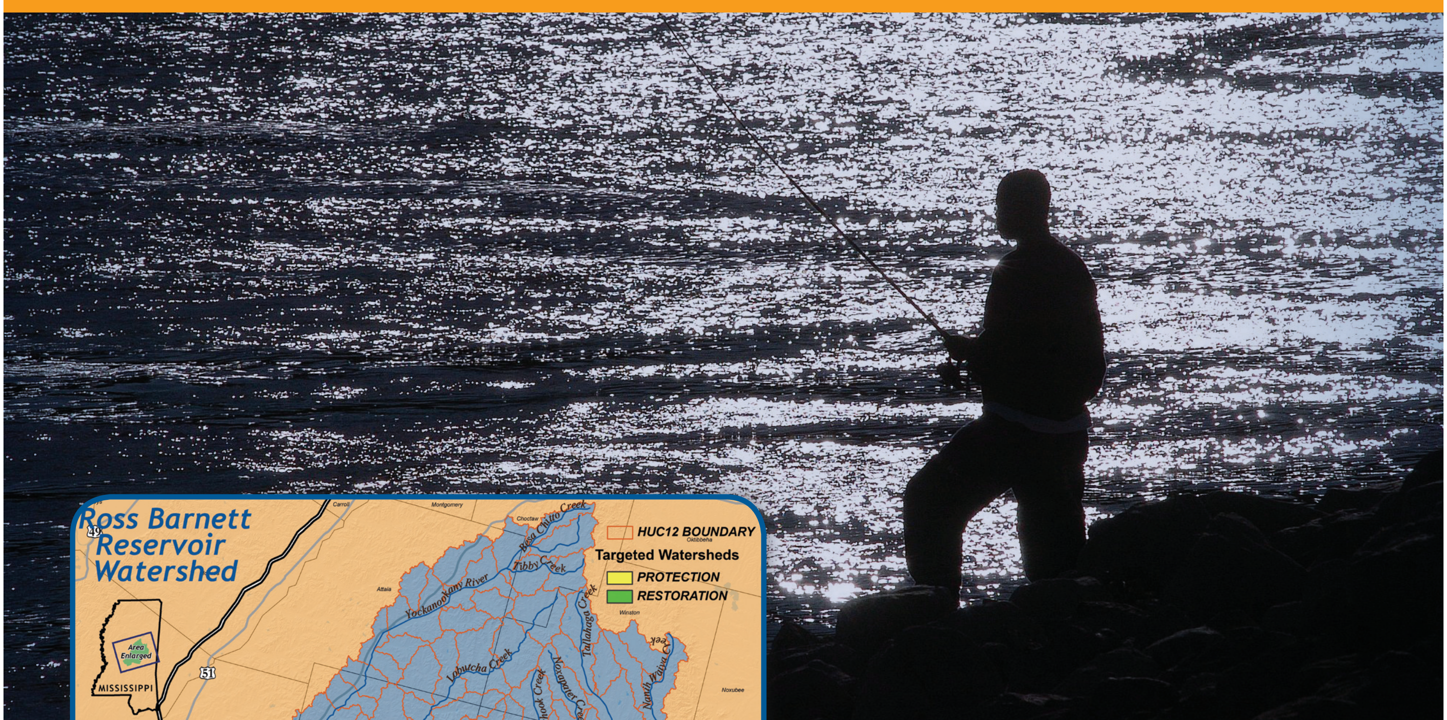
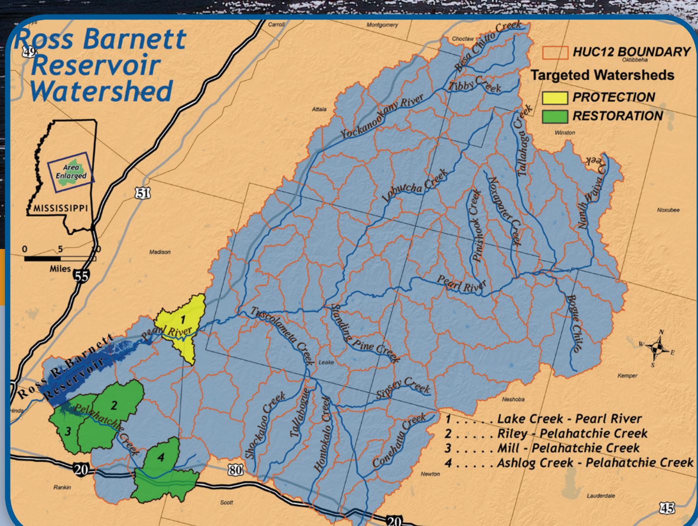
WATER QUALITY MONITORING PLAN

for the

ROSS BARNETT RESERVOIR AND ITS WATERSHED





WATER QUALITY MONITORING PLAN
FOR THE ROSS BARNETT RESERVOIR AND ITS WATERSHED

Prepared for

Mississippi Department of Environmental Quality
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October 31, 2011

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1.0 MONITORING GOALS

1.1 Ross Barnett Reservoir Initiative

The Ross Barnett Reservoir watershed is considered by many to be the most important watershed in the state. The US Environmental Protection Agency (EPA) has designated it as a Priority Watershed, which means that EPA and its state partners have agreed to focus resources to protect and restore waters in the area. The Ross Barnett Reservoir serves as the source of drinking water for the City of Jackson and the surrounding area. In addition to its use as a water supply source, the 33,000-acre lake is used for recreation – primarily boating, fishing, and water skiing. An estimated 2.5 million people visit the Reservoir each year.

The 105 miles of reservoir shoreline also serve as a catalyst for significant residential and commercial development in Rankin and Madison counties. Forty-eight residential communities have been developed on Pearl River Valley Water Supply District (PRVWSD) property. These developments are maintained by comprehensive subdivision covenants, architectural review guidelines, and active homeowner associations. These developments have spurred economic growth in northwestern Rankin County and southeastern Madison County, which currently experience the second and third highest economic growth rates in the state. Due to its significant use as a water supply source and its prominent role in recreation and economic development, protection of water quality in the Ross Barnett Reservoir is essential.

In April 2007, board members and staff from PRVWSD met with senior leadership of the Mississippi Department of Environmental Quality (MDEQ) to discuss their concerns about the water quality of the Ross Barnett Reservoir. This initial meeting was followed by a meeting held during May 2007 between senior leadership and staff from PRVWSD, MDEQ, the Mississippi Soil & Water Conservation Commission (MSWCC), and the Natural Resources Conservation Service (NRCS). Six priority issues were identified for Ross Barnett Reservoir:

1. Excessive sedimentation in the coves and embayments,
2. Bacteria/pathogens in the Reservoir and its tributaries,
3. Nutrients and eutrophication of the Reservoir,
4. Currently used pesticides,

5. Invasive species, particularly hydrilla, and
6. Trash and littering in the Reservoir and upstream tributaries.

The Ross Barnett Reservoir Initiative (Initiative), which emerged from these meetings and is now known as Rez*onate*, calls for the development and implementation of a watershed protection and restoration management plan and a source water protection plan. Monitoring is integral to determining the condition of the Reservoir water quality and evaluating the success of management actions in achieving the goals of Rez*onate*.

1.2 Ross Barnett Reservoir Monitoring Goals

The monitoring goal for the Ross Barnett Reservoir and its immediate tributaries is to be able to assess the status and trends over space and time in:

- Sediment (suspended and deposited);
- Water quality (including nutrients, pathogen densities, and contaminant concentrations);
- Abundance and biodiversity of fish and benthic macroinvertebrates;
- Historically used pesticides, including dichlorodiphenyltrichloroethane (DDT), toxaphene, and polychlorinated biphenyls (PCBs), and mercury concentrations in fish tissue;
- Invasive aquatic macrophyte density and species composition; and
- Litter and trash.

1.3 Pearl River Watershed Monitoring Goals

The monitoring goal for the Pearl River watershed upstream from Ross Barnett Reservoir is to be able to assess status and trends in the following, for the major tributaries and total maximum daily load (TMDL) segments over time:

- Sediment loads,
- Nutrient loads,
- Pathogen densities,

- Benthic macroinvertebrates,
- DDT, toxaphene, PCBs, and mercury concentrations in fish tissue, and
- Litter and trash volume.

1.4 Drinking Water Goals

This monitoring plan is also intended to track water quality constituents related to drinking water treatment issues identified by the City of Jackson O.B. Curtis Water Treatment Plant (personal communication, Don Bach, O.B. Curtis Water Treatment Plant, July 2010). The monitoring goal associated with drinking water treatment issues is to be able to assess the status and trends over space and time in the Reservoir of:

- Suspended sediments,
- Anoxia (dissolved oxygen),
- Algae (chlorophyll *a*), and
- Total organic carbon.

1.5 Other Goals

Another goal of this monitoring plan is to support the Rez*onate* project by measuring performance indicators to track success in meeting Rez*onate* goals. Performance indicators will be evaluated on a routine basis and used to adaptively manage implementation of the Rez*onate*.

2.0 EXISTING MONITORING PROGRAMS

2.1 Water Quality Monitoring Programs

Water quality monitoring in Ross Barnett Reservoir and its watershed has been conducted since the Reservoir was impounded in 1965. The locations of historical monitoring sites for flow, stage, water quality, and/or pathogens used by EPA, the US Geological Survey (USGS), MDEQ, and the Mississippi State Department of Health (MSDH) are shown in Appendix A.

EPA monitoring occurred in 1973 as part of the National Eutrophication Survey (NES) and again in 2008 as part of the National Lakes Assessment Survey. For the NES, EPA monitored selected tributaries in the watershed on a monthly basis, and monitored water quality at four sites in the Reservoir three times – during the spring, early summer, and late summer. The National Lakes Assessment sampled only one water quality station in the Reservoir, but sampled ten littoral sites for a habitat/shoreline assessment.

Flow measurements and water quality monitoring, both within the Reservoir and within watershed tributaries, have also been conducted by USGS and MDEQ. Ross Barnett Reservoir is included in MDEQ's ambient water quality monitoring network of streams, rivers, lakes and reservoirs throughout the state. Water quality parameters that are typically monitored at water quality sites in the Reservoir and its tributaries are listed in Table 2.1. These parameters vary depending on the specific monitoring objectives of the program. Between 2002 and 2004, MDEQ conducted extensive monitoring of the Reservoir and inflow in conjunction with the development of lake and reservoir nutrient criteria. In recent years, flow and water quality monitoring have been associated with Section 319 watershed restoration projects where management practices have been implemented in smaller catchments in the watershed, such as Mill Creek, a tributary to Pelahatchie Bay watershed (Appendix A). All the sites that have been monitored since the Reservoir was filled, along with their periods of monitoring, are listed in Appendix A.

Under contract with PRVWSD, MSDH monitors indicators for pathogens (fecal coliforms) in selected locations in the Reservoir. Other water quality constituents are generally not collected with the pathogen samples.

Table 2.1 Typical water quality parameters historically monitored in Ross Barnett Reservoir and its tributaries.

Water Quality Category	Parameter
In situ	Temperature
	Dissolved Oxygen (DO)
	Conductivity
	pH
	Turbidity
Physicochemical	Suspended Sediment
	Total Kjeldahl Nitrogen (TKN)
	Nitrite + Nitrate Nitrogen
	Ammonia Nitrogen
	Total Phosphorus
	Ortho-phosphate
	Total Organic Carbon (TOC)
	Biochemical Oxygen Demand (BOD)
	Total Dissolved Solids (TDS)
	Alkalinity
	Hardness
	Calcium
	Chloride
Biological	Chlorophyll
	Coliform Bacteria
	Macroinvertebrates
	Fish

2.2 Fisheries Monitoring

The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) monitors fish species composition, abundance, and catch per unit effort in the Ross Barnett Reservoir. Information on the sampling program, results, and protocols can be found on the MDWFP website and in the annual Fisheries Management Plan.

2.3 Water Treatment Plant Intake Monitoring

The O.B. Curtis Water Treatment Plant analyzes raw (i.e., untreated) water from Ross Barnett Reservoir on business days. The treatment plant laboratory analyzes raw water samples for turbidity, color, alkalinity, pH, iron, and manganese.

2.4 Aquatic Macrophyte Monitoring

Species composition and density of aquatic macrophytes in the Ross Barnett Reservoir are monitored annually by Mississippi State University (MSU) under contract with PRVWSD. Information from this monitoring program is used to identify areas in the Reservoir where aquatic weed control efforts (i.e., herbicide application) are needed.

2.5 Others

A number of special monitoring projects have been implemented since the Reservoir was impounded, but these typically do not have long periods of record. For example, USGS recently conducted a study to assess the concentration of 139 compounds in the Reservoir near the water intake for the O.B. Curtis Water Treatment Plant and in the finished drinking water (Rose et al. 2009). Many of these compounds are contaminants of emerging concern, such as personal care products, flame retardants, pesticides, plasticizers, and pharmaceuticals.

3.0 DATA GAPS

3.1 Reservoir Monitoring

There is no continuous temporal coverage of water quality monitoring in the Ross Barnett Reservoir. Appendix B indicates when water quality sampling occurred in the Reservoir without reference to specific constituents (temperature, pH, chlorophyll), period of sampling (e.g., monthly, quarterly), or agency. There are significant data gaps in the water quality record.

The longest monitoring effort in Ross Barnett Reservoir is associated with pathogens. MSDH has sampled sites in the Main Harbor Marina and near the Highway 43 bridge from 1969 to 2009, with one gap in 1976.

There has been no long-term monitoring program for a suite of water quality constituents, such as turbidity, suspended sediments, phosphorus, nitrogen, chlorophyll, and transparency. Water quality monitoring for these constituents, however, has occurred during selected periods in the past. For example, MDEQ had a water quality monitoring program from 1996/1997 to 2004 that collected data for these constituents at stations near the dam (RBR01), mid-reservoir (RBR02), in the upper reservoir (RBR03), near the Highway 43 bridge, and in Pelahatchie Bay (RBR04) (see Figure 3.1).

3.2 Tributary Monitoring

There is also no continuous temporal coverage of water quality monitoring of tributary sites in the watershed (Appendix B). A site in the Pearl River near Edinburg at Highway 16 was monitored for both water quality constituents and flow from 1969 to 1976, from 1993 to 1998, and from 2000 to 2001. There are significant gaps in monitoring of tributary water quality in the upstream watershed.

There are a limited number of years when both flow and water quality were monitored simultaneously (Appendix B). Constituent loading estimates to the Reservoir require measures of both flow and constituent concentrations of interest (e.g., sediment, phosphorus, nitrogen) over time.

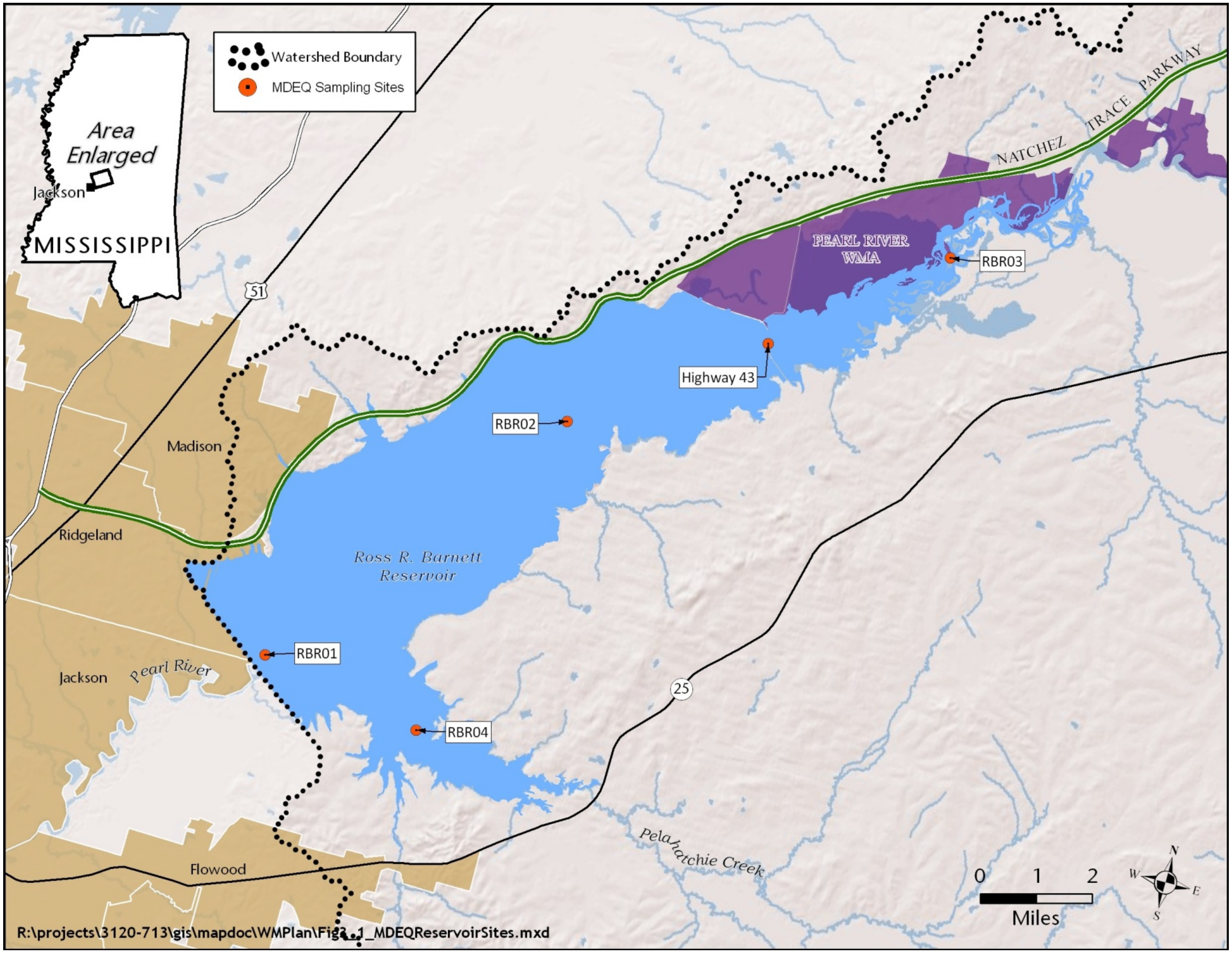

Figure 3.1. MDEQ sampling locations in the Ross Barnett Reservoir.

4.0 MONITORING PLAN

4.1 Monitoring Approach

A nested monitoring approach will be implemented for the Ross Barnett Reservoir and its watershed. A base program will be established to provide information on status and trends in water quality constituents needed to assess the attainment of designated uses within the Reservoir and its watershed. Additional monitoring to provide information on specific issues related to Rez*onate* will be nested within the base program. Table 4.1 summarizes the monitoring plan described below.

Table 4.1. Base water quality monitoring program and nested elements.

Monitoring Element	Rationale
Base program	Evaluate long-term status and trends in water quality.
Synoptic	Evaluate spatial variability in water quality.
M-BISQ	Assess stream conditions based on biological indicators.
Storm events	Estimate sediment and nutrient loadings to the Reservoir.
Pathogens	Assess potential risks to human health from primary and secondary contact.
Contaminants	Evaluate contaminant concentrations in raw water supply and fish tissue.
Diel DO	Evaluate minimum DO concentrations during critical low flow.
Fisheries	Evaluate the effectiveness of management practices in sustaining the sport fisheries.
Aquatic macrophytes	Determine the extent of aquatic weeds in the Reservoir and the effectiveness of management practices in controlling invasive aquatic weeds.
Litter and trash	Determine the extent of litter and trash in the Reservoir and the effectiveness of awareness, outreach and education programs in reducing litter and trash.
Watershed implementation	Evaluate the effectiveness of catchment management practices in improving water quality.
Volunteer	Engage stakeholders to increase their awareness of water quality issues and elicit their efforts in improving water quality.

