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October 18, 2018

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VIA EMAIL (LEONARDD@DOT.STATE.AL.US

Mr. DeJarvis Leonard, PE
Attn: Mrs. Sandra F. P. Bonner
East Central Region
Alabama Department of Transportation
100 Corporate Parkway, Suite 450
Hoover, AL 35242

Re: AL-DOT Project No. ACAA59534-ATRP (015) (the "Project")

Dear Mr. Leonard:

This firm represents Little Cahaba Land Company ("LCLC"). LCLC opposes the Project.

Sent herewith is a copy of Dr. Mike Howell's expert report regarding some of the environmental impacts that the Project would have on the Little Cahaba River, its watershed, and more importantly, Birmingham's drinking water.

Dr. Howell's report leads to the conclusion that if any road is to be built, in addition to drinking water issues, this Project needs to include an Environmental Impact Study, rather than just and Environmental Assessment.

Finally, LCLC notes that if either of the Routes 5 are used, they cross land that perhaps should be designated as wetlands.

After LCLC filed Dr. Howell's initial report timely, ALDOT consented to our request for an extension of time in which to file this revised report. That consent came from ALDOT's attorney Alan Truitt. ALDOT can keep the initial report in the record, but LCLC is fine with it being withdrawn and replaced.

Sincerely yours,

Michael Leo Hall

MLH/jmh
Enclosure
cc: J. Alan Truitt

LITTLE CAHABA LAND COMPANY, LLC

V.

ALABAMA DEPARTMENT OF TRANSPORTATION (ALDOT)

ALDOT PROJECT NO. ACAA59534-ATRP(015)

FINAL REPORT OF

W. Mike Howell, PhD

W. Mike Howell

October 18, 2018

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TABLE OF ACRONYMS

ADEM.................................. Alabama Department of Environmental Management

ALDOT................................ Alabama Department of Transportation

AWOP.................................. EPA Area-Wide Optimization Program

BWWB................................. Birmingham Water Works Board

CCR...................................... annual Consumer Confidence Reports water boards across the nation are required to submit to their customers by the EPA

EPA...................................... Environmental Protection Agency

MCL..................................... Maximum Contaminant Level – the safe level of a chemical in drinking water

NTU...................................... Nephelometric Turbidity Units measured by a Turbidimeter, and used to measure turbidity in water

OC.. Oral Contraceptives

TMDL.................................. Total Maximum Daily Load - the maximum amount of a pollutant allowed in a waterbody

Water Treatment Plant...... Shades Mountain Water Treatment Plant

PREFACE

The citizens of Greater Birmingham are fortunate that the Birmingham Water Works Board's (BWWB) drinking water exceeds all standards and quality tests. Everyone should feel comfortable drinking BWWB's water. My concern is that threats to our raw, unfiltered source waters (Lake Purdy, Little Cahaba and Cahaba Rivers) can be negatively impacted within a short period of time. My anxiousness is heightened because of the Alabama Department of Environmental Management's (ADEM) 2018, 303 (d) draft list, reports for the first time that mercury has contaminated largemouth bass in Lake Purdy such that eating this fish is restricted to one fish per month. The added threat of proposed road and bridge building by the Alabama Department of Transportation (ALDOT) in the Lake Purdy and Little Cahaba River drainage basin will bring added vehicular traffic and future urbanization into a relatively pristine area. Our watershed should be strongly protected from future degradation of surface waters via siltation, mercury, other heavy metals, pesticides, herbicides, and various inorganic and organic toxins. Increased sewage disposal following urbanization could introduce pathogenic microbes, pharmaceutical pollutants, hormones, hormone metabolites, and other endocrine-mimicking chemicals into our source waters. Road and bridge building will likely bring housing and mall developments along with sewage and utility lines. This would negatively impact this fragile corridor and will undoubtedly magnify the toxic chemical load to our drinking water sources.

Opinions expressed herein are mine alone as a native Alabamian and concerned citizen of Birmingham. They are not those of my former employer(s), or any other persons or organizations.

I. ENGAGEMENT AND OPINIONS

My name is W. Mike Howell. I am an emeritus Professor in the Department of Biological and Environmental Sciences, Samford University, Birmingham, Alabama. I have been retained by Burr & Forman, LLP, counsel for the Little Cahaba Land Company, to give my expert opinion on the Alabama Department of Transportation's (ALDOT's) proposed road and bridge construction in the Little Cahaba River basin and the possible effects it could have on:

1. The quality and safety of drinking water for a majority of Birmingham's citizens, especially in light of the Alabama Department of Environmental Management's (ADEM) 2018 first time listing of our public drinking water source, Lake Purdy, as an "Impaired" 303d reservoir because of atmospheric deposition of mercury.

2. The ecosystem of the Little Cahaba River including possible effects on the macroinvertebrates, mussels and fishes.

ALDOT'S PROPOSAL

ALDOT proposes to: (1) relocate Cahaba Beach Road, (2) build a bridge across the Little Cahaba River, and (3) thereby connect Swan Drive to Sicard Hollow Road.

OPINIONS

Construction activities and disruption of the natural environment arising from ALDOT's proposed project will cause an immediate increase in stream siltation, adversely affect Birmingham's major source of drinking water, and most likely increase existing mercury levels in the source waters used for filtration and treatment prior to being used for public drinking water. More specifically my opinions are that:

1. The construction of the ALDOT project *and* the resulting increase in vehicular traffic across the river will erode the soil and add a silt load to the Little Cahaba. Excess sedimentation endangers aquatic life, including smothering mussel beds, clogging fishes' gills, covering fish eggs, and destroying bottom dwelling macroinvertebrates. Much of the silt increase in the river will remain in suspension making the river turbid. Silt falling onto bottom sediments will become increasingly more toxic as many harmful chemicals are known to adhere to silt particles.

2. More silt would flow into the intake valve for Birmingham's drinking water, making water cleaning more expensive. The proposed project's effect would increase the number of pathogenic microbes in the river, many of which can "hitchhike" on the increased silt into the intake valve. Increased siltation would introduce more silt-bound chemical toxins. Greater siltation would place the Shades Mountain Water Treatment Plant under more duress in order to maintain its present-day goal of 0.05 NTU's for our drinking water.

3. The construction of, and vehicular traffic on, the proposed road and bridge would add mercury-laden dust into the atmosphere. It could be blown by winds and deposited in nearby Lake Purdy, the Cahaba and Little Cahaba rivers, and their watersheds, thereby adding to the mercury load in the water.

4. Before approval of ALDOT's project, the water column, bottom sediments, and top predatory fishes should be tested to evaluate the concentrations of mercury, other chemical toxins and pathogens: (1) in Lake Purdy; (2) in the Little Cahaba River above its confluence with the main Cahaba River above Highway 280; (3) in the Highway 280

Reservoir where waters from the two rivers intermix above the low-level dam; and, (4) in the main Cahaba River near the Cahaba River Pumping Station. Tests should also include levels of known toxic pharmaceutical pollutants, hormones and other endocrine-disrupting chemicals.

II.QUALIFICATIONS

I am a biological scientