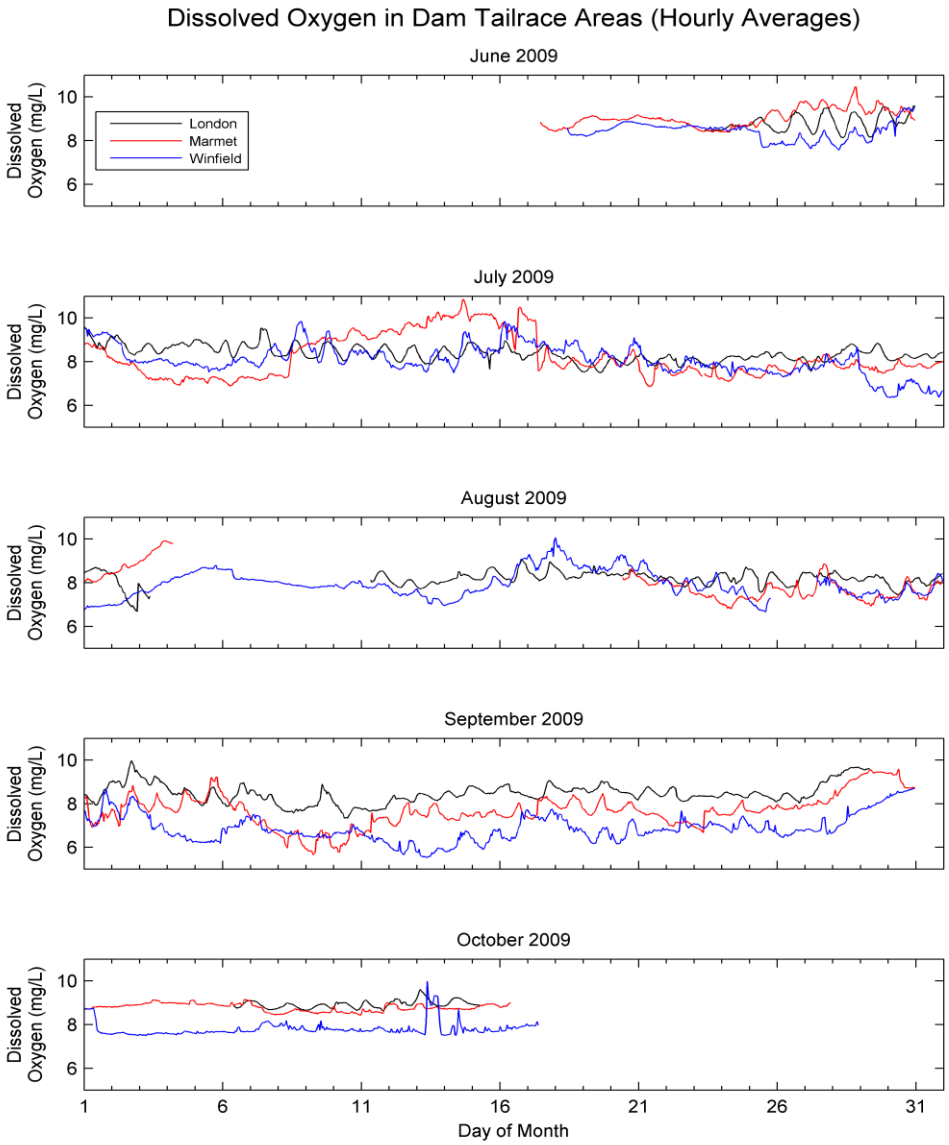

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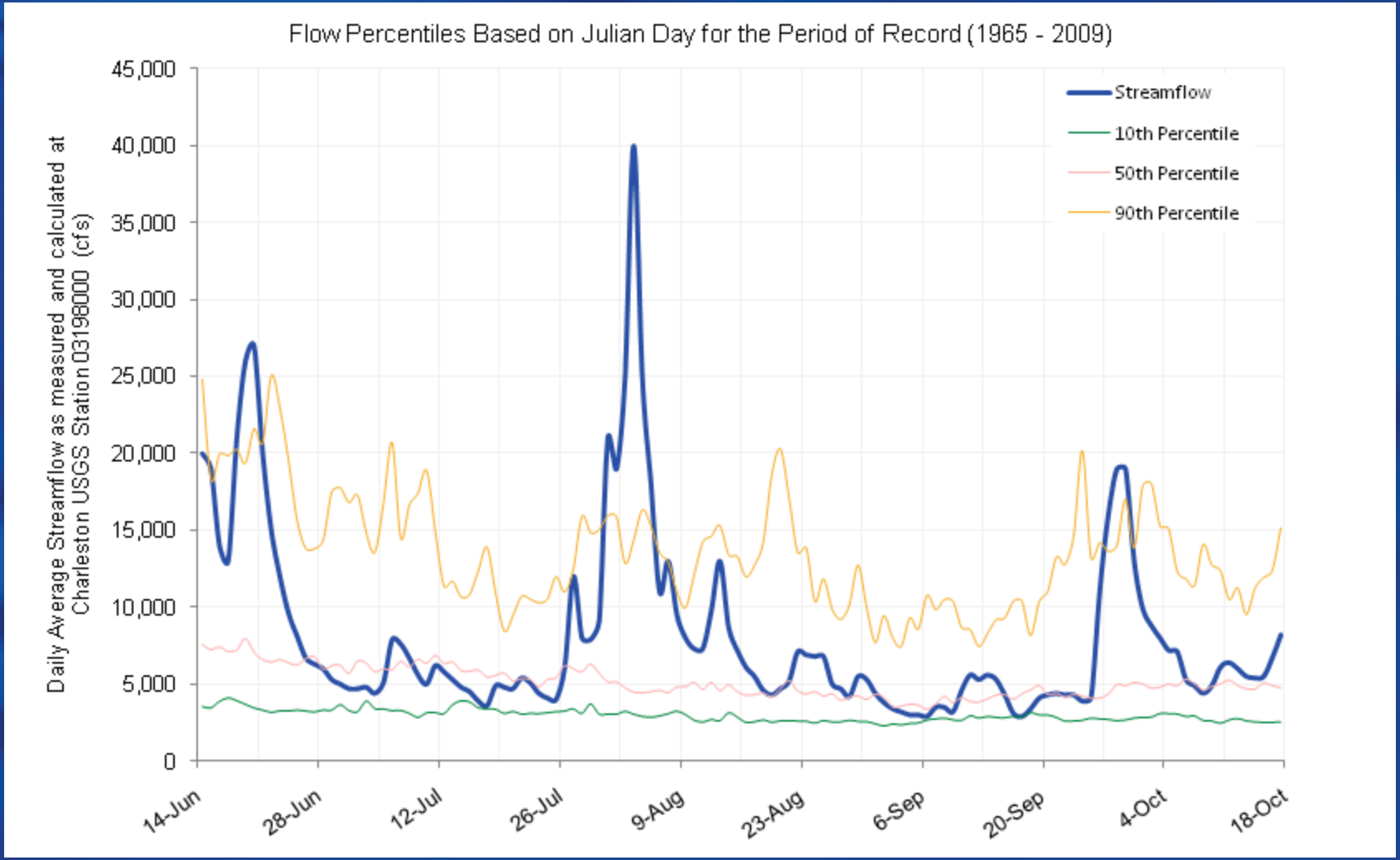
Figure 40. Kanawha River Streamflow Data – Summer/Early Fall 2009



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Methods of Enhancing DO at Hydroelectric Facilities

- Selective withdrawal
- Advance Hydropower Turbine System
- Auto-venting Turbines
- Turbine Enhancement
- Diffuser Systems
- Aerating Weirs
- Destratification

Applicability of DO Enhancement Methods to the Projects

- Selective withdrawal, aerating weirs and destratification are not applicable.
- Advanced Hydropower Turbine System and Auto-Venting Turbines are potentially applicable, but generally only when turbine replacement/rehabilitation/retrofitting is required as well.
- Diffuser system could be applicable.
- Available data does not strongly support the need for DO Enhancement at the Projects.

Conclusions

- There have been no documented violations of State Water Quality Standards for dissolved oxygen anywhere in the study area since at least 1997 and probably longer.
- During 15 June – 17 October 2009, extensive longitudinal, horizontal and vertical DO monitoring found that DO levels were never lower than 6.2 mg/l at the London and Marmet Projects or below 5.6 mg/l at the Winfield Project

Conclusions (cont.)

- Except for infrequent events at isolated sampling stations, there was little evidence of vertical or horizontal stratification or variability of DO, temperature, pH or conductivity anywhere in the study area.
- DO and pH tended to decrease upstream to downstream while temperature and conductivity tended to increase.

Conclusions (cont.)

- Although river flow was abnormally high during parts of the sampling period, there were extended periods during both July and September when river flow was substantially below median daily flow.
- It is concluded that at least portions of the study were conducted under relatively low flow/high temperature conditions.

Conclusions (cont.)

- High flows resulted in study area-wide changes in water quality. However, there was no indication that small changes in flow, consistent with flow regulation changes proposed by the ACOE, would have any appreciable effect on water quality.
- The was no indication of Projects impact on water quality or a need for DO enhancement at any of the Projects