4.2 Base Program

4.2.1 Rationale

There are no substitutes for measured data in evaluating the performance of management practices or assessing whether regulations and policies are making a difference in improving aquatic ecosystem condition. Models can be used to project possible changes in water quality following the implementation of management practices, but models require monitoring information for calibration and confirmation. As noted in Section 3.0, there are significant gaps in the water quality monitoring period of record for both the Reservoir and its tributaries. A base water quality monitoring program that will cost-effectively provide the information required to evaluate the effectiveness of regulations, policies, and management practices in attaining the designated and desired uses of Ross Barnett Reservoir and its tributaries is needed. One objective of the *Comprehensive Watershed Protection and Restoration Plan* is to design and implement a base monitoring program for the Reservoir and its watershed that can be sustained through periods of limited budgetary and personnel resources. If funds and personnel are available, other monitoring modules can be implemented to provide additional management information. In addition, this base program is supplemented by pre- and post-monitoring efforts to support the implementation of management practices in priority watersheds, delineated by USGS 12-digit hydrologic unit codes (HUC12s), in the upper Pearl River basin.

4.2.2 Locations

Monitoring locations for the base program include in-reservoir sites in the near-field of the water intake (RBR01), at the Highway 43 bridge (Hwy 43), and upstream of the causeway in Pelahatchie Bay (RBR04) (Figure 4.1). These stations correspond with stations previously monitored in the Reservoir (shown on Figure 3.1). These sites provide information on spatial gradients in Reservoir water quality and can be used to quantify trends in Reservoir water quality over time. Base monitoring locations in the watershed include a site in the Pearl River at the USGS gage near Lena; a site in Pelahatchie Creek at the USGS gage at Highway 25 near Fannin; and a site in the Yockanookany River at the USGS gage near Ofahoma. The Pearl River site will include drainage from Lobutcha Creek, Tuscolameta Creek, and the Pearl River (Figure 4.1).

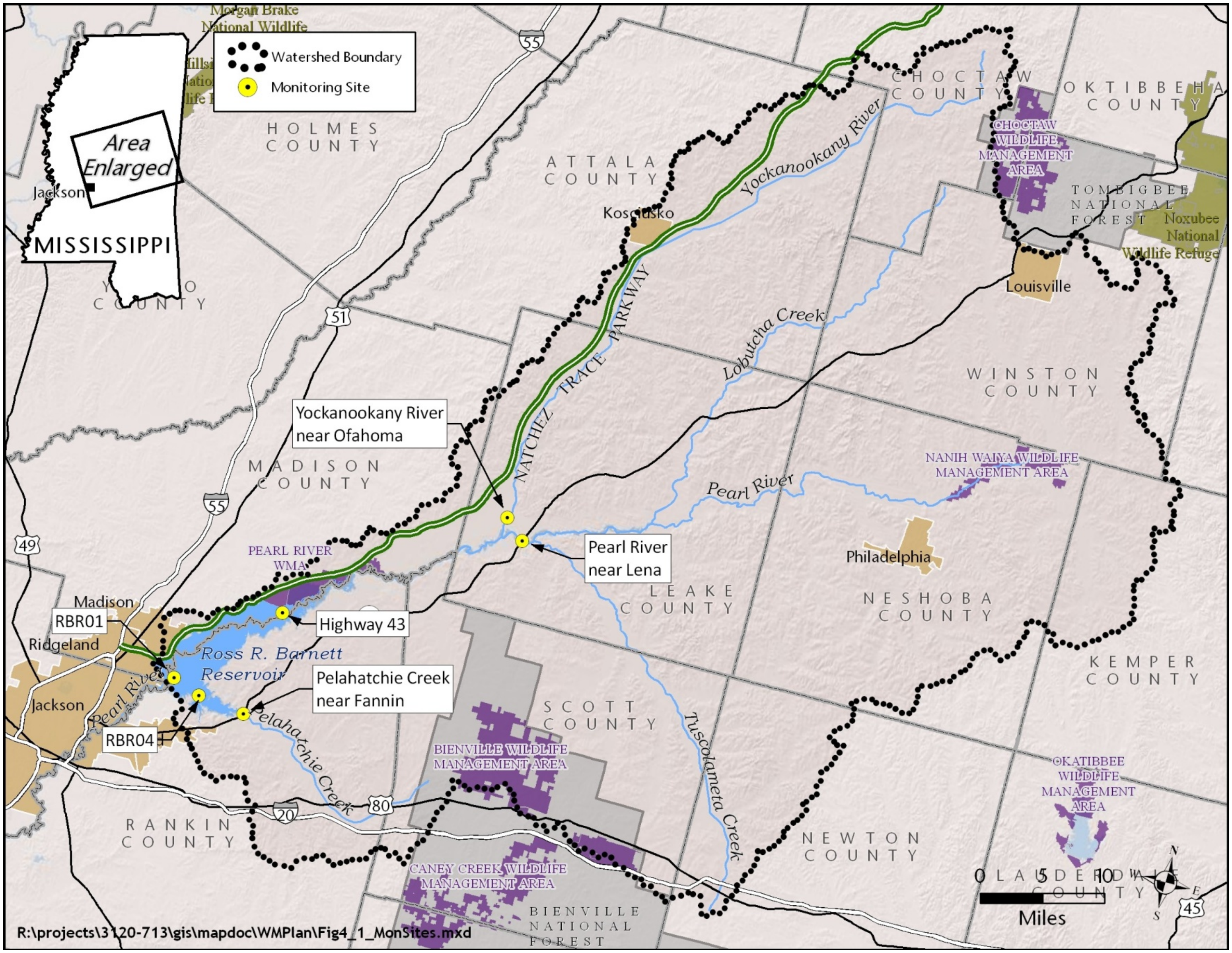

Figure 4.1. Proposed monitoring stations.

4.2.3 Sampling Depth

Tributary water samples will be collected at mid-depth over the thalweg, if the stream is well-mixed, or integrated over the entire depth if the water is not well-mixed. In the Reservoir, if the total site depth is less than 10 ft, water samples will be collected at mid-depth. For sites with total depth greater than 10 ft, one water sample will be collected at 1.5 ft below the surface and a second sample collected 3 ft off the bottom using a Van Dorn sampling device.

In situ parameters will be measured beginning at 0.5 ft below the water surface for the surface reading, and at every foot, with the bottom reading being 1 ft above the bottom for sites less than 15 ft in depth. For sites greater than 15 ft in depth, in situ measurements will be made beginning at 0.5 ft below the water surface, at 2 ft intervals, and at 5 ft depth (to address requirements for assessing water quality standards), with the bottom reading occurring 1 ft above the bottom.

4.2.4 Parameters

Water quality parameters to be measured at the river and Reservoir sites are shown in Table 4.2. Standard operating procedures (SOPs) and quality assurance protocols are described in the Ross Barnett Reservoir Quality Assurance Project Plan (QAPP).

Table 4.2. Water quality parameters to be monitored as part of base monitoring program.

In situ	Physicochemical	Biological
Temperature	Secchi depth	Chlorophyll *a*
Dissolved oxygen	Total suspended solids	
pH	Alkalinity	
Conductivity	Hardness	
Turbidity	Total organic carbon	
	Total nitrogen	
	Total Kjeldahl nitrogen	
	Ammonia nitrogen	
	Total phosphorus	
	Dissolved phosphorus	
	Nitrate+Nitrite nitrogen	

4.2.5 Sampling Frequency

Monthly water quality and in situ measurements will be collected at all tributary sites. In the Reservoir, one visit will be made to each site in January, March and April. From 15 June to 15 September, each site will be visited every 2 weeks. One visit will be made to each site during November. This sampling frequency will satisfy Consolidated Assessment and Listing Methodology (CALM) criteria for monitoring data.

4.2.6 Fish and Macrobenthos

Fish monitoring conducted by MDWFP will be included in the base program as long as this monitoring continues. MDEQ is developing a protocol for monitoring and assessing the status of macrobenthos assemblages in non-wadeable streams. This protocol will be added to the base program for tributary stream sites when it is finalized.

4.3 M-BISQ Monitoring

4.3.1 Rationale

MDEQ developed the Mississippi Benthic Index of Stream Quality (M-BISQ) to provide an integrated indicator of stream condition. Aquatic organisms, particularly benthic organisms, integrate the effects of multiple stressors, such as habitat loss or alteration, hydrologic modification, toxicity, invasive species, and increased sedimentation. Water quality grab samples only provide an instantaneous picture of condition at the time of sampling. Benthic organisms experience the full range of conditions throughout the year, integrating short-term perturbations, such as storm events or seasonal pesticide application, with longer-term perturbations, such as stream bank erosion or land use changes. In addition, most benthic organisms are relatively sessile, so the composition of the benthic assemblages provide an integrated indicator of the health of specific stream segments. The M-BISQ was specifically developed for wadeable streams throughout the state and the scores calibrated to good, fair and poor aquatic ecosystem condition for specific physiographic regions. M-BISQ scores have been calculated and used to assess the condition of a number of stream segments in the Upper Pearl River watershed. Monitoring the status and trends in the M-BISQ index can provide a long-term perspective on changes in the Pearl River watershed upstream from the Ross Barnett Reservoir.

4.3.2 Monitoring Approach

M-BISQ index scores indicate that over 25 stream segments in the Upper Pearl River watershed are impaired (Figure 4.2). Seven permanent benthos monitoring sites will be located in wadeable sections of streams draining to the Ross Barnett Reservoir as part of the base monitoring program (Figure 4.2). Four of these sites will be located in the immediate vicinity of the Reservoir, on tributaries draining directly to the Ross Barnett Reservoir or immediately upstream (Coffee Bogue, Fannegusha Creek, Cane Creek, and Hollybush Creek or Clear Creek). Each of these sites has been assessed as being impaired. The other three sites will be located on wadeable sections of streams on major tributaries to Ross Barnett Reservoir: Yockanookany River, Pearl River, and Tuscolameta Creek. Tuscolameta Creek has been assessed as being impaired while the other two tributaries were assessed as attaining designated uses. Sampling of these sites will be conducted on an annual basis and follow the benthic sampling SOPs cited in the Ross Barnett Reservoir QAPP.

If resources permit, 30 sites supplemental sites will be sampled every other year. These will be randomly distributed on wadeable stream segments throughout the upper watershed, with different sites sampled during each sampling event. These sites will help target areas in the watershed where either restoration or protection management practices might be implemented. MDEQ will work with the EPA Western Ecology Division EMAP Statistics and Design Branch to obtain a 10-year sampling event distribution of 300 probabilistically selected sites on wadeable streams within the upper basin, including a set of contingency sites in case the stream segment does not have the desired attributes of the target population (e.g., ephemeral stream, wetland system). These sites will specifically be located in accessible locations within the watershed.

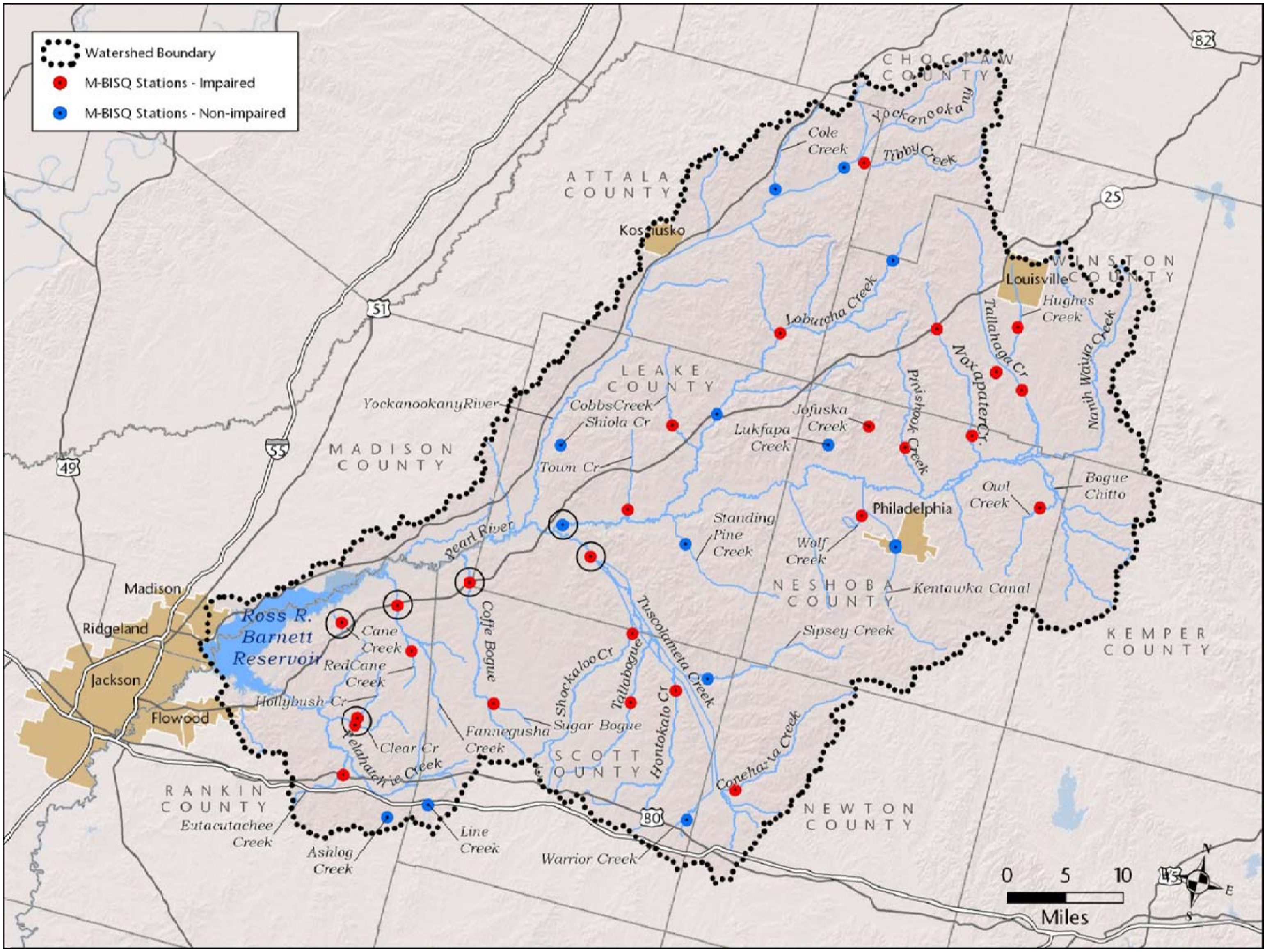

Figure 4.2. M-BISQ stations in Ross Barnett watershed. Circled sites will be monitored annually.

4.4 Synoptic Monitoring

4.4.1 Rationale

The base water quality monitoring program will permit an assessment of the general status and trends in Reservoir water quality over time. The base program, however, reflects water quality in the main body of the Reservoir, not in the individual coves, embayments, and shallows. A snapshot of the spatial distribution of selected water quality constituents (e.g., clarity, chlorophyll) can indicate problems in shoreline and near-shore areas that are highly accessible and visible to residents, recreational users, and other stakeholders. Knowing where problems are arising can result in earlier implementation of management practices and potentially prevent these problems from becoming larger. A synoptic sampling approach can provide this snapshot.

4.4.2 Monitoring Approach

Synoptic water quality sampling is proposed annually during July to provide a snapshot of spatial variability in water quality throughout the Reservoir and to assess the effects of shoreline activity on water quality. Synoptic samples would be one foot integrated surface water samples collected at 35 to 40 sites distributed throughout the Reservoir, in areas no closer than 10 yards, nor further than 500 yards, from the shoreline (see Figure 4.3 for illustration). In situ profiles and a Secchi depth measurement would be taken at all sites. Water samples would be analyzed for chlorophyll *a* and turbidity. A qualitative habitat survey form would be completed to assess shoreline, riparian, and littoral habitat. The form would be a modified version of the EPA National Lake Assessment habitat form (Figure 4.4). Sampling at all sites would occur over no more than two consecutive days at normal conservation pool elevation of 297.5 ft. mean sea level (MSL).

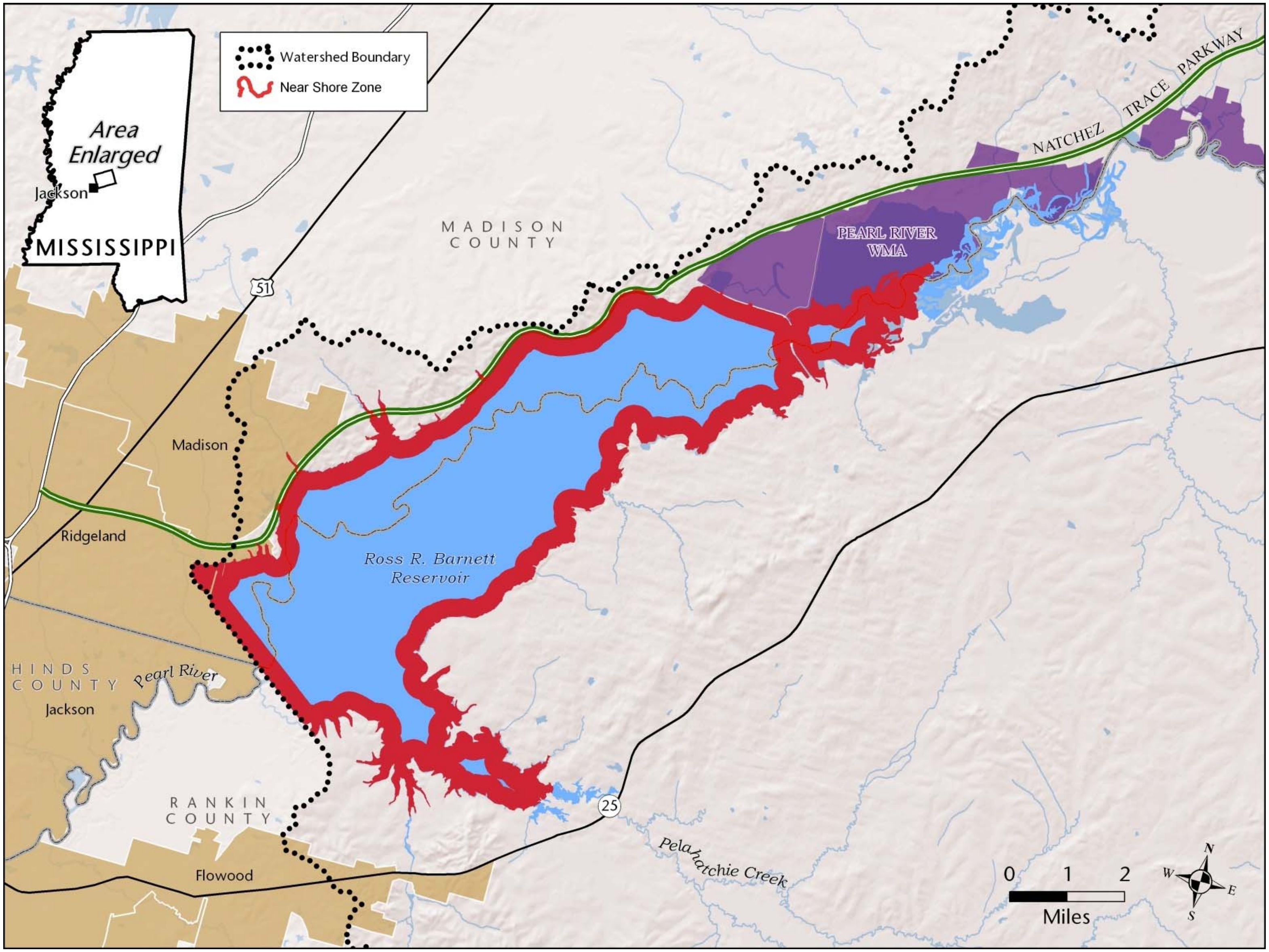

Figure 4.3. Areas within 500 meters of Ross Barnett shoreline.

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PHYSICAL HABITAT CHARACTERIZATION - LAKES

Reviewed by (initial): SD

SITE ID: NLA06608 - 9999 DATE: 05/01/2007

STATION: ● A ○ B ○ C ○ D ○ E ○ F ○ G ○ H ○ I ○ J

DEPTH AT STATION (10 m offshore): 2.0 ○ ft ● m

LAT 33.07900

IF STATION WAS RELOCATED, INDICATE HERE: ○ DROPPED: ○

NEW STATION (K, L, etc.) IS IT AN ISLAND? ○ UNABLE TO SAMPLE: ○

LONG 096.94020

LITTORAL ZONE

Surface film type: ● None ○ Scum ○ Algal Mat ○ Oily ○ Other

0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)

BOTTOM SUBSTRATE						Flag
Bedrock (>4000mm; larger than a car)	(0)	1	2	3	4	
Boulders (250-4000mm; basketball-car)	(0)	1	2	3	4	
Cobble (64-250mm; tennis ball-basketball)	(0)	1	2	3	4	
Gravel (2-64mm; ladybug to tennis ball size)	0	1	2	(3)	4	
Sand (0.06 - 2mm; gritty between fingers)	0	(1)	2	3	4	
Silt, Clay, or Muck (<0.06mm; not gritty)	(0)	1	2	3	4	
Woody Debris	(0)	1	2	3	4	
Organic (Leaf Pack, Detritus)	(0)	1	2	3	4	

Color: ○ Black ○ Gray ● Brown ○ Red ○ Other

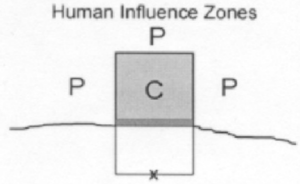
Odor: ● None ○ H_2S ○ Anoxic ○ Oil ○ Chemical ○ Other

AQUATIC MACROPHYTES						Flag
Submergent	0	(1)	2	3	4	
Emergent	0	(1)	2	3	4	
Floating	0	(1)	2	3	4	
Total Aquatic Macrophyte Cover	0	1	(2)	3	4	

Do macrophytes extend lakeward? ○ Yes ● No

FISH COVER						Flag
Aquatic and Innundated Herbaceous Veg.	0	1	(2)	3	4	
Woody Debris/Snags > 0.3 m Dia.	(0)	1	2	3	4	
Woody Brush/Woody Debris <0.3 m dia. (alive or dead)	0	(1)	2	3	4	
Inundated Live Trees >0.3 m dia	(0)	1	2	3	4	
Overhanging Veg. within 1 m of Surface	(0)	1	2	3	4	
Ledges or Sharp Dropoffs	(0)	1	2	3	4	
Boulders	(0)	1	2	3	4	
Human Structures- Docks, Landings, etc	(0)	1	2	3	4	

Human Influence Zones



RIPARIAN ZONE

0 = Absent (0%) 1 = Sparse (<10%) 2 = Moderate (10-40%) 3 = Heavy (40-75%) 4 = Very Heavy (>75%)

CANOPY (>5 m high) — Flag

○ Deciduous ○ Broadleaf Evergreen ○ Coniferous ○ Mixed ● None

						Flag
Big Trees (Trunk >0.3 m dBH)	(0)	1	2	3	4	
Small Trees (Trunk <0.3 m dBH)	(0)	1	2	3	4	

UNDERSTORY (0.5 TO 5m high) — Flag

● Deciduous ○ Broadleaf Evergreen ○ Coniferous ○ Mixed ○ None

						Flag
Woody Shrubs & Saplings	0	(1)	2	3	4	
Tall Herbs, Grasses, & Forbs	0	1	(2)	3	4	

GROUND COVER (<0.5 high)						Flag
Woody Shrubs & Saplings	0	(1)	2	3	4	
Herbs, Grasses and Forbs	0	1	(2)	3	4	
Standing Water or Inundated Vegetation	0	(1)	2	3	4	
Barren, Bare Dirt or Buildings	0	(1)	2	3	4	

SHORELINE SUBSTRATE ZONE						Flag
Bedrock (>4000mm; larger than a car)	(0)	1	2	3	4	
Boulders (250-4000mm; basketball-car size)	(0)	1	2	3	4	
Cobble (64-250mm; tennis ball-basketball size)	(0)	1	2	3	4	
Gravel (2-64 mm; ladybug-tennis ball size)	(0)	1	2	3	4	
Sand (0.06 - 2mm; gritty between fingers)	0	1	2	(3)	4	
Silt, Clay, or Muck (<0.06mm; not gritty)	0	(1)	2	3	4	
Woody Debris	(0)	1	2	3	4	
Organic (Leaf Pack, Detritus)	0	(1)	2	3	4	
Vegetation or Other	0	(1)	2	3	4	

HUMAN INFLUENCE — Flag

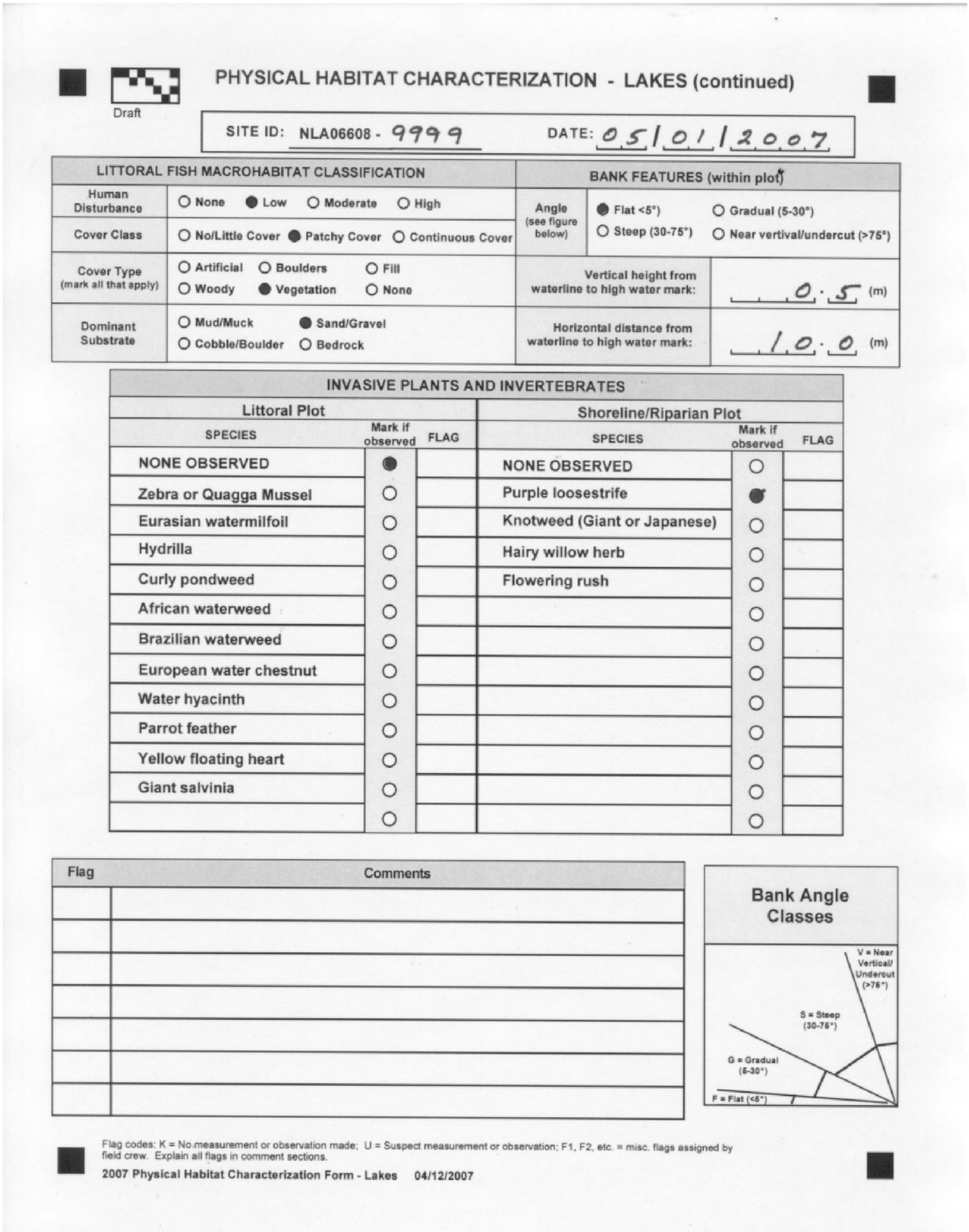
0 = Not Present P = Present outside plot C = Present within plot

				Flag
Buildings	(0)	P	C	
Commercial	(0)	P	C	
Park Facilities/ Man-made beach	(0)	P	C	
Docks/Boats	(0)	P	C	
Walls, dikes or revetments	(0)	P	C	
Landfill/Trash	0	P	(C)	
Roads or Railroad	(0)	P	C	
Power lines	(0)	P	C	
Row Crops	(0)	P	C	
Pasture/Range/Hay Field	0	(P)	C	
Orchard	(0)	P	C	
Lawn	(0)	P	C	

Flag codes: K = No measurement or observation made; U = Suspect measurement or observation; F1, F2, etc. = misc. flags assigned by field crew. Explain all flags in comment sections.

2007 Physical Habitat Characterization Form - Lakes 04/12/2007

Figure 4.4(a). EPA physical habitat characterization form (side 1).



PHYSICAL HABITAT CHARACTERIZATION - LAKES (continued)

Draft

SITE ID: NLA06608 - 9999 DATE: 05/01/2007

LITTORAL FISH MACROHABITAT CLASSIFICATION	
Human Disturbance	○ None ● Low ○ Moderate ○ High
Cover Class	○ No/Little Cover ● Patchy Cover ○ Continuous Cover
Cover Type (mark all that apply)	○ Artificial ○ Boulders ○ Fill ○ Woody ● Vegetation ○ None
Dominant Substrate	○ Mud/Muck ● Sand/Gravel ○ Cobble/Boulder ○ Bedrock

BANK FEATURES (within plot)	
Angle (see figure below)	● Flat <5°) ○ Gradual (5-30°) ○ Steep (30-75°) ○ Near vertival/undercut (>75°)
Vertical height from waterline to high water mark:	0.5 (m)
Horizontal distance from waterline to high water mark:	1.0.0 (m)

INVASIVE PLANTS AND INVERTEBRATES

Littoral Plot SPECIES	Mark if observed	FLAG	Shoreline/Riparian Plot SPECIES	Mark if observed	FLAG
NONE OBSERVED	●		NONE OBSERVED	○	
Zebra or Quagga Mussel	○		Purple loosestrife	●	
Eurasian watermilfoil	○		Knotweed (Giant or Japanese)	○	
Hydrilla	○		Hairy willow herb	○	
Curly pondweed	○		Flowering rush	○	
African waterweed	○			○	
Brazilian waterweed	○			○	
European water chestnut	○			○	
Water hyacinth	○			○	
Parrot feather	○			○	
Yellow floating heart	○			○	
Giant salvinia	○			○	
	○			○	

Flag	Comments

Flag codes: K = No measurement or observation made; U = Suspect measurement or observation; F1, F2, etc. = misc. flags assigned by field crew. Explain all flags in comment sections.

2007 Physical Habitat Characterization Form - Lakes 04/12/2007

Figure 4.4(b). EPA physical habitat characterization form (side 2).

4.5 Storm Event Monitoring

4.5.1 Rationale

Most of the sediment and nutrient loadings to reservoirs occur during storms, which are probabilistically rare events. Monthly routine monitoring programs typically do not capture loadings from storm events. Because storms occur infrequently, storm event sampling can be difficult. Understanding the differences in magnitude between base flow versus storm flow loading will help identify and justify appropriate management practices, their implementation, and timing.

4.5.2 Monitoring Approach

Two storm events will be sampled each year during two different hydrologic regimes. One storm event will be sampled in early spring following fertilizer applications to lawns and upstream agricultural areas and just prior to or at the start of the growing season. The sampling period for the first storm will be between mid-March to mid-April. The second storm event will be sampled as the growing season progresses and the water warms. The sampling window for the second storm will be between mid-May to mid-June. These storm events will be monitored at the USGS gage sites in the Pearl River, Yockanookany River, and Pelahatchie Creek included in the base program (Figure 4.1). The parameters to be monitored are shown in Table 4.3. Automated samplers will be used to collect samples, with samples collected and analyzed throughout the hydrograph. The storm must be generated by at least 0.1 inch of precipitation within a 24-hour period, with no previous storm occurring within 48 hours of sampling. The first storm that satisfies these criteria during the critical periods will constitute the storm event for that period. If no storms satisfy the criteria during the critical period, the period will be extended for an additional two weeks.

Table 4.3. Water quality parameters to be monitored as part of storm event monitoring program.

In situ	Physicochemical
Temperature	Total suspended solids
Dissolved oxygen	Alkalinity
pH	Hardness
Conductivity	Total nitrogen
Turbidity	Ammonia nitrogen
	Nitrate+nitrite nitrogen
	Total phosphorus
	Total organic carbon

4.6 Pathogen Monitoring

4.6.1 Rationale

Pathogen monitoring is intended to indicate the potential for waterborne disease vectors. However, sampling and analyzing for specific pathogenic microorganisms is cost- and time-prohibitive. Total and fecal coliform indicators historically have been monitored as surrogates for pathogenic organisms. More recently, *E. coli* indicators are being monitored as surrogates for pathogenic organisms. Both primary and secondary contact recreational activities occur in Ross Barnett Reservoir, so surrogate indicator monitoring for pathogens is critical.

4.6.2 Monitoring Approach

Pathogen samples will be collected monthly at a minimum of five locations within the Reservoir. The current monitoring sites are located: 1) below the spillway at the boat ramp; 2) in Main Harbor; 3) in Pelahatchie Bay; 4) in the wildlife management area around the Highway 43 bridge; and 5) at the low head dam in the Pearl River upstream (Figure 4.5). PRVWSD may continue to sample at current monitoring sites. It is proposed to begin sampling at the following locations: 1) Mouth of Pelahatchie Bay; 2) the Old Trace Park area; 3) the boat gathering area on the north side near Natchez Trace Overlook and Rose's Bluff; and 4) either Flag or Houseboat Island upstream in the Pearl River (Figure 4.6). Samples would be collected monthly April through October (recreation season), and analyzed using current protocols.

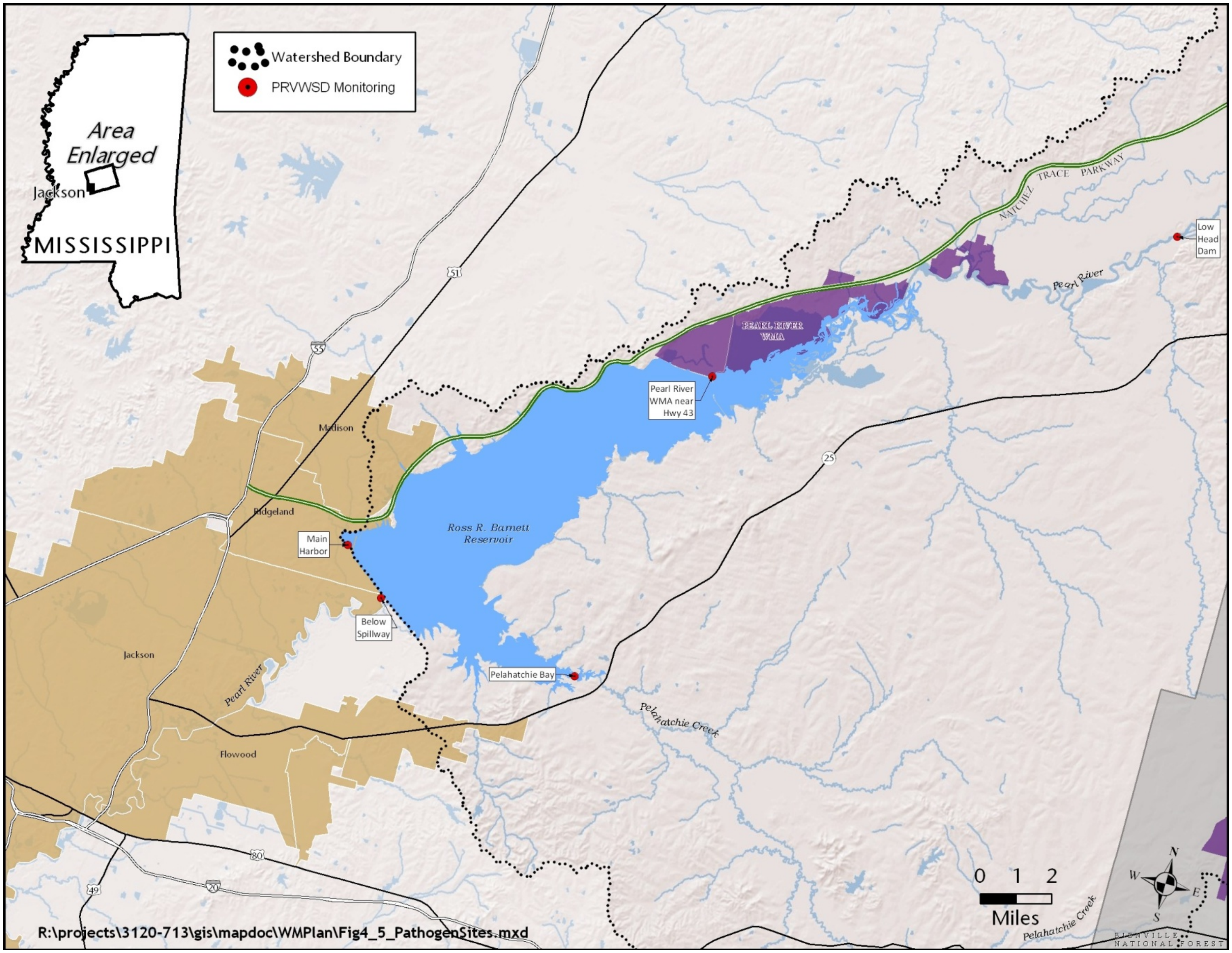


Figure 4.5. Current pathogen monitoring sites in Ross Barnett Reservoir.

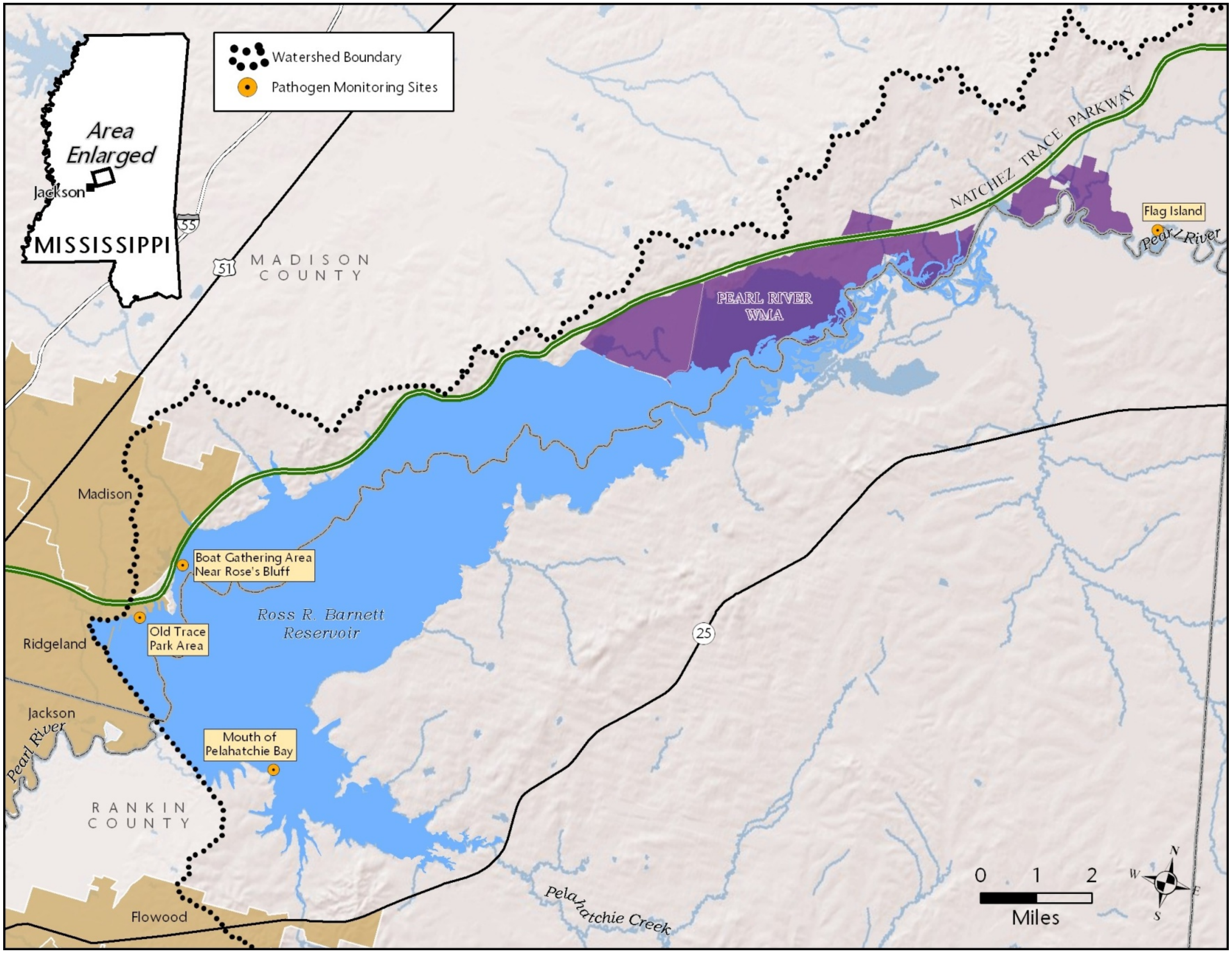


Figure 4.6. Proposed pathogen monitoring sites at Ross Barnett Reservoir.

If microbial samples exceed the water quality criteria at a location for two consecutive months, more intensive microbial monitoring will be implemented following CALM procedures. If these exceedances are confirmed, microbial source-tracking protocols may be implemented to determine the source of the exceedances.

Millipore or similar pathogen sampling sticks should be evaluated to determine their feasibility for use in monitoring pathogens in the Reservoir. If this methodology were feasible and comparable with current methodologies and protocols, additional stations might be added with little additional cost.

4.7 Contaminant Monitoring

4.7.1 Rationale

USGS recently sampled for pesticides and other emerging organic contaminants of concern in both raw water and finished water from the O.B. Curtis Water Treatment Plant at Ross Barnett Reservoir (Rose et al. 2009). A number of contaminants were detected, although none were present at concentrations exceeding human health criteria. One of the herbicides detected was used in the Reservoir for aquatic weed control, while a second herbicide detected was used in forest management in the watershed.

Current analytical methods can measure and detect many constituents at ultra-trace level concentrations. However, there are no known human health or ecological effects associated with many of these contaminants at these concentrations. Measuring organic contaminants in water is an expensive laboratory procedure. Therefore, the focus of this monitoring element will be to measure those contaminants for which human health or aquatic life criteria exist or are in the process of being developed, and that are expected to be present in the Reservoir based on use in the watershed. Atrazine was the only contaminant detected in the USGS analysis for which criteria exist or are being developed.

For bioaccumulative and biomagnified contaminants, fish tissue concentrations have been measured and compared with human health and aquatic life criteria. Because the Ross Barnett Reservoir provides fish for consumption, fish tissue contaminants will also be monitored. Fish consumption advisories for mercury and PCBs are in effect in the Ross Barnett Reservoir watershed, and Pelahatchie Creek and Pearl River were included on the 2008 Mississippi 303(d) list as being impacted by legacy pesticides (DDT and toxaphene). Fish were collected from the Ross Barnett Reservoir between 2004 and 2007 and analyzed for a number of contaminants, including mercury, DDT, and toxaphene. PCBs were not measured in the fish tissue. Mercury concentrations in two of four largemouth bass and two of four catfish samples exceeded the 0.3 µg/g EPA fish tissue mercury criteria. However, mercury concentrations in all fish samples were below the MDEQ criterion for mercury in fish tissue. DDT and toxaphene levels were below the method quantitation limit (i.e., not detected).

4.7.2 Monitoring Approach

Fish tissue contaminant analyses will be conducted every 4 years. Both largemouth bass and flathead catfish species will be analyzed following standard MDEQ protocols established for fish tissue collection and analyses. Fish will be analyzed for mercury, DDT, PCBs, and toxaphene.

Analysis of triplicate water samples collected near the O.B. Curtis Water Treatment Plant will be conducted annually in late spring after many pre-emergent and emergent herbicides, and pesticides, have been applied in the watershed. The parameter list will include Atrazine, and other household, commercial and industrial chemicals commonly used in the watershed with a waterborne pathway, for which human health or aquatic life water quality criteria exist. A chemical analysis list is being developed.

4.8 Diel Dissolved Oxygen Monitoring

4.8.1 Rationale

DO is critical in supporting aquatic life. DO water quality standards for Mississippi streams have been established at 5.0 mg/L. DO concentrations, however, fluctuate seasonally throughout the year as well as on a daily cycle. This daily cycle is referred to as a diel cycle.

Sampling for the base monitoring program, and for most monitoring programs, occurs during the daylight hours when DO concentrations are usually above their minimum concentrations due to photosynthesis. To determine the minimum DO concentrations requires that DO concentrations be continuously monitored throughout a 24-hour period. Because DO saturation in water is inversely proportional to water temperature, the highest DO concentrations are typically recorded during the colder winter season with the lowest DO concentrations recorded during the hot summer season. To evaluate minimum DO concentrations, continuous diel DO monitoring will occur during a critical, low flow period in late August or early September.

4.8.2 Monitoring Approach

Continuous recording in situ sondes will monitor DO at the base program tributary stations established in the Pearl River, Yockanookany River, and Pelahatchie Creek during the August through September period. The sondes will be deployed during the first August grab sampling event at these tributary stations, recalibrated during the second August sampling event, and retrieved when the first September grab samples are collected. This monitoring will provide a record of DO concentrations in the tributaries during the critical low-flow period, and satisfy the CALM protocols for diel DO monitoring.

4.9 Fisheries Monitoring

4.9.1 Rationale

Fish are important indicators in the Ross Barnett Reservoir for multiple reasons: recreational fishing, subsistence fish consumption, aquatic life indicators, public interest, as prey for fish-eating birds and other predators, and the aesthetics associated with a healthy fish population. Sustaining the Reservoir fisheries is an important part of the Ross Barnett Reservoir Initiative.

4.9.2 Monitoring Approach

MDWFP has an ongoing fish monitoring program that will be continued according to established fish monitoring protocols for the Ross Barnett Reservoir (MDWFP 2009).

4.10 Aquatic Macrophytes

4.10.1 Rationale

Aquatic macrophytes (plants) provide critical habitat for aquatic organisms and wildlife, reduction and retention of sediment, nutrient uptake and denitrification, and aesthetic appeal when flowering. Aquatic macrophytes, however, can reach densities at which they become a nuisance to homeowners, boaters, and fishers. In addition, invasive species can spread rapidly and dominate desired species. Control and prevention of invasive species is an important prt of the management activities. Aquatic macrophyte management is led by PRVWSD and will continue in the future.

4.10.2 Monitoring Approach

Mississippi State University has an established aquatic macrophyte monitoring program that will be continued using established sampling and analysis protocols (MSU 2005).

4.11 Litter and Trash

4.11.1 Rationale

PRVWSD annually spends about $50,000.00 for trash removal around the Reservoir and upstream to the Low-Head Dam. Litter and trash are an eyesore and contribute to decreased water quality, decreased property values, pest and rodent problems, and potential impacts on wildlife and fisheries. Developing an approach for monitoring litter and trash will help inform the public, establish the magnitude of the problem, and provide a tool for evaluating litter reduction efforts.

4.11.2 Monitoring Approach

At a minimum, the contractor for trash collection and disposal will be required to provide an estimate of the volume or weight of the trash collected. This will help quantify the magnitude of the trash scattered around the Reservoir and upstream.

A trash index score will be computed for three sites on three occasions: the week after Memorial Day, Fourth of July, and Labor Day. The three sites will be located at Old Trace Park, Pelahatchie Shore Park, and Flag Island. The assessment methodology is described in *Rapid Trash Assessment Methodology, Version 8* (CRWQCB San Francisco Bay Region 2004). The assessment is conducted on a 100-ft area of shoreline at a sampling site. A team of two people document characteristics of the site such as public access to the site, a description of the shoreline, and a “high-water” line. Trash located below the high-water line can be expected to move into the Reservoir or river or be swept downstream during the next high-flow event. In conducting the assessment, the team members systematically walk from downstream to upstream and pick up trash items as they come to them. A tally of the number and types of items found is kept as the items are picked up. Items found above and below the high-water line are tallied separately. A trash score is calculated for the site based on six parameters. Instructions on a worksheet developed specifically for the rapid trash assessment allow monitoring personnel to assign scores for each parameter (see Figure 4.7):

1. Level of trash,
2. Actual number of items found,
3. Threat to aquatic life,
4. Threat to human health,
5. Illegal dumping and littering, and
6. Accumulation of trash.

The trash index scores will be provided to radio and television stations, and could be posted on the electronic billboard on Lakeland Drive, following each holiday. This information will be used in a public awareness, outreach, and education campaign, in conjunction with the *Keep Mississippi Beautiful* program. The “Don’t Mess With Texas” program effectively reduced litter by over 27% in its first year.

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

WATERSHED/STREAM: ______________________________ DATE/TIME: ______________

MONITORING GROUP, STAFF: ________________________ SAMPLE ID: ______________

SITE DESCRIPTION (Station Name, Number, etc.): ____________________________________

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
1. Level of Trash	On first glance, no trash visible. Little or no trash (<10 pieces) evident when streambed and stream banks are closely examined for litter and debris, for instance by looking under leaves.	On first glance, little or no trash visible. After close inspection small levels of trash (10-50 pieces) evident in stream bank and streambed.	Trash is evident in low to medium levels (51-100 pieces) on first glance. Stream, bank surfaces, and riparian zone contain litter and debris. Evidence of site being used by people: scattered cans, bottles, food wrappers, blankets, clothing.	Trash distracts the eye on first glance. Stream, bank surfaces, and immediate riparian zone contain substantial levels of litter and debris (>100 pieces). Evidence of site being used frequently by people: many cans, bottles, and food wrappers, blankets, clothing.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Actual Number of Trash Items Found	0 to 10 trash items found based on a trash assessment of a 100-foot stream reach.	11 to 50 trash items found based on a trash assessment of a 100-foot stream reach.	51 to 100 trash items found based on a trash assessment of a 100-foot stream reach.	Over 100 trash items found based on a trash assessment of a 100-foot stream reach.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Threat to Aquatic Life	Trash, if any, is mostly paper or wood products or other biodegradable materials. Note: A large amount of rapidly biodegradable material like food waste creates high oxygen demand, and should not be scored as optimal.	Little or no (<10 pieces) transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts. Presence of settleable, degradable, and non-toxic debris such as glass or metal.	Medium prevalence (10-50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, Styrofoam, balloons, cigarette butts Larger deposits (< 50 pieces) of settleable debris such as glass or metal. Any evidence of clumps of deposited yard waste or leaf litter.	Large amount (>50 pieces) of transportable, persistent, buoyant litter such as: hard or soft plastics, balloons, Styrofoam, cigarette butts; toxic items such as batteries, lighters, or spray cans; large clumps of yard waste or dumped leaf litter; or large amount (>50 pieces) of settleable glass or metal.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Threat to Human Health	Trash contains no evidence of bacteria or virus hazards such as medical waste, diapers, pet or human waste. No evidence of toxic substances such as chemical containers or batteries. No ponded water for mosquito production. No evidence of puncture and laceration hazards such as broken glass or metal debris.	No bacteria or virus hazards or sources of toxic substances, but small presence (<10 pieces) of puncture and laceration hazards such as broken glass and metal debris. No presence of ponded water in trash items such as tires or containers that could facilitate mosquito production.	Presence of **any one** of the following: hypodermic needles or other medical waste; used diaper, pet waste, or human feces; any toxic substance such as chemical containers, batteries, or fluorescent light bulbs (mercury). Medium prevalence (10-50 pieces) of puncture hazards.	Presence of **more than one** of the items described in the marginal condition category, or high prevalence of any one item (e.g. greater than 50 puncture or laceration hazards).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Figure 4.7(a). Rapid trash assessment worksheet, page 1.

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

	CONDITION CATEGORY			
Trash Assessment Parameter	**Optimal**	**Sub optimal**	**Marginal**	**Poor**
5. Illegal Dumping	D: No evidence of illegal dumping. No bags of trash, no yard waste, no household items placed at site to avoid proper disposal, no shopping carts.	D: Some evidence of illegal dumping. Limited vehicular access limits the amount of potential dumping, or material dumped is diffuse paper-based debris.	D: Presence of **one** of the following: furniture, appliances, shopping carts, bags of garbage or yard waste, coupled with vehicular access that facilitates in-and-out dumping of materials to avoid landfill costs.	D: Evidence of chronic dumping, with **more than one** of the following items: furniture, appliances, shopping carts, bags of garbage, or yard waste. Easy vehicular access for in-and-out dumping of materials to avoid landfill costs.
Illegal Littering	L: Any trash is incidental litter (< 5 pieces) or carried downstream from another location.	L: Some evidence of litter within creek and banks originating from adjacent land uses (<10 pieces).	L: Prevalent (10-50 pieces) in-stream or shoreline littering that appears to originate from adjacent land uses.	L: Large amount (>50 pieces) of litter within creek and on banks that appears to originate from adjacent land uses.
D-SCORE	10 9	8 7 6	5 4 3	2 1 0
L-SCORE	10 9	8 7 6	5 4 3	2 1 0
6. Accumulation of Trash	There does not appear to be a problem with trash accumulation from downstream transport. Trash, if any, appears to have been directly deposited at the stream location.	Some evidence (<10 pieces) that litter and debris have been transported from upstream areas to the location, based on evidence such as silt marks, faded colors or location near high water line.	Evidence that (10 to 50 pieces) trash is carried to the location from upstream, as evidenced by its location near high water line, siltation marks on the debris, or faded colors.	Trash appears to have accumulated in substantial quantities at the location based on delivery from upstream areas, and is in various states of degradation based on its persistence in the waterbody. Over 50 items of trash have been carried to the location from upstream.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Total Score _______________

SITE DEFINITION:
UPPER/LOWER BOUNDARIES OF REACH: ____
HIGH WATER LINE: ____
UPPER EXTENT OF BANKS OR SHORE: ____
____

NOTES:

____
____
____
____
____
____
____

Figure 4.7(b). Rapid trash assessment worksheet, page 2.

Rapid Trash Assessment Worksheet

Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board

TRASH ITEM TALLY (Tally with (•) if found above high water line, and (|) if below)

PLASTIC # Above___ # Below____	**METAL** # Above___ # Below____
Plastic Bags	Aluminum Foil
Plastic Bottles	Aluminum or Steel Cans
Plastic Bottle Caps	Bottle Caps
Plastic Cup Lid/Straw	Metal Pipe Segments
Plastic Pipe Segments	Auto Parts (specify below)
Plastic Six-Pack Rings	Wire (barb, chicken wire etc.)
Plastic Wrapper	Metal Object
Soft Plastic Pieces	**LARGE (specify below)** # Above___ # Below____
Hard Plastic Pieces	Appliances
Styrofoam cups pieces	Furniture
Styrofoam Pellets	Garbage Bags of Trash
Fishing Line	Tires
Tarp	Shopping Carts
Other (write-in)	Other (write-in)
BIOHAZARD # Above___ # Below____	**TOXIC** # Above___ # Below____
Human Waste/Diapers	Chemical Containers
Pet Waste	Oil/Surfactant on Water
Syringes or Pipettes	Spray Paint Cans
Dead Animals	Lighters
Other (write-in)	Small Batteries
CONSTRUCTION DEBRIS#Above___#Below__	Vehicle Batteries
Concrete (not placed)	Other (write-in)
Rebar	**BIODEGRADABLE** # Above___ # Below____
Bricks	Paper
Wood Debris	Cardboard
Other (write-in)	Food Waste
MISCELLANEOUS # Above___ # Below____	Yard Waste (incl. trees)
Synthetic Rubber	Leaf Litter Piles
Foam Rubber	Other (write-in)
Balloons	**GLASS** # Above___ # Below____
Ceramic pots/shards	Glass bottles
Hose Pieces	Glass pieces
Cigarette Butts	**FABRIC AND CLOTH** # Above___ # Below____
Golf Balls	Synthetic Fabric
Tennis Balls	Natural Fabric (cotton, wool)
Other (write-in)	Other (write-in)
Total pieces Above: **Below:**	**Grand total:**
Tally all trash in above rows; make notes below as needed to facilitate scoring.	
Littered:	
Dumped:	
Downstream Accumulation:	

SPECIFIC DESCRIPTION OF ITEMS FOUND:______________________________________

____

____

Figure 4.7(c). Rapid trash assessment worksheet, page 3.

4.12 Reservoir Bathymetric Survey

4.12.1 Rationale

The storage capacity of a reservoir is expected to change over time due to sediment deposition. Bathymetric surveys can be used to determine the current storage capacity of a reservoir. When tracked over time, bathymetric survey results can provide estimates sediment accumulation volumes. A bathymetric survey for the Ross Barnett Reservoir would require a combination of both hydrographic and topographic methods. Hydrographic surveys involve collecting data to characterize the underwater morphometry. Topographic methods would be needed to map the areas above the pool.

Measurements of the amount and rate of sediment deposition in reservoirs are important indicators of the success of watershed management practices. There has not been a sedimentation survey conducted on the Reservoir since its construction. Current volume estimates are based on the area capacity curve dated July 1959. The survey would provide data to quantify the current volume and update the area capacity curve for the Reservoir. As an option, measurements at established survey ranges could be conducted in subsequent years to estimate sediment accumulation rates and track areas where sedimentation is most significant (i.e., downstream of tributaries and construction sites). Finally, the original reservoir surveys could be digitized so that they are comparable to current-day surveys.

4.12.2 Monitoring Approach

The survey will be performed by experienced surveyors who are familiar with the procedures outlined in the US Army Corps of Engineers (USACE) manual *Engineering and Design - Hydrographic Surveying* or an equivalent publication. The hydrographic portion of the survey would be most accurate if collected during summer pool (when water levels are highest). Topographic mapping for the land area above the pool could most efficiently be conducted by Light Detection and Ranging (LIDAR) surveys conducted when the pool is at its lowest stage and trees have dropped their leaves.

In general, the hydrographic survey will be conducted by running survey lines from bank-to-bank perpendicular to the axis of the Reservoir. The spacing of the survey lines would be determined by the surveyor based on the desired accuracy and precision of the survey and reservoir morphometry. USACE recommends spacing that varies from 200 ft to 400 ft with increased spacing allowed where topography is fairly uniform.

4.13 Monitoring Program Summary

A monitoring program has been designed to provide a sustainable status and trends monitoring network for the Reservoir and its watershed. Water quantity and quality will be monitored as part of a base program in the Reservoir, the two primary tributaries to the Reservoir (Pearl River and Yockanookany River) and Pelahatchie Bay and its primary tributary, Pelahatchie Creek (Figure 4.1). This base program includes biological monitoring of four fixed sites on wadeable streams in the near-field of the Reservoir to track the status and trends of watershed changes in tributaries in the near-field drainage of the Reservoir (Figure 4.2). These four fixed sites include sites that were assessed as impaired. These sites will be monitored to track changes in these HUC12 watersheds as management practices are implemented over time. An additional three sites located upstream in the watershed on wadeable streams are included in the base biological monitoring program. One site is currently impaired and the other two are attaining designated uses (Figure 4.2).

This base program is supplemented with other monitoring efforts to address other issues in the Reservoir and its watershed, including pathogens, aquatic weeds, fish productivity, pesticides, and trash, as resources permit. In addition, there could be up to 300 additional biological monitoring sites sampled on wadeable streams over 10 sampling periods to assess stream condition in the watershed. This monitoring will also include voluntary efforts to continue to engage stakeholders in management of the Reservoir and its watershed.

Finally, watershed implementation projects will be designed and implemented in priority HUC12 watersheds, which will include pre-implementation monitoring to establish the baseline water quality for impaired segments and post-implementation monitoring to document the recovery of the impaired segment and its attainment of designated uses over time. Management practices implemented will be aimed at meeting specific management objectives that are consistent with TMDLs as well as restoration and protection goals specified in the *Comprehensive Watershed Protection and Restoration Plan*. These watershed implementation projects are discussed in the next section.

4.14 Watershed Implementation Plan Monitoring

4.14.1 Rationale

Individual watershed restoration projects will be implemented in catchments for which TMDLs have been completed (Table 4.4), where there is stakeholder interest, or that are identified as high-priority in the *Comprehensive Watershed Protection and Restoration Plan*. The Plan includes a method for prioritizing HUC12 watersheds based on the location of TMDL waters, as well as additional criteria that indicate pollutant sources, potential causes of impairment, and agency concerns/interests.

Watershed restoration projects will be implemented through preparation of individual watershed implementation plans for HUC12 watersheds. The implementation plans will include plans for pre- and post-implementation monitoring to establish a comparative baseline and evaluate the effectiveness and efficiency of management practices following implementation.

4.14.2 Monitoring Approach

Individual watershed implementation projects have been designed and implemented for Mill Creek and Fannegusha Creek in the Ross Barnett watershed. These projects included plans for monitoring the effectiveness of the management practices implemented. Monitoring of the Fannegusha Creek project has concluded. Monitoring will continue at two sites in the Mill Creek catchment.

Table 4.4. Completed TMDLs for the Ross Barnett watershed.

Waterbody	Pollutant	Approval Date
Bogue Chitto Creek	Organic enrichment/low DO	Nutrients – December 18, 2008
	Sediment	March 25, 2009
	Pesticides	January 4, 2007
Cane Creek	Sediment	March 25, 2009
Coffee Bogue Creek	Pathogens	December 18, 2008
	Nutrients, organic enrichment/low DO	March 25, 2009
	Sediment	March 25, 2009
Conehatta Creek	Sediment	March 25, 2009
Conehoma Creek	PCBs	January 13, 2004
Eutacutachee Creek	Sediment	March 25, 2009
Fannegusha Creek	Sediment	June 28, 2004
Hurricane Creek	Sediment	June 28, 2004
Lobutcha Creek (upper and lower)	Pathogens	December 15, 1999
Lobutcha Creek	Sediment	March 25, 2009
Nanih Waiya Creek	Nutrients, organic enrichment/low DO	December 18, 2008
	Pesticides	December 18, 2008
	Fecal coliforms	December 15, 1999
	Sediment	March 25, 2009
Noxapater Creek	Nutrients, organic enrichment/low DO	December 18, 2008
	Pesticides	January 4, 2007
	Sediment	March 25, 2009
Pearl River	Nutrients	June 29, 2009
Pearl River	Pathogens	December 15, 1999
Pearl River	Sediment	March 25, 2009
Pearl River (Copiah, Hinds, Rankin, and Simpson)	Pesticides	January 4, 2007
Pearl River (Leake and Neshoba)	Pesticides	January 4, 2007
Pearl River (Leake, Madison, Rankin, and Scott)	Pesticides	January 4, 2007
Pearl River	Mercury	January 12, 2004
Pelahatchie Creek	Pathogens	March 2009
	Pesticides	January 4, 2007
	Sediment	March 25, 2009
Pinishook Creek	Pathogens	December 15, 1999
	Sediment	March 25, 2009
Red Cane Creek	Sediment	June 28, 2004
Shockaloo Creek	Nutrients, organic enrichment/low DO	Pending

Table 4.4. Completed TMDLs for the Ross Barnett Reservoir watershed (continued).

Waterbody	Pollutant	Approval Date
	Pathogens	December 18, 2008
	Sediment	March 25, 2009
Standing Pine Creek	Pathogens	December 15, 1999
Tallabogue Creek	Nutrients, organic enrichment/low DO	Pending
	Sediment	March 25, 2009
Tallahaga Creek	Sediment	March 25, 2009
Tibby Creek	Pathogens	December 18, 2008
Tuscolameta Creek	Nutrients, organic enrichment/low DO	Pending
	Sediment	March 25, 2009
Tallahaga Creek	Pathogens	December 15, 1999
Yockanookany River	Mercury	January 12, 2004
	PCBs	January 13, 2004

For new projects, pre-implementation monitoring of at least one-year duration will establish a comparative baseline prior to implementing restoration and management practices. During implementation, monitoring can be discontinued because the data will reflect the transient conditions occurring during construction or implementation. Once implementation is complete, post-implementation monitoring will be initiated and continue until the effectiveness and efficiency of the management practices can be determined. At a minimum, this is likely to be 5 years, and could continue for 10 years or longer depending on the size of the watershed and the management practices that are implemented. Projects in the Mill Creek watershed, for example, did not show clear evidence of reduction in sediment loads until 4 years after implementation of sediment management. Monitoring is expensive, and having the capability of rotating intensive monitoring efforts among catchments could be cost-effective, if there is also a mechanism for tracking the continued effectiveness of management practices, or identifying when remediation or maintenance efforts should be implemented to sustain restored or protected areas. Volunteer monitoring in these restored or protected catchments could provide this information. In addition, as noted in the next section, one goal might be to transition most of the monitoring and maintenance of the project to the local stakeholders, after intensive monitoring is rotated to another catchment.

As an alternate to pre-implementation monitoring, “control” sites could be monitored. Two types of control sites might be selected. The control site might be impaired and provide a reference for assessing the effectiveness of the management practice. The control site could also be attaining its uses and provide the target to be achieved by the management practice. The type of control site will be determined by conditions within each catchment.

4.15 Volunteer Monitoring

4.15.1 Rationale

Engaging stakeholders in the restoration and protection efforts is critical for the sustainability of watershed management activities. Volunteer monitoring programs have been successful in engaging stakeholders, increasing awareness of watershed issues, and implementing and sustaining management practices to ameliorate these issues.

4.15.2 Monitoring Approach

Several volunteer monitoring efforts are proposed as part of this program:

- **Great Secchi Dip-In** – Each year, usually between late June and mid-July (in 2010, it is between June 26 – July 18), volunteers are provided with instructions and a Secchi disk. They are asked to take a measurement sometime during this period and record the information online at a website maintained by Kent State University, the North American Lakes Management Society, and EPA. National and state reports are provided by Kent State University later each fall or winter.
- **Synoptic Sampling** – Jackson State University has graduate programs in environmental engineering and environmental sciences. Supplementing sampling crews with students from Jackson State University during the synoptic sampling (see Section 4.4) would provide educational opportunities for the students and increase their awareness of the importance of the Ross Barnett Reservoir and its watershed to the quality of life in central Mississippi.
- **Trash Index** – Volunteers can be trained to conduct the trash surveys following the three holidays and compute the trash index scores (Section 4.11). Voluntary efforts are ultimately going to be needed to reduce trash and litter. Using volunteers as part of the effort increases the opportunities for environmental awareness, outreach, and education.
- **Post-Implementation Monitoring** – Once the effectiveness of restoration or protection management practices is demonstrated in a catchment (Section 4.12),

the agency monitoring efforts can be reduced or eliminated if there are volunteers to periodically monitor selected parameters to track changes and trends in water quality over time.

5.0 FUNDING

The monitoring program will be funded through several programs. The MDEQ ambient monitoring program will fund the base program efforts. USGS has a 1:1 matching program that historically has provided funds. These funds, however, are discretionary and based on needs established by USGS. Efforts will be made to solicit these funds and document the benefits to the community and state from this funding. PRVWSD will continue to supply funds to MSDH to conduct pathogen monitoring within the Reservoir. PRVWSD will also continue to fund the aquatic macrophyte monitoring program. MDWFP will continue fish population monitoring efforts. Monitoring of individual watershed implementation projects will be funded through CWA Section 319 funds. The Section 319 funds will permit the development of an outreach and education effort to engage volunteers in the Great Secchi Dip-In associated with the synoptic sampling and the trash index monitoring.

6.0 REVIEW AND EVALUATION

6.1 Evaluation and Assessment

6.1.1 Performance Measures

Performance measures have been developed to evaluate the success in achieving the monitoring goals established in Section 1.0. The goals are to be able to assess the status and trends over space and time for each of the pollutants listed in Table 6.1.

6.1.2 Annual Evaluation

For monitoring information to be useful, it must be assessed, reported, and incorporated into the decision-making process. The *Comprehensive Watershed Protection and Restoration Plan* will identify a set of questions to be answered periodically and reported to the public. Annual answers for selected questions will help increase the importance and visibility of the Reservoir to the community. The trash index, for example, could become like the Chesapeake Bay's "Bernie's Sneaker Index." Clarity in the Chesapeake Bay is critical for the reestablishment of grass beds, which are a restoration endpoint for Chesapeake Bay. Each year for over 20 years, Bernie Fowler, a concerned citizen, has walked into Chesapeake Bay until he can no longer see his sneaker, and has recorded this depth. While the index has little scientific value, it has become the public's metric for improvement, or lack of improvement, in Chesapeake Bay water quality. Trash is a visible symbol of public interest and environmental stewardship. The Trash Index score, and other indicators with public relevance, will be presented at the annual Waterfest event each year.

Table 6.1. Issue-specific performance measures.

Pollutant	Performance Measures
Sediment	**Status:** • Annual estimate of total sediment loading to the Reservoir. • Measurements of total suspended solids (TSS), turbidity, and water clarity gradients in the Reservoir on a seasonal basis (winter, summer). • Seasonal turbidity at the dam. • Seasonal TSS concentrations at the dam. **Trends:** • Estimate of trends in annual total sediment load detected at $\alpha = 0.1$ with 90% confidence. • Estimate of trends in seasonal average TSS concentrations (summer, winter) detected at $\alpha = 0.1$ with 90% confidence. • Estimate of trends in seasonal turbidity at the dam detected at $\alpha = 0.1$ with 90% confidence. • Estimate of trends in TSS concentrations at the dam detected at $\alpha = 0.1$ with 90% confidence.
Nutrients	**Status:** • Annual estimate of TN and TP loading to the Reservoir. • Measurements of nitrogen and phosphorous gradients in the Reservoir during the growing season. • Measurement of chlorophyll *a* gradients in the Reservoir during the growing season. **Trends:** • Estimate of trends in N and P annual loads to the Reservoir detected at $\alpha = 0.1$ with 90% confidence. • Estimate of trends in the seasonal average summer N, P, and chlorophyll *a* concentrations detected at $\alpha = 0.1$ with 90% confidence.
Pathogens	**Status:** • Measurements of fecal coliform bacteria at five sites in the Reservoir. **Trends:** • Estimate of change in percent of samples with colonies above the water quality criteria on an annual basis.
Pesticides and Other Contaminants	**Status:** • Measurements of pesticide levels in the water column and fish tissue. **Trends:** • Estimate of trends in fish tissue concentrations of DDT, PCBs, toxaphene, and mercury on an annual basis detected at $\alpha = 0.1$ with 90% confidence.

Table 6.1. Issue-specific performance measures (continued).

Pollutant	Performance Measures
Litter	**Status:** • Measurement of the trash index/indicator at three locations in the Reservoir. • Measurement of amount of trash removed from the Reservoir. **Trends:** • Estimate of trends in trash index scores for each holiday on an annual basis detected at $\alpha = 0.1$ with 90% confidence. • Estimate of trends in amount of trash removal from the Reservoir detected at $\alpha = 0.1$ with 90% confidence.
Aquatic Plant Management	**Status:** • Annual plant species surveys. **Trends:** • Estimate of trends in species richness and occurrence of non-native invasive aquatic plants, detected at $\alpha = 0.1$ with 90% confidence.
Anoxia	**Status:** • Days of oxygen concentrations less than 2 at the dam. **Trends:** • Estimate of trends in annual days of oxygen concentrations less than 2 at the dam detected at $\alpha = 0.1$ with 90% confidence.
Trihalo-methane Precursors	**Status:** • Seasonal chlorophyll *a* concentrations at the dam. • Annual estimate of TOC load to the Reservoir. • Seasonal TOC concentrations at the dam. **Trends:** • Estimate of trends in seasonal chlorophyll *a* concentrations at the dam detected at $\alpha = 0.1$ with 95% confidence. • Estimate of trends in annual TOC load to the Reservoir detected at $\alpha = 0.1$ with 95% confidence. • Estimate of trends in seasonal TOC concentrations at the dam.

6.1.3 Periodic Evaluation and Assessment

MDEQ conducts a biennial assessment of waterbody attainment of designated uses for the state of Mississippi as part of the 305(b) process. The Ross Barnett Reservoir and its tributaries are part of this assessment. The MDEQ assessment should serve as the foundation for answering the remaining questions identified in the *Comprehensive Watershed Protection and Restoration Plan*. Every 2 years, an assessment of status and trends in water quality, fisheries, aquatic weeds, and sedimentation should be prepared as a public report.

6.2 Monitoring Program Review and Refinement

Adaptive management represents a sensible management approach to be followed for Ross Barnett Reservoir and its watershed. Adaptive management is founded on periodic evaluation, assessment, and refinement, if needed, to achieve the desired goals for the Reservoir. Periodic evaluation of the monitoring programs should occur every 4 years, in conjunction with alternating biennial assessments. There has been no continuity in water quality monitoring of the Reservoir and its tributaries in the past, as indicated in the chapter discussing Data Gaps (Section 3.0). A base monitoring program must be maintained if it is to yield useful information for planning, management, and decision-making. However, monitoring must also be relevant to changing public interests and desired uses. Review and refinement every 4 years, if needed, should provide for continuity and adaptation.

7.0 REFERENCES

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APPENDIX A

Summary of Historical Water Quality Sampling in the Ross Barnett Reservoir Watershed

Appendix A. Agency, station number and location, year, and type of monitoring (Q = flow, S = stage, W = water quality, P = pathogens) conducted at the stations from 1964 through 2009.

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Source	Organization	Station	Name	Watershed	Location	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
STORET	EPA	280402	ROSS BARNETT RESERVOIR	Reservoir	Dam																																					W									
NWIS	USGS	2485600	ROSS BARNETT RESERVOIR NR JACKSON, MS	Reservoir	Dam			S	S	S	S	S	S	S	S	S	S																																		
WADES	MDEQ	RBR1	ROSS BARNETT RESERVOIR Near RIDGELAND NEAR DAM EAST OF SPILLWAY .	Reservoir	Dam						Q	Q			W	Q																																			
WADES	MDEQ	549RBR01	ROSS BARNETT RESERVOIR Near RIDGELAND NEAR DAM WEST OF SPILLWAY 0.5 MILES NORTH OF SPILLWAY ROAD WATER COLUMN PROFILE	Reservoir	Dam						W	W	W	W P	W P	W P	W P	W P																																	
MDH	Jackson		OB Curtis Raw Water	Reservoir	Dam	W	W	W	W	W	W																																								
STORET	EPA	272537	ROSS BARNETT RES MOUTH OF MARINA	Reservoir	Lower Res																																										W		W	W	W P
STORET	EPA	272539	ROSS BARNETT RESERVOIR	Reservoir	Lower Res																																										W		W	W	W
STORET	EPA	272541	ROSS BARNETT RESERVOIR	Reservoir	Lower Res																																										W		W	W	W
STORET	EPA	272543	ROSS BARNETT RESERVOIR	Reservoir	Lower Res																																										W		W	W	W
STORET	EPA	272535	ROSS BARNETT RESERVOIR MARINA	Reservoir	Lower Res																																										W		W	W	
STORET	EPA	272545	ROSS BARNETT RESERVOIR	Reservoir	Lower Res																																										W		W	W	W P
STORET	EPA	272547	ROSS BARNETT RESERVOIR	Reservoir	Lower Res																																										W		W	W	W
STORET	EPA	272549	ROSS BARNETT RESERVOIR	Reservoir	Lower Res																																										W		W	W	W
MSDH (hc), PRVWSD (ec)	MSDH	1	MAIN HARBOR MARINA	Reservoir	Lower Res	P	P	P	P	P	P	P	P		P						P	P						P	P	P	P	P	P	P	P	P	P	P		P	P	P	P	P	P	P					
STORET	EPA	272551	PELAHATCHIE CR ROSS BARNETT RES	Reservoir	Pelahatchie																																										W		W	W	W P
STORET	EPA	272553	PELAHATCHIE CR ROSS BARNETT RES	Reservoir	Pelahatchie																																										W			W	
STORET	EPA	272555	PELAHATCHIE CR ROSS BARNETT RES	Reservoir	Pelahatchie																																										W		W	W	W
STORET	EPA	280401	ROSS BARNETT RESERVOIR	Reservoir	Pelahatchie																																					W									
WADES	MDEQ	RBR4	ROSS BARNETT RESERVOIR At RIDGELAND AT MAIN HARBOR MARINA OFF PIER E & F .	Reservoir	Pelahatchie										W																																				
WADES	MDEQ	549RBR04	ROSS BARNETT RESERVOIR (PELAHATCHIE CREEK EMBAYMENT) Near FANNIN NORTHEAST OF PELAHATCHIE RECREATION AREA 1 MILE EAST OF PELAHATCHIE RECREATION AREA WATER COLUMN PROFILE	Reservoir	Pelahatchie						W	W	W	W P	W P	W P	W P	W P																																	
STORET	EPA	280403	ROSS BARNETT RESERVOIR	Reservoir	lower to mid																																					W									
STORET	EPA	272610	ROSS BARNETT RESERVOIR	Reservoir	Mid Res																																										W		W	W	W
STORET	EPA	272612	ROSS BARNETT RESERVOIR	Reservoir	Mid Res																																										W		W	W	W
STORET	EPA	272614	ROSS BARNETT RESERVOIR	Reservoir	Mid Res																																										W		W	W	
STORET	EPA	272616	ROSS BARNETT RESERVOIR	Reservoir	Mid Res																																										W		W	W	
STORET	EPA	272618	ROSS BARNETT RESERVOIR	Reservoir	Mid Res																																										W		W	W	
STORET	EPA	280404	ROSS BARNETT RESERVOIR	Reservoir	Mid Res																																					W									
WADES	MDEQ	RBR2	ROSS BARNETT RESERVOIR Near RIDGELAND NEAR WATER INTAKE WEST OF SIPLLWAY .	Reservoir	Mid Res										W																																				
WADES	MDEQ	549RBR02	ROSS BARNETT RESERVOIR Near SAND HILL MID-LAKE BELOW HWY 43 4 MILES WEST OF GOSHEN SPRINGS WATER COLUMN PROFILE	Reservoir	Mid Res						W	W	W	W P	W P	W P	W P	W P																																	
STORET	EPA	272640	ROSS BARNETT RESERVOIR	Reservoir	HWY 43																																										W		W	W	
STORET	EPA	272642	ROSS BARNETT RESERVOIR	Reservoir	HWY 43																																										W		W	W	
STORET	EPA	272644	ROSS BARNETT RESERVOIR	Reservoir	HWY 43																																										W		W	W	
STORET	EPA	272646	ROSS BARNETT RESERVOIR	Reservoir	HWY 43																																										W		W	W	
STORET	EPA	272648	ROSS BARNETT RESERVOIR	Reservoir	HWY 43																																										W		W	W	
STORET	EPA	2804A2	PEARL RIVER	Reservoir	HWY 43																																				W	W									
WADES	MDEQ	2485000	ROSS BARNETT RESERVOIR Near CANTON AT HWY 43 9 MILES SE OF CANTON .	Reservoir	HWY 43						W	W	W	W P	W P	W P	WQSP	WQSP	WQSP																																
WADES	MDEQ	PL484	ROSS BARNETT RESERVOIR Near CANTON AT HWY 43 PIER AT HWY 43 PIER .	Reservoir	HWY 43			W	W	W	W	W	W																																						
MSDH (hc), PRVWSD (ec)	MSDH	8	HWY 43 BRIDGE	Reservoir	HWY 43	P	P	P	P	P	P	P	P		P						P	P						W P	P	P	P	P	P	P	P	P	P	P		P	P	P	P	P	P	P					
WADES	MDEQ	RBR3	ROSS BARNETT RESERVOIR At RIDGELAND AT MOUTH OF MAIN HARBOR NEXT TO BREAKERS CONDO .	Reservoir	Head										W																																				
WADES	MDEQ	549RBR03	ROSS BARNETT RESERVOIR Near SAND HILL UPPER LAKE ABOVE HWY 43 6 MILES NE OF SANDHILL WATER COLUMN PROFILE	Reservoir	Head						W	W	W				W P	W P																																	
STORET	EPA	272561	CLEAR CR CO RD BR NW PELAHATCHIE	Pelahatchie	1:10																																													WQ	
NWIS	USGS	2485577	MILL CR TRIB NO 1 AT GRANTS FERRY RD NR LUCKNEY, MS (active)	Pelahatchie	1:10	W	WQS	WQS	WQS																																										
NWIS	USGS	2485573	MILL CREEK AT CASTLEWOODS BLVD NEAR LUCKNEY, MS	Pelahatchie	1:10	W	WQS	WQS																																											
NWIS	USGS	2485570	MILL CREEK AT COON HUNTERS ROAD NR BRANDON, MS	Pelahatchie	1:10												W																																		
NWIS	USGS	2485590	MILL CREEK AT SPILLWAY ROAD NR LUCKNEY, MS (active)	Pelahatchie	1:10	W S	WQS	W S						S		S	WQS	QS																																	
NWIS	USGS	2485574	MILL CREEK AT STATE HIGHWAY 25 NR LUCKNEY, MS	Pelahatchie	1:10	WQS	WQS	WQS	WQS								WQS																																		
NWIS	USGS	248557250	MILL CREEK TRIB 5 AT WOODLANDS DR NR LUCKNEY, MS	Pelahatchie	1:10		W S	WQS																																											
NWIS	USGS	2485575	MILL CREEK TRIB NO 2 NR LUCKNEY, MS	Pelahatchie	1:10	WQS	WQS																																												
NWIS	USGS	2485578	MILL CREEK TRIBUTARY NO 1 NR LUCKNEY, MS	Pelahatchie	1:10												W																																		
STORET	EPA	2804BA	PELAHATCHIE	Pelahatchie	1:10																																				WQ	WQ									
STORET	EPA	2804BB	PELAHATCHIE	Pelahatchie	1:10																																				WQ	WQ									
STORET	EPA	272557	PELAHATCHIE CR MISS 471 N BRANDN	Pelahatchie	1:10																																										W	W	W	W	W
STORET	EPA	272559	PELAHATCHIE CR NW PELAHATCHIE	Pelahatchie	1:10																																													WQ	
STORET	EPA	272586	PELAHATCHIE CR US 80 SW MORTON	Pelahatchie	1:10																																													WQ	
STORET	EPA	272570	PELAHATCHIE CR US80 PELAHATCHIE	Pelahatchie	1:10																																													WQ	
STORET	EPA	2804B1	PELAHATCHIE CREEK	Pelahatchie	1:10																																				W	W									
WADES	MDEQ	PELCR12	PELAHATCHIE CREEK At CLARKSBURG AT HWY 80 .	Pelahatchie	1:10																									W																					
WADES	MDEQ	PELCR9	PELAHATCHIE CREEK At PELAHATCHIE AT HWY 80 .	Pelahatchie	1:10																									W																					
WADES	MDEQ	316	EUTAEUTACHEE CREEK Near PELAHATCHIE 150M UPSTREAM OF HWY 80 REPLICATE 1	Pelahatchie	1:10									WQ																																					
WADES	MDEQ	PELCR21	PELAHATCHIE CREEK At PELAHATCHIE HWY 43 .	Pelahatchie	1:10																									W																					
WADES	MDEQ	PR12	PELAHATCHIE CREEK NEAR FANNIN AT HWY 25 .	Pelahatchie	1:10							P		P																																					
NWIS	USGS	2485498	PELAHATCHIE CREEK AT STATE HWY 25 NR FANNIN, MS	Pelahatchie	1:10		QS	S	QS		QS	QS					QS	QS	QS																																
WADES	MDEQ	PELCR13	PELAHATCHIE CREEK Near CLARKSBURG AT MORTON-RANKIN CO LINE RD .	Pelahatchie	1:10																									W																					
WADES	MDEQ	PELCR15	PELAHATCHIE CREEK Near MORTON AT MORTON-RANKIN CO LINE RD .	Pelahatchie	1:10																									W																					
WADES	MDEQ	PELCR3	PELAHATCHIE CREEK Near PELAHATCHIE AT NOBLIN BRIDGE RD .	Pelahatchie	1:10																									W																					

3/10/2010

Source	Organization	Station	Name	Watershed	Location	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
WADES	MDEQ	PELCR10	PELAHATCHIE CREEK Near PELAHATCHIE BEHIND MULTICRAFT INDUSTRIES WEST OF PELAHATCHIE .	Pelahatchie	1:10																									W																					
STORET	EPA	2804B2	PELAHATCHIE CREEK	Pelahatchie	1:10																																				W	W									
NWIS	USGS	2485500	PELAHATCHIE CREEK NR FANNIN, MIS	Pelahatchie	1:10																																	W P	W P	W P											
MSDH (hc), PRVWSD (ec)	MSDH	9	PELAHATCHIE CREEK - HWY 471 BRIDGE	Pelahatchie	1:10	P	P	P	P	P	P	P	P		P						P	P						W P	P	P	P	P	P	P	P	P	P	P		P	P	P	P	P	P	P					
NWIS	USGS	2475230	TALLASHER CREEK NR CENTER RIDGE, MS.	Pelahatchie	1:10																						QS	QS																WQS							
NWIS	USGS	248557375	UNNAMED TRIBUTARY TO MILL CREEK NR FLOWOOD, MS	Pelahatchie	1:10	WQS	WQS																																												
WADES	MDEQ	838	CANE CREEK Near SAND HILL 2500M UPSTREAM OF HIGHWAY 43 ROUTINE SAMPLE	Reservoir	1:10							W																																							
STORET	EPA	2804C1	FANNEGUSHA CREEK	Fannegusha	1:10																																				W	W									
WADES	MDEQ	PR11	FANNEGUSHA CREEK NEAR RATLIFF AT COAL BLUFF RD .	Fannegusha	1:10							P		P																																					
WADES	MDEQ	310	FANNEGUSHA CREEK Near SAND HILL 250M UPSTREAM OF HWY 25 REPLICATE 1	Fannegusha	1:10									WQ																																					
NWIS	USGS	2484760	FANNEGUSHA CREEK NR SAND HILL, MS (active)	Fannegusha	1:10	WQS	WQS	WQS				QS					QS	QS			QS		QS			QS				QS		QS			QS	QS				QS				QS							
WADES	MDEQ	312	HURRICANE CREEK Near LEESBURG 10M DOWNSTREAM OF FLEMING RD REPLICATE 2	Fannegusha	1:10									W																																					
WADES	MDEQ	313	RED CANE CREEK Near LEESBURG 185M UPSTREAM OF WEAVER RD .	Fannegusha	1:10						W			WQ																																					
WADES	MDEQ	I313	RED CANE CREEK Near LEESBURG 185M UPSTREAM OF WEAVER RD .	Fannegusha	1:10					W																																									
WADES	MDEQ	311	COFFEE BOGUE Near LUDLOW 200M UPSTREAM OF HWY 25 REPLICATE 1	Pearl	1:10									WQ																																					
WADES	MDEQ	PR10	COFFEE BOGUE Near LUDLOW AT HWY 25 BRIDGE .	Pearl	1:10							P		P																																					
STORET	EPA	2804A1	PEARL RIVER	Pearl	1:10																																				W	W									
NWIS	USGS	2484650	PEARL RIVER AT RATLIFF`S FERRY NR RATLIFF, MS	Pearl	1:10	S	S	S	S	S	S	S	S	QS	QS	QS	QS																																		
NWIS	USGS	2485000	PEARL RIVER NEAR CANTON AT HWY 43	Reservoir	Mid Res									W	W	W	WQS	WQS	WQS																																
WADES	MDEQ	PL298	PEARL RIVER Near FARMHAVEN BELOW CONFLUENCE WITH YOCKANOOKANY RIVER SEDIMENT	Pearl	1:10												W																																		
WADES	MDEQ	PL288	PEARL RIVER Near GOOD HOPE AT LEAKE CO WATER PARK SEDIMENT	Pearl	1:10											W																																			
WADES	MDEQ	PL291	PEARL RIVER Near RATLIFF AT LOW HEAD DAM SEDIMENT	Pearl	1:10												W																																		
MSDH (hc), PRVWSD (ec)	MSDH	10	LOWHEAD DAM	Pearl	1:10	P	P	P	P	P	P	P	P		P						P	P						W P	P	P	P	P	P	P	P	P	P	P		P	P	P	P	P	P	P					
NWIS	USGS	2481986	BEASHA CREEK NR LAUREL HILL, MS	Beasha	1:50																													WQ																	
Report	EPA	BC1.0	BEESHA CREEK @ HWY 16	Beasha	1:50							WQ																																							
Report	EPA	BC5.6	BEESHA CREEK @ HWY 488	Beasha	1:50							WQ																																							
NWIS	USGS	2481911	COONSHUCK CANAL NR HOUSE, MS	Beasha	1:50																						QS							W																	
NWIS	USGS	2481920	FULTON CANAL AT MCDONALD, MS	Beasha	1:50																													WQ																	
NWIS	USGS	2481930	LONSILOCHER CANAL NR PHILADELPHIA, MS	Beasha	1:50																													W																	
NWIS	USGS	2481995	LUNELUAH CREEK AT LAUREL HILL, MS	Beasha	1:50																													WQ																	
STORET	EPA	272870	LOBUTCHA CR MISS 16 NE CARTHAGE	Lobutcha	1:50																																													WQ	
WADES	MDEQ	256	LOBUTCHA CREEK At RENFROE 155M UPSTREAM OF HWY 25 BRIDGE REPLICATE 1	Lobutcha	1:50					W				WQ																																					
NWIS	USGS	2482500	LOBUTCHA CREEK NR CARTHAGE, MS	Lobutcha	1:50																						QS	QS																	W	W					
STORET	MDEQ	2482292	LOBUTCHA CREEK NR RURAL HILL, MS	Lobutcha	1:50												W	W																WQ																	
WADES	MDEQ	PICK2	PICKINS CREEK Near CARTHAGE 250 YARDS ABOVE CHOCTAW MAID OUTFALL SONDE	Lobutcha	1:50															W																															
WADES	MDEQ	PICK1	PICKINS CREEK Near CARTHAGE 400 YARDS ABOVE CHOCTAW MAID OUTFALL WATER COLUMN PROFILE	Lobutcha	1:50															W																															
WADES	MDEQ	PICK5	PICKINS CREEK Near CARTHAGE AT HOPOCA RD BRIDGE 1.25 MILES DOWNSTREAM OF OUTFALL WATER COLUMN PROFILE	Lobutcha	1:50															W																															
WADES	MDEQ	PICK6	PICKINS CREEK Near CARTHAGE AT HOPOCA RD BRIDGE 2.5 MILES DOWNSTREAM OF CHOCTAW MAID OUTFALL WATER COLUMN PROFILE	Lobutcha	1:50															W																															
WADES	MDEQ	PICK4	PICKINS CREEK Near CARTHAGE AT PICKINS CIRCLE ROAD BRIDGE 100 FT DOWNSTREAM OF CHOCTAW MAID OUTFALL WATER COLUMN PROFILE	Lobutcha	1:50															W																															
WADES	MDEQ	PICK4A	PICKINS CREEK Near CARTHAGE NEAR POWER LINE CROSSING BELOW PICKINS CIRCLE RD 1000 YARDS DOWNSTREAM OF OUTFALL SONDE	Lobutcha	1:50															W																															
STORET	EPA	272970	NANAWAYNA CR MISS 393 SE CLATOWN	Nanah Waiya	1:50																																													W	
NWIS	USGS	2481840	NOXAPATER CREEK NR NOXAPATER, MS	Noxapater	1:50																													Q																	
STORET	EPA	272977	HUGHES CR CO RD BR S LOUISVILLE	Pearl	1:50																																													WQ	
NWIS	USGS	2481892	JOFUSKA CREEK NR ARLINGTON, MS	Pearl	1:50																													WQ																	
STORET	EPA	272920	KENTAWHA CR MIDDLE CHAN MISS 15	Pearl	1:50																																													WQ	
Report	EPA	KC6.6	KENTAWKA CANAL @ HWY 15	Pearl	1:50							WQ																																							
Report	EPA	KC0.2	KENTAWKA CANAL AT MOUTH	Pearl	1:50							WQ																																							
NWIS	USGS	2481967	LUKFAPA CREEK NR ARLINGTON, MS	Pearl	1:50																													WQ																	
STORET	EPA	272950	PEARL R MISS 15 S BURNSIDE	Pearl	1:50																																													WQ	
STORET	EPA	272900	PEARL R MISS 16 AT EDINBURG	Pearl	1:50																																													WQ	
Report	EPA	PR412.8	PEARL R @ HWY 15 BRIDGE	Pearl	1:50							WQ																																							
Report	EPA	PR379.3	PEARL R @ SUNRISE	Pearl	1:50							WQ																																							
Report	EPA	PR400.7	PEARL R JUST DOWNSTREAM OF KENTAWKA CANAL	Pearl	1:50							WQ																																							
Report	EPA	PR394.2	PEARL R MIDWAY BETWEEN KENTAWKA C AND BEESHA CR	Pearl	1:50							WQ																																							
Report	EPA	PR400.9	PEARL R UPSTREAM OF CONFLUENCE KENTAWKA CANAL	Pearl	1:50							WQ																																							
NWIS	USGS	2481880	PEARL RIVER AT BURNSIDE, MS (active)	Pearl	1:50	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS															
STORET	MDEQ	2488250	PEARL RIVER NEAR WANILLA	Pearl	1:50													W	W P																																
Report	EPA	PR387.5	PEARL R @ EDINBURG/HWY 16	Pearl	1:50							W																																							
STORET	MDEQ	2482000	PEARL RIVER AT EDINBURG AT HWY 16	Pearl	1:50	QS	QS	QS	QS	QS	QS	QS	QS	WQS	WQS	QS	WQSP	WQSP	WQSP	WQSP	WQSP	WQSP	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	WQSP	WQSP	QS	QS	QS	QS	QS	Q	QS	Q	Q	Q	Q	Q
STORET	MDEQ	2482550	PEARL RIVER NR CARTHAGE, MS	Pearl	1:50	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	Q	QS	QS	Q	QS	WQSP	WQSP	WQSP	WQSP	WQ P	WQSP	WQ P	WQSP	Q	Q	Q	Q	QS
STORET	MDEQ	272865	PEARL R MISS 35 BR SE CARTHAGE	Pearl	1:50																																													WQ	
STORET	MDEQ	2483500	PEARL RIVER NR LENA, MS (active)	Pearl	1:50	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS			QS																											
STORET	MDEQ	2481883	PINISHOOK CREEK NR ARLINGTON, MS	Pearl	1:50																													Q																	
STORET	MDEQ	2481865	SPRING CREEK NR BOND, MS	Pearl	1:50																													WQ																	
STORET	MDEQ	262	STANDING PINE CREEK At FREENY AT END OF SANDERS RD 1.5 MILES UPSTREAM OF HWY 488 BRIDGE REPLICATE 1	Pearl	1:50									WQ																																					

Appendix A (continued).

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Source	Organization	Station	Name	Watershed	Location	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
STORET	MDEQ	PR4	STANDING PINE CREEK At FREENY AT HWY 488 BRIDGE .	Pearl	1:50							P		P																																					
STORET	MDEQ	2482290	STANDING PINE CREEK NR FREENY, MS.	Pearl	1:50										QS												QS	QS	Q	Q															WQ						
STORET	MDEQ	261	TOWN CREEK At CARTHAGE 300M BELOW CARTHAGE POTW DISCHARGE OFF BLANCHE STREET OFF OF HWY 35 .	Pearl	1:50						W			WQ																																					
STORET	MDEQ	24818165	BIG SLOUGH NR CLAYTOWN, MS	Tallahaga	1:50																										W																				
STORET	MDEQ	24818149	BIG SLOUGH NR NOXAPATER, MS	Tallahaga	1:50																										W S																				
STORET	MDEQ	24818137	HUGHES CREEK NR LOUISVILLE, MS	Tallahaga	1:50																										W																				
STORET	MDEQ	24818151	OLD CREEK NR NOXAPATER, MS	Tallahaga	1:50																										W																				
STORET	MDEQ	272805	AMETA CR S CHANNEL MISS 35	Tuscolameta	1:50																																													WQ	
STORET	MDEQ	272822	FUCHES CR CO RD BR NE FOREST	Tuscolameta	1:50																																													WQ	
STORET	MDEQ	272815	HONTOKALO CR MISS 21	Tuscolameta	1:50																																													WQ	
STORET	MDEQ	272793	PEARL R MISS 13 BR SW CARTHAGE	Tuscolameta	1:50																																										W	W	W	W	W
STORET	MDEQ	CI-05	SHOCKALOO CREEK Near FOREST AT SPARKSVILLE RD (TOWER RD) .	Tuscolameta	1:50															W																															
STORET	MDEQ	CI-03	SHOCKALOO CREEK Near FOREST AT UNNAMED RD EAST OF CLIFTON RD BELOW CENTRAL INDUSTRIES DISCHARGE .	Tuscolameta	1:50															W																															
STORET	MDEQ	CI-01	SHOCKALOO CREEK Near FOREST IMMEDIATELY BELOW CENTRAL INDUSTRIES DISCHARGE NORTH OF RR TRACK .	Tuscolameta	1:50															W																															
STORET	MDEQ	CI-07	SHOCKALOO CREEK Near HARPERVILLE AT HILLSBORO-LUDLOW RD .	Tuscolameta	1:50															W																															
STORET	MDEQ	CI-06	SHOCKALOO CREEK Near HILLSBORO AT CLIFTON-HILLSBORO RD .	Tuscolameta	1:50															W																															
STORET	MDEQ	321	SHOCKALOO CREEK Near WALNUT GROVE 100M UPSTREAM OF PEA RIDGE RD REPLICATE 1	Tuscolameta	1:50									WQ																																					
STORET	MDEQ	CI-08	SHOCKALOO CREEK Near WALNUT GROVE AT PEA RIDGE RD .	Tuscolameta	1:50															W																															
STORET	MDEQ	PR8	SHOCKALOO CREEK Near WALNUT GROVE AT PEA RIDGE RD .	Tuscolameta	1:50							P		P																																					
STORET	MDEQ	SC4	SIPSEY CREEK Near SEBASTOPOL 1.0 MILES DOWNSTREAM OF GREEN ACRE FARMS EFFLUENT DITCH .	Tuscolameta	1:50																					W																									
STORET	MDEQ	SC1	SIPSEY CREEK Near SEBASTOPOL 100 YARDS UPSTREAM OF GREEN ACRE FARMS EFLUENT DITCH .	Tuscolameta	1:50																			W		W																									
STORET	MDEQ	SC5	SIPSEY CREEK Near SEBASTOPOL 2.0 MILES DOWNSTREAM OF GREEN ACRE FARMS EFFLUENT DITCH .	Tuscolameta	1:50																			W		W																									
STORET	MDEQ	322	SIPSEY CREEK Near SEBASTOPOL 275M UPSTREAM OF HWY 21 BRIDGE REPLICATE 1	Tuscolameta	1:50									WQ																																					
STORET	MDEQ	SC6	SIPSEY CREEK Near SEBASTOPOL 3.0 MILES DOWNSTREAM OF GREEN ACRE FARMS EFFLUENT DITCH .	Tuscolameta	1:50																					W																									
STORET	MDEQ	SC2	SIPSEY CREEK Near SEBASTOPOL 400 YARDS DOWNSTREAM OF GREEN ACRE FAMRS EFFLUENT DITCH .	Tuscolameta	1:50																					W																									
STORET	MDEQ	SC3	SIPSEY CREEK Near SEBASTOPOL 575 YARDS DOWNSTREAM OF GREEN ACRE FARMS EFFLUENT DITCH .	Tuscolameta	1:50																			W		W																									
STORET	MDEQ	SC7	SIPSEY CREEK Near SEBASTOPOL AT MOUTH AT TUSCOLAMETA CREEK/BIG CANAL 3.4 MILES DOWNSTREAM OF GREEN ACRE FARMS EFFLUENT DITCH .	Tuscolameta	1:50																					W																									
STORET	MDEQ	2482715	SIPSEY CREEK NR DIXON, MS	Tuscolameta	1:50																													WQ																	
STORET	MDEQ	2483001	SOUTH CANAL TUSCOLAMETA CREEK NR WALNUT GROVE, MS (active)	Tuscolameta	1:50	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	Q	QS	QS	Q	Q	Q	Q	Q	Q	Q								
STORET	MDEQ	CI-11	TALLABOGUE CREEK Near FOREST AT OLD HILLSBORO RD .	Tuscolameta	1:50															W																															
STORET	MDEQ	CI-04	TALLABOGUE CREEK Near FOREST AT UNNAMED RD EAST OF CLIFTON RD .	Tuscolameta	1:50															W																															
STORET	MDEQ	CI-15	TALLABOGUE CREEK Near FOREST AT UNNAMED RD SOUTH OF SPARKSVILLE RD .	Tuscolameta	1:50															W																															
STORET	MDEQ	CI-02	TALLABOGUE CREEK Near FOREST BELOW RR TRACK EAST OF CENTRAL INDUSTRIES .	Tuscolameta	1:50															W																															
STORET	MDEQ	323	TALLABOGUE CREEK Near HARPERVILLE 150M UPSTREAM OF KING RD .	Tuscolameta	1:50						W			WQ																																					
STORET	MDEQ	I323	TALLABOGUE CREEK Near HARPERVILLE 150M UPSTREAM OF KING RD .	Tuscolameta	1:50					W																																									
STORET	MDEQ	CI-10	TALLABOGUE CREEK Near HARPERVILLE AT TALLABOGUE RD BRIDGE NEAR LITTLE ROCK CHURCH .	Tuscolameta	1:50															W																															
STORET	MDEQ	CI-12	TALLABOGUE CREEK Near HILLSBORO AT OLD JACKSON RD .	Tuscolameta	1:50															W																															
STORET	MDEQ	272837	TUSCOLAMETA CR N CHANNEL MISS 21	Tuscolameta	1:50																																													WQ	
STORET	MDEQ	272803	TUSCOLAMETA CR N CHANNEL MISS 35	Tuscolameta	1:50																																													WQ	
STORET	MDEQ	272835	TUSCOLAMETA CR S CHANNEL MISS 21	Tuscolameta	1:50																																													WQ	
STORET	MDEQ	2483000	TUSCOLAMETA CREEK AT WALNUT GROVE, MS	Tuscolameta	1:50	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	Q	QS	QS	Q	QS	QS	Q	Q	QS		QS		W		W	W		
STORET	MDEQ	259	TUSCOLAMETA CREEK Near PIGGTOWN 500M UPSTREAM OF PLEASANT HILL RD .	Tuscolameta	1:50						W			WQ																																					
STORET	MDEQ	I259	TUSCOLAMETA CREEK Near PIGGTOWN 500M UPSTREAM OF PLEASANT HILL RD .	Tuscolameta	1:50					W																																									
STORET	MDEQ	CI-09	TUSCOLAMETA CREEK Near WALNUT GROVE AT HWY 487 .	Tuscolameta	1:50															W																															
STORET	MDEQ	TNR8	TUSCOLAMETA CREEK--BIG CANAL Near SEBASTOPOL 65 YARDS ABOVE SIPSEY CREEK CONFLUENCE .	Tuscolameta	1:50																					W																									
STORET	MDEQ	2483750	BESA CHITTO CREEK NR WEIR, MS	Yockanookany	1:50																												WQ																		
STORET	MDEQ	2483760	TIBBY CREEK NR MCCOOL, MS	Yockanookany	1:50																												WQ																		
STORET	MDEQ	272780	YOCKANOOKANY R CO ROAD BRIDGE	Yockanookany	1:50																																													WQ	
STORET	MDEQ	272710	YOCKANOOKANY R MISS 429 BRIDGE	Yockanookany	1:50																																													WQ	
STORET	MDEQ	272787	YOCKANOOKANY R MISS 12 W ACKERMN	Yockanookany	1:50																																													WQ	
STORET	MDEQ	272692	YOCKANOOKANY R MISS 16 SE CANTON	Yockanookany	1:50																																										W	W	W	W	W
STORET	MDEQ	272740	YOCKANOOKANY R MISS 35 SE KOSCIU	Yockanookany	1:50																																													WQ	
STORET	MDEQ	272770	YOCKANOOKANY R MISS 411 NW MCOOL	Yockanookany	1:50																																													WQ	
STORET	MDEQ	YOC2	YOCKANOOKANY RIVER At ACKERMAN 150M DOWNSTREAM OF ACKERMAN WWTF .	Yockanookany	1:50									W																																					
STORET	MDEQ	YOC1	YOCKANOOKANY RIVER At ACKERMAN 150M UPSTREAM OF ACKERMAN WWTF .	Yockanookany	1:50									W																																					
STORET	MDEQ	249	YOCKANOOKANY RIVER At MCCOOL 230M DOWNSTREAM OF HWY 411 BRIDGE REPLICATE 1	Yockanookany	1:50									WQ																																					
STORET	MDEQ	2483700	YOCKANOOKANY RIVER AT WEIR, MS	Yockanookany	1:50																																							WQ							
WADES	MDEQ	2484480	YOCKANOOKANY RIVER Near REVIVE AT RED DOG RD 6 MILES SOUTH OF THOMASTOWN .	Yockanookany	1:50									W	WQ	WQ	WQ P	WQ P	WQ P																																
NWIS	USGS	2483650	YOCKANOOKANY RIVER NR FENTRESS, MS	Yockanookany	1:50																																WQ P														
NWIS	USGS	2484000	YOCKANOOKANY RIVER NR KOSCIUSKO, MS	Yockanookany	1:50	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	Q	Q	QS	QS	QS	WQ	QS	Q	QS	Q	Q	Q	QS	Q	QS	Q	Q	Q
NWIS	USGS	2484500	YOCKANOOKANY RIVER NR OFAHOMA, MS	Yockanookany	1:50	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	QS	Q	QS	QS	Q	Q	Q	QS	Q	QS	Q	WQ P	WQ P	WQ P	Q	QS	Q	QS	Q

Appendix A (continued).

3/10/2010																												
Source	Organization	Station	Name	Watershed	Location	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987
NWIS	USGS	2483598	YOCKANOOKANY RIVER NW OF ACKERMAN, MS	Yockanookany	1:50																							
NWIS	USGS	2483615	YOCKANOOKANY RIVER TRIB AT ACKERMAN, MS	Yockanookany	1:50																							
STORET	EPA	272745	YOCKANOOKANY R-TRIB 1.5MI E KOSC	Yockanookany	1:50																							
NPS	NPS	NATR_NICR	Ninemile Creek	Yockanookany	1:50	W P	W P	W P																				
NPS	NPS	NATR_CLCR	Cole Creek	Yockanookany	1:50	W P	W P	W P																				
NPS	NPS	NATR_HCCR	Hurricane Creek	Yockanookany	1:50	W P	W P	W P																				
STORET	NPS	NATR_MSDEQ_SW4		Yockanookany	1:50													W	W									
STORET	NPS	NATR_SID_1031		Yockanookany	1:50													W										
STORET	NPS	NATR_SIG_1004		Yockanookany	1:50													W										
STORET	NPS	NATR_SIG_1011		Yockanookany	1:50													W										
STORET	NPS	NATR_SPD_1036		Yockanookany	1:50													W										
STORET	NPS	NATR_SPD_1037		Yockanookany	1:50													W										
STORET	NPS	NATR_SPE_1002		Yockanookany	1:50													W										
STORET	NPS	NATR_SPG_1004		Yockanookany	1:50													W										
STORET	NPS	NATR_SPG_1005		Yockanookany	1:50													W										
STORET	NPS	NATR_SPG_1006		Yockanookany	1:50													W										
STORET	NPS	NATR_SPG_1008		Yockanookany	1:50													W										
STORET	NPS	NATR_SPG_1010		Yockanookany	1:50													W										
NWIS	USGS	2481744	NANIH WAIYA CREEK NR BOON, MS	Nanih Waiya	>50																							
NWIS	USGS	2481814	HUGHES CREEK NR NOXAPATER, MS	Tallahaga	>50																							
NWIS	USGS	24818149	BIG SLOUGH NR NOXAPATER, MS	Tallahaga	>50																							
NWIS	USGS	2481815	TALLAHAGA CREEK NR CLAYTOWN, MS	Tallahaga	>50																							
NWIS	USGS	2481807	TALLAHAGA CREEK NR LOUISVILLE, MS	Tallahaga	>50																						QS	

Station	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
2483598					WQ				WQ P														
2483615									WQ P														
272745																						WQ	
NATR_NICR																							
NATR_CLCR																							
NATR_HCCR																							
NATR_MSDEQ_SW4																							
NATR_SID_1031																							
NATR_SIG_1004																							
NATR_SIG_1011																							
NATR_SPD_1036																							
NATR_SPD_1037																							
NATR_SPE_1002																							
NATR_SPG_1004																							
NATR_SPG_1005																							
NATR_SPG_1006																							
NATR_SPG_1008																							
NATR_SPG_1010																							
2481744					Q																		
2481814			WQSP		W																		
24818149			W SP																				
2481815																							
2481807			WQSP																				

APPENDIX B

Inventory of Water Quality and Monitoring Data

Appendix B. Inventory of water quality and monitoring data from 1964 to 2009. Years in which BOTH flow and water quality monitoring occurred are filled green. Cells with no color indicate data gaps.

3/10/2010

Source	Organization	Station	Name	Watershed	Location	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
STORET	EPA	280402	ROSS BARNETT RESERVOIR	Reservoir	Dam																																														
NWIS	USGS	2485600	ROSS BARNETT RESERVOIR NR JACKSON, MS	Reservoir	Dam																																														
WADES	MDEQ	RBR1	ROSS BARNETT RESERVOIR Near RIDGELAND NEAR DAM EAST OF SPILLWAY .	Reservoir	Dam																																														
WADES	MDEQ	549RBR01	ROSS BARNETT RESERVOIR Near RIDGELAND NEAR DAM WEST OF SPILLWAY 0.5 MILES NORTH OF SPILLWAY ROAD WATER COLUMN PROFILE	Reservoir	Dam																																														
MDH	Jackson		OB Curtis Raw Water	Reservoir	Dam																																														
STORET	EPA	272537	ROSS BARNETT RES MOUTH OF MARINA	Reservoir	Lower Res																																														
STORET	EPA	272539	ROSS BARNETT RESERVOIR	Reservoir	Lower Res																																														
STORET	EPA	272541	ROSS BARNETT RESERVOIR	Reservoir	Lower Res																																														
STORET	EPA	272543	ROSS BARNETT RESERVOIR	Reservoir	Lower Res																																														
STORET	EPA	272535	ROSS BARNETT RESERVOIR MARINA	Reservoir	Lower Res																																														
STORET	EPA	272545	ROSS BARNETT RESERVOIR	Reservoir	Lower Res																																														
STORET	EPA	272547	ROSS BARNETT RESERVOIR	Reservoir	Lower Res																																														
STORET	EPA	272549	ROSS BARNETT RESERVOIR	Reservoir	Lower Res																																														
MSDH (hc), PRVWSD (ec)	MSDH	1	MAIN HARBOR MARINA	Reservoir	Lower Res																																														
STORET	EPA	272551	PELAHATCHIE CR ROSS BARNETT RES	Reservoir	Pelahatchie																																														
STORET	EPA	272553	PELAHATCHIE CR ROSS BARNETT RES	Reservoir	Pelahatchie																																														
STORET	EPA	272555	PELAHATCHIE CR ROSS BARNETT RES	Reservoir	Pelahatchie																																														
STORET	EPA	280401	ROSS BARNETT RESERVOIR	Reservoir	Pelahatchie																																														
WADES	MDEQ	RBR4	ROSS BARNETT RESERVOIR At RIDGELAND AT MAIN HARBOR MARINA OFF PIER E & F .	Reservoir	Pelahatchie																																														
WADES	MDEQ	549RBR04	ROSS BARNETT RESERVOIR (PELAHATCHIE CREEK EMBAYMENT) Near FANNIN NORTHEAST OF PELAHATCHIE RECREATION AREA 1 MILE EAST OF PELAHATCHIE RECREATION AREA WATER COLUMN PROFILE	Reservoir	Pelahatchie																																														
STORET	EPA	280403	ROSS BARNETT RESERVOIR	Reservoir	lower to mid																																														
STORET	EPA	272610	ROSS BARNETT RESERVOIR	Reservoir	Mid Res																																														
STORET	EPA	272612	ROSS BARNETT RESERVOIR	Reservoir	Mid Res																																														
STORET	EPA	272614	ROSS BARNETT RESERVOIR	Reservoir	Mid Res																																														
STORET	EPA	272616	ROSS BARNETT RESERVOIR	Reservoir	Mid Res																																														
STORET	EPA	272618	ROSS BARNETT RESERVOIR	Reservoir	Mid Res																																														
STORET	EPA	280404	ROSS BARNETT RESERVOIR	Reservoir	Mid Res																																														
WADES	MDEQ	RBR2	ROSS BARNETT RESERVOIR Near RIDGELAND NEAR WATER INTAKE WEST OF SIPLLWAY .	Reservoir	Mid Res																																														
WADES	MDEQ	549RBR02	ROSS BARNETT RESERVOIR Near SAND HILL MID-LAKE BELOW HWY 43 4 MILES WEST OF GOSHEN SPRINGS WATER COLUMN PROFILE	Reservoir	Mid Res																																														
STORET	EPA	272640	ROSS BARNETT RESERVOIR	Reservoir	HWY 43																																														
STORET	EPA	272642	ROSS BARNETT RESERVOIR	Reservoir	HWY 43																																														
STORET	EPA	272644	ROSS BARNETT RESERVOIR	Reservoir	HWY 43																																														
STORET	EPA	272646	ROSS BARNETT RESERVOIR	Reservoir	HWY 43																																														
STORET	EPA	272648	ROSS BARNETT RESERVOIR	Reservoir	HWY 43																																														
STORET	EPA	2804A2	PEARL RIVER	Reservoir	HWY 43																																														
WADES	MDEQ	2485000	ROSS BARNETT RESERVOIR Near CANTON AT HWY 43 9 MILES SE OF CANTON .	Reservoir	HWY 43																																														
WADES	MDEQ	PL484	ROSS BARNETT RESERVOIR Near CANTON AT HWY 43 PIER AT HWY 43 PIER .	Reservoir	HWY 43																																														
MSDH (hc), PRVWSD (ec)	MSDH	8	HWY 43 BRIDGE	Reservoir	HWY 43																																														
WADES	MDEQ	RBR3	ROSS BARNETT RESERVOIR At RIDGELAND AT MOUTH OF MAIN HARBOR NEXT TO BREAKERS CONDO .	Reservoir	Head																																														
WADES	MDEQ	549RBR03	ROSS BARNETT RESERVOIR Near SAND HILL UPPER LAKE ABOVE HWY 43 6 MILES NE OF SANDHILL WATER COLUMN PROFILE	Reservoir	Head																																														
STORET	EPA	272561	CLEAR CR CO RD BR NW PELAHATCHIE	Pelahatchie	1:10																																														
NWIS	USGS	2485577	MILL CR TRIB NO 1 AT GRANTS FERRY RD NR LUCKNEY, MS (active)	Pelahatchie	1:10																																														
NWIS	USGS	2485573	MILL CREEK AT CASTLEWOODS BLVD NEAR LUCKNEY, MS	Pelahatchie	1:10																																														
NWIS	USGS	2485570	MILL CREEK AT COON HUNTERS ROAD NR BRANDON, MS	Pelahatchie	1:10																																														
NWIS	USGS	2485590	MILL CREEK AT SPILLWAY ROAD NR LUCKNEY, MS (active)	Pelahatchie	1:10																																														
NWIS	USGS	2485574	MILL CREEK AT STATE HIGHWAY 25 NR LUCKNEY, MS	Pelahatchie	1:10																																														
NWIS	USGS	248557250	MILL CREEK TRIB 5 AT WOODLANDS DR NR LUCKNEY, MS	Pelahatchie	1:10																																														
NWIS	USGS	2485575	MILL CREEK TRIB NO 2 NR LUCKNEY, MS	Pelahatchie	1:10																																														
NWIS	USGS	2485578	MILL CREEK TRIBUTARY NO 1 NR LUCKNEY, MS	Pelahatchie	1:10																																														
STORET	EPA	2804BA	PELAHATCHIE	Pelahatchie	1:10																																														
STORET	EPA	2804BB	PELAHATCHIE	Pelahatchie	1:10																																														
STORET	EPA	272557	PELAHATCHIE CR MISS 471 N BRANDN	Pelahatchie	1:10																																														
STORET	EPA	272559	PELAHATCHIE CR NW PELAHATCHIE	Pelahatchie	1:10																																														
STORET	EPA	272586	PELAHATCHIE CR US 80 SW MORTON	Pelahatchie	1:10																																														
STORET	EPA	272570	PELAHATCHIE CR US80 PELAHATCHIE	Pelahatchie	1:10																																														
STORET	EPA	2804B1	PELAHATCHIE CREEK	Pelahatchie	1:10																																														
WADES	MDEQ	PELCR12	PELAHATCHIE CREEK At CLARKSBURG AT HWY 80 .	Pelahatchie	1:10																																														
WADES	MDEQ	PELCR9	PELAHATCHIE CREEK At PELAHATCHIE AT HWY 80 .	Pelahatchie	1:10																																														
WADES	MDEQ	316	EUTAEUTACHEE CREEK Near PELAHATCHIE 150M UPSTREAM OF HWY 80 REPLICATE 1	Pelahatchie	1:10																																														
WADES	MDEQ	PELCR21	PELAHATCHIE CREEK At PELAHATCHIE HWY 43 .	Pelahatchie	1:10																																														
WADES	MDEQ	PR12	PELAHATCHIE CREEK NEAR FANNIN AT HWY 25 .	Pelahatchie	1:10																																														
NWIS	USGS	2485498	PELAHATCHIE CREEK AT STATE HWY 25 NR FANNIN, MS	Pelahatchie	1:10																																														
WADES	MDEQ	PELCR13	PELAHATCHIE CREEK Near CLARKSBURG AT MORTON-RANKIN CO LINE RD .	Pelahatchie	1:10																																														
WADES	MDEQ	PELCR15	PELAHATCHIE CREEK Near MORTON AT MORTON-RANKIN CO LINE RD .	Pelahatchie	1:10																																														
WADES	MDEQ	PELCR3	PELAHATCHIE CREEK Near PELAHATCHIE AT NOBLIN BRIDGE RD .	Pelahatchie	1:10																																														

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Source	Organization	Station	Name	Watershed	Location	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
WADES	MDEQ	PELCR10	PELAHATCHIE CREEK Near PELAHATCHIE BEHIND MULTICRAFT INDUSTRIES WEST OF PELAHATCHIE .	Pelahatchie	1:10																																														
STORET	EPA	2804B2	PELAHATCHIE CREEK	Pelahatchie	1:10																																														
NWIS	USGS	2485500	PELAHATCHIE CREEK NR FANNIN, MIS	Pelahatchie	1:10																																														
MSDH (hc), PRVWSD (ec)	MSDH	9	PELAHATCHIE CREEK - HWY 471 BRIDGE	Pelahatchie	1:10																																														
NWIS	USGS	2475230	TALLASHER CREEK NR CENTER RIDGE, MS.	Pelahatchie	1:10																																														
NWIS	USGS	248557375	UNNAMED TRIBUTARY TO MILL CREEK NR FLOWOOD, MS	Pelahatchie	1:10																																														
WADES	MDEQ	838	CANE CREEK Near SAND HILL 2500M UPSTREAM OF HIGHWAY 43 ROUTINE SAMPLE	Cane Cr	1:10																																														
STORET	EPA	2804C1	FANNEGUSHA CREEK	Fannegusha	1:10																																														
WADES	MDEQ	PR11	FANNEGUSHA CREEK NEAR RATLIFF AT COAL BLUFF RD .	Fannegusha	1:10																																														
WADES	MDEQ	310	FANNEGUSHA CREEK Near SAND HILL 250M UPSTREAM OF HWY 25 REPLICATE 1	Fannegusha	1:10																																														
NWIS	USGS	2484760	FANNEGUSHA CREEK NR SAND HILL, MS (active)	Fannegusha	1:10																																														
WADES	MDEQ	312	HURRICANE CREEK Near LEESBURG 10M DOWNSTREAM OF FLEMING RD REPLICATE 2	Fannegusha	1:10																																														
WADES	MDEQ	313	RED CANE CREEK Near LEESBURG 185M UPSTREAM OF WEAVER RD .	Fannegusha	1:10																																														
WADES	MDEQ	I313	RED CANE CREEK Near LEESBURG 185M UPSTREAM OF WEAVER RD .	Fannegusha	1:10																																														
WADES	MDEQ	311	COFFEE BOGUE Near LUDLOW 200M UPSTREAM OF HWY 25 REPLICATE 1	Pearl	1:10																																														
WADES	MDEQ	PR10	COFFEE BOGUE Near LUDLOW AT HWY 25 BRIDGE .	Pearl	1:10																																													
STORET	EPA	2804A1	PEARL RIVER	Pearl	1:10																																														
NWIS	USGS	2484650	PEARL RIVER AT RATLIFF`S FERRY NR RATLIFF, MS	Pearl	1:10																																														
WADES	MDEQ	PL298	PEARL RIVER Near FARMHAVEN BELOW CONFLUENCE WITH YOCKANOOKANY RIVER SEDIMENT	Pearl	1:10																																														
WADES	MDEQ	PL288	PEARL RIVER Near GOOD HOPE AT LEAKE CO WATER PARK SEDIMENT	Pearl	1:10																																														
WADES	MDEQ	PL291	PEARL RIVER Near RATLIFF AT LOW HEAD DAM SEDIMENT	Pearl	1:10																																														
MSDH (hc), PRVWSD (ec)	MSDH	10	LOWHEAD DAM	Pearl	1:10																																														
NWIS	USGS	2481986	BEASHA CREEK NR LAUREL HILL, MS	Beasha	1:50																																														
Report	EPA	BC1.0	BEESHA CREEK @ HWY 16	Beasha	1:50																																														
Report	EPA	BC5.6	BEESHA CREEK @ HWY 488	Beasha	1:50																																														
NWIS	USGS	2481911	COONSHUCK CANAL NR HOUSE, MS	Beasha	1:50																																														
NWIS	USGS	2481920	FULTON CANAL AT MCDONALD, MS	Beasha	1:50																																														
NWIS	USGS	2481930	LONSILOCHER CANAL NR PHILADELPHIA, MS	Beasha	1:50																																														
NWIS	USGS	2481995	LUNELUAH CREEK AT LAUREL HILL, MS	Beasha	1:50																																														
STORET	EPA	272870	LOBUTCHA CR MISS 16 NE CARTHAGE	Lobutcha	1:50																																														
WADES	MDEQ	256	LOBUTCHA CREEK At RENFROE 155M UPSTREAM OF HWY 25 BRIDGE REPLICATE 1	Lobutcha	1:50																																														
NWIS	USGS	2482500	LOBUTCHA CREEK NR CARTHAGE, MS	Lobutcha	1:50																																														
STORET	MDEQ	2482292	LOBUTCHA CREEK NR RURAL HILL, MS	Lobutcha	1:50																																														
WADES	MDEQ	PICK2	PICKINS CREEK Near CARTHAGE 250 YARDS ABOVE CHOCTAW MAID OUTFALL SONDE	Lobutcha	1:50																																														
WADES	MDEQ	PICK1	PICKINS CREEK Near CARTHAGE 400 YARDS ABOVE CHOCTAW MAID OUTFALL WATER COLUMN PROFILE	Lobutcha	1:50																																														
WADES	MDEQ	PICK5	PICKINS CREEK Near CARTHAGE AT HOPOCA RD BRIDGE 1.25 MILES DOWNSTREAM OF OUTFALL WATER COLUMN PROFILE	Lobutcha	1:50																																														
WADES	MDEQ	PICK6	PICKINS CREEK Near CARTHAGE AT HOPOCA RD BRIDGE 2.5 MILES DOWNSTREAM OF CHOCTAW MAID OUTFALL WATER COLUMN PROFILE	Lobutcha	1:50																																														
WADES	MDEQ	PICK4	PICKINS CREEK Near CARTHAGE AT PICKINS CIRCLE ROAD BRIDGE 100 FT DOWNSTREAM OF CHOCTAW MAID OUTFALL WATER COLUMN PROFILE	Lobutcha	1:50																																														
WADES	MDEQ	PICK4A	PICKINS CREEK Near CARTHAGE NEAR POWER LINE CROSSING BELOW PICKINS CIRCLE RD 1000 YARDS DOWNSTREAM OF OUTFALL SONDE	Lobutcha	1:50																																														
NWIS	USGS	2481840	NOXAPATER CREEK NR NOXAPATER, MS	Noxapater	1:50																																														
STORET	EPA	272977	HUGHES CR CO RD BR S LOUISVILLE	Pearl	1:50																																														
NWIS	USGS	2481892	JOFUSKA CREEK NR ARLINGTON, MS	Pearl	1:50																																														
STORET	EPA	272920	KENTAWHA CR MIDDLE CHAN MISS 15	Pearl	1:50																																														
Report	EPA	KC6.6	KENTAWKA CANAL @ HWY 15	Pearl	1:50																																														
Report	EPA	KC0.2	KENTAWKA CANAL AT MOUTH	Pearl	1:50																																														
NWIS	USGS	2481967	LUKFAPA CREEK NR ARLINGTON, MS	Pearl	1:50																																														
STORET	EPA	272950	PEARL R MISS 15 S BURNSIDE	Pearl	1:50																																														
STORET	EPA	272900	PEARL R MISS 16 AT EDINBURG	Pearl	1:50																																														
Report	EPA	PR412.8	PEARL R @ HWY 15 BRIDGE	Pearl	1:50																																														
Report	EPA	PR379.3	PEARL R @ SUNRISE	Pearl	1:50																																														
Report	EPA	PR400.7	PEARL R JUST DOWNSTREAM OF KENTAWKA CANAL	Pearl	1:50																																														
Report	EPA	PR394.2	PEARL R MIDWAY BETWEEN KENTAWKA C AND BEESHA CR	Pearl	1:50																																														
Report	EPA	PR400.9	PEARL R UPSTREAM OF CONFLUENCE KENTAWKA CANAL	Pearl	1:50																																														
NWIS	USGS	2481880	PEARL RIVER AT BURNSIDE, MS (active)	Pearl	1:50																																														
STORET	MDEQ	2488250	PEARL RIVER NEAR WANILLA	Pearl	1:50																																														
Report	EPA	PR387.5	PEARL R @ EDINBURG/HWY 16	Pearl	1:50																																														
STORET	MDEQ	2482000	PEARL RIVER AT EDINBURG AT HWY 16	Pearl	1:50																																														
STORET	MDEQ	2482550	PEARL RIVER NR CARTHAGE, MS	Pearl	1:50																																														
STORET	MDEQ	272865	PEARL R MISS 35 BR SE CARTHAGE	Pearl	1:50																																														
STORET	MDEQ	2483500	PEARL RIVER NR LENA, MS (active)	Pearl	1:50																																														
STORET	MDEQ	2481883	PINISHOOK CREEK NR ARLINGTON, MS	Pearl	1:50																																														
STORET	MDEQ	2481865	SPRING CREEK NR BOND, MS	Pearl	1:50																																														
STORET	MDEQ	262	STANDING PINE CREEK At FREENY AT END OF SANDERS RD 1.5 MILES UPSTREAM OF HWY 488 BRIDGE REPLICATE 1	Pearl	1:50																																														
STORET	MDEQ	PR4	STANDING PINE CREEK At FREENY AT HWY 488 BRIDGE .	Pearl	1:50																																														
STORET	MDEQ	2482290	STANDING PINE CREEK NR FREENY, MS.	Pearl	1:50																																														
STORET	MDEQ	261	TOWN CREEK At CARTHAGE 300M BELOW CARTHAGE POTW DISCHARGE OFF BLANCHE STREET OFF OF HWY 35 .	Pearl	1:50																																														
STORET	MDEQ	24818165	BIG SLOUGH NR CLAYTOWN, MS	Tallahaga	1:50																																														

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Source	Organization	Station	Name	Watershed	Location	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
STORET	MDEQ	24818149	BIG SLOUGH NR NOXAPATER, MS	Tallahaga	1:50																																														
STORET	MDEQ	24818137	HUGHES CREEK NR LOUISVILLE, MS	Tallahaga	1:50																																														
STORET	MDEQ	24818151	OLD CREEK NR NOXAPATER, MS	Tallahaga	1:50																																														
STORET	MDEQ	272805	AMETA CR S CHANNEL MISS 35	Tuscolameta	1:50																																													■	
STORET	MDEQ	272822	FUCHES CR CO RD BR NE FOREST	Tuscolameta	1:50																																													■	
STORET	MDEQ	272815	HONTOKALO CR MISS 21	Tuscolameta	1:50																																													■	
STORET	MDEQ	272793	PEARL R MISS 13 BR SW CARTHAGE	Tuscolameta	1:50																																														
STORET	MDEQ	CI-05	SHOCKALOO CREEK Near FOREST AT SPARKSVILLE RD (TOWER RD)	Tuscolameta	1:50																																														
STORET	MDEQ	CI-03	SHOCKALOO CREEK Near FOREST AT UNNAMED RD EAST OF CLIFTON RD BELOW CENTRAL INDUSTRIES DISCHARGE .	Tuscolameta	1:50																																														
STORET	MDEQ	CI-01	SHOCKALOO CREEK Near FOREST IMMEDIATELY BELOW CENTRAL INDUSTRIES DISCHARGE NORTH OF RR TRACK .	Tuscolameta	1:50																																														
STORET	MDEQ	CI-07	SHOCKALOO CREEK Near HARPERVILLE AT HILLSBORO-LUDLOW RD .	Tuscolameta	1:50																																														
STORET	MDEQ	CI-06	SHOCKALOO CREEK Near HILLSBORO AT CLIFTON-HILLSBORO RD .	Tuscolameta	1:50																																														
STORET	MDEQ	321	SHOCKALOO CREEK Near WALNUT GROVE 100M UPSTREAM OF PEA RIDGE RD REPLICATE 1	Tuscolameta	1:50									■																																					
STORET	MDEQ	CI-08	SHOCKALOO CREEK Near WALNUT GROVE AT PEA RIDGE RD .	Tuscolameta	1:50																																														
STORET	MDEQ	PR8	SHOCKALOO CREEK Near WALNUT GROVE AT PEA RIDGE RD .	Tuscolameta	1:50																																														
STORET	MDEQ	SC4	SIPSEY CREEK Near SEBASTOPOL 1.0 MILES DOWNSTREAM OF GREEN ACRE FARMS EFFLUENT DITCH .	Tuscolameta	1:50																																														
STORET	MDEQ	SC1	SIPSEY CREEK Near SEBASTOPOL 100 YARDS UPSTREAM OF GREEN ACRE FARMS EFLUENT DITCH .	Tuscolameta	1:50																																														
STORET	MDEQ	SC5	SIPSEY CREEK Near SEBASTOPOL 2.0 MILES DOWNSTREAM OF GREEN ACRE FARMS EFFLUENT DITCH .	Tuscolameta	1:50																																														
STORET	MDEQ	322	SIPSEY CREEK Near SEBASTOPOL 275M UPSTREAM OF HWY 21 BRIDGE REPLICATE 1	Tuscolameta	1:50									■																																					
STORET	MDEQ	SC6	SIPSEY CREEK Near SEBASTOPOL 3.0 MILES DOWNSTREAM OF GREEN ACRE FARMS EFFLUENT DITCH .	Tuscolameta	1:50																																														
STORET	MDEQ	SC2	SIPSEY CREEK Near SEBASTOPOL 400 YARDS DOWNSTREAM OF GREEN ACRE FAMRS EFFLUENT DITCH .	Tuscolameta	1:50																																														
STORET	MDEQ	SC3	SIPSEY CREEK Near SEBASTOPOL 575 YARDS DOWNSTREAM OF GREEN ACRE FARMS EFFLUENT DITCH .	Tuscolameta	1:50																																														
STORET	MDEQ	SC7	SIPSEY CREEK Near SEBASTOPOL AT MOUTH AT TUSCOLAMETA CREEK/BIG CANAL 3.4 MILES DOWNSTREAM OF GREEN ACRE FARMS EFFLUENT DITCH .	Tuscolameta	1:50																																														
STORET	MDEQ	2482715	SIPSEY CREEK NR DIXON, MS	Tuscolameta	1:50																													■																	
STORET	MDEQ	2483001	SOUTH CANAL TUSCOLAMETA CREEK NR WALNUT GROVE, MS (active)	Tuscolameta	1:50																																														
STORET	MDEQ	CI-11	TALLABOGUE CREEK Near FOREST AT OLD HILLSBORO RD	Tuscolameta	1:50																																														
STORET	MDEQ	CI-04	TALLABOGUE CREEK Near FOREST AT UNNAMED RD EAST OF CLIFTON RD .	Tuscolameta	1:50																																														
STORET	MDEQ	CI-15	TALLABOGUE CREEK Near FOREST AT UNNAMED RD SOUTH OF SPARKSVILLE RD .	Tuscolameta	1:50																																														
STORET	MDEQ	CI-02	TALLABOGUE CREEK Near FOREST BELOW RR TRACK EAST OF CENTRAL INDUSTRIES .	Tuscolameta	1:50																																														
STORET	MDEQ	323	TALLABOGUE CREEK Near HARPERVILLE 150M UPSTREAM OF KING RD .	Tuscolameta	1:50									■																																					
STORET	MDEQ	I323	TALLABOGUE CREEK Near HARPERVILLE 150M UPSTREAM OF KING RD .	Tuscolameta	1:50																																														
STORET	MDEQ	CI-10	TALLABOGUE CREEK Near HARPERVILLE AT TALLABOGUE RD BRIDGE NEAR LITTLE ROCK CHURCH .	Tuscolameta	1:50																																														
STORET	MDEQ	CI-12	TALLABOGUE CREEK Near HILLSBORO AT OLD JACKSON RD .	Tuscolameta	1:50																																														
STORET	MDEQ	272837	TUSCOLAMETA CR N CHANNEL MISS 21	Tuscolameta	1:50																																													■	
STORET	MDEQ	272803	TUSCOLAMETA CR N CHANNEL MISS 35	Tuscolameta	1:50																																													■	
STORET	MDEQ	272835	TUSCOLAMETA CR S CHANNEL MISS 21	Tuscolameta	1:50																																													■	
STORET	MDEQ	2483000	TUSCOLAMETA CREEK AT WALNUT GROVE, MS	Tuscolameta	1:50																																														
STORET	MDEQ	259	TUSCOLAMETA CREEK Near PIGGTOWN 500M UPSTREAM OF PLEASANT HILL RD .	Tuscolameta	1:50									■																																					
STORET	MDEQ	I259	TUSCOLAMETA CREEK Near PIGGTOWN 500M UPSTREAM OF PLEASANT HILL RD .	Tuscolameta	1:50																																														
STORET	MDEQ	CI-09	TUSCOLAMETA CREEK Near WALNUT GROVE AT HWY 487 .	Tuscolameta	1:50																																														
STORET	MDEQ	TNR8	TUSCOLAMETA CREEK--BIG CANAL Near SEBASTOPOL 65 YARDS ABOVE SIPSEY CREEK CONFLUENCE .	Tuscolameta	1:50																																														
STORET	MDEQ	2483750	BESA CHITTO CREEK NR WEIR, MS	Yockanookany	1:50																												■																		
STORET	MDEQ	2483760	TIBBY CREEK NR MCCOOL, MS	Yockanookany	1:50																												■																		
STORET	MDEQ	272780	YOCKANOOKANY R CO ROAD BRIDGE	Yockanookany	1:50																																													■	
STORET	MDEQ	272710	YOCKANOOKANY R MISS 429 BRIDGE	Yockanookany	1:50																																													■	
STORET	MDEQ	272787	YOCKANOOKANY R MISS 12 W ACKERMN	Yockanookany	1:50																																													■	
STORET	MDEQ	272692	YOCKANOOKANY R MISS 16 SE CANTON	Yockanookany	1:50																																														
STORET	MDEQ	272740	YOCKANOOKANY R MISS 35 SE KOSCIU	Yockanookany	1:50																																													■	
STORET	MDEQ	272770	YOCKANOOKANY R MISS 411 NW MCOOL	Yockanookany	1:50																																													■	
STORET	MDEQ	YOC2	YOCKANOOKANY RIVER At ACKERMAN 150M DOWNSTREAM OF ACKERMAN WWTF .	Yockanookany	1:50																																														
STORET	MDEQ	YOC1	YOCKANOOKANY RIVER At ACKERMAN 150M UPSTREAM OF ACKERMAN WWTF .	Yockanookany	1:50																																														
STORET	MDEQ	249	YOCKANOOKANY RIVER At MCCOOL 230M DOWNSTREAM OF HWY 411 BRIDGE REPLICATE 1	Yockanookany	1:50									■																																					
STORET	MDEQ	2483700	YOCKANOOKANY RIVER AT WEIR, MS	Yockanookany	1:50																																						■							
WADES	MDEQ	2484480	YOCKANOOKANY RIVER Near REVIVE AT RED DOG RD 6 MILES SOUTH OF THOMASTOWN .	Yockanookany	1:50										■	■	■	■	■																																
NWIS	USGS	2483650	YOCKANOOKANY RIVER NR FENTRESS, MS	Yockanookany	1:50																																														
NWIS	USGS	2484000	YOCKANOOKANY RIVER NR KOSCIUSKO, MS	Yockanookany	1:50																																	■												
NWIS	USGS	2484500	YOCKANOOKANY RIVER NR OFAHOMA, MS	Yockanookany	1:50																																						■	■	■					
NWIS	USGS	2483598	YOCKANOOKANY RIVER NW OF ACKERMAN, MS	Yockanookany	1:50																												■				■														
NWIS	USGS	2483615	YOCKANOOKANY RIVER TRIB AT ACKERMAN, MS	Yockanookany	1:50																																■														
STORET	EPA	272745	YOCKANOOKANY R-TRIB 1.5MI E KOSC	Yockanookany	1:50																																													■	
NPS	NPS	NATR_NICR	Ninemile Creek	Yockanookany	1:50																																														
NPS	NPS	NATR_CLCR	Cole Creek	Yockanookany	1:50																																														
NPS	NPS	NATR_HCCR	Hurricane Creek	Yockanookany	1:50																																														
STORET	NPS	NATR_MSDEQ_SW4		Yockanookany	1:50																																														
STORET	NPS	NATR_SID_1031		Yockanookany	1:50																																														

Appendix B (continued).

3/10/2010

Source	Organization	Station	Name	Watershed	Location	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
STORET	NPS	NATR_SIG_1004		Yockanookany	1:50																																														
STORET	NPS	NATR_SIG_1011		Yockanookany	1:50																																														
STORET	NPS	NATR_SPD_1036		Yockanookany	1:50																																														
STORET	NPS	NATR_SPD_1037		Yockanookany	1:50																																														
STORET	NPS	NATR_SPE_1002		Yockanookany	1:50																																														
STORET	NPS	NATR_SPG_1004		Yockanookany	1:50																																														
STORET	NPS	NATR_SPG_1005		Yockanookany	1:50																																														
STORET	NPS	NATR_SPG_1006		Yockanookany	1:50																																														
STORET	NPS	NATR_SPG_1008		Yockanookany	1:50																																														
STORET	NPS	NATR_SPG_1010		Yockanookany	1:50																																														
NWIS	USGS	2481744	NANIH WAIYA CREEK NR BOON, MS	Nanih Waiya	>50																																														
STORET	EPA	272970	NANAWAYNA CR MISS 393 SE CLATOWN	Nanah Waiya	1:50																																														
NWIS	USGS	2481814	HUGHES CREEK NR NOXAPATER, MS	Tallahaga	>50																																														
NWIS	USGS	24818149	BIG SLOUGH NR NOXAPATER, MS	Tallahaga	>50																																														
NWIS	USGS	2481815	TALLAHAGA CREEK NR CLAYTOWN, MS	Tallahaga	>50																																														
NWIS	USGS	2481807	TALLAHAGA CREEK NR LOUISVILLE, MS	Tallahaga	>50																																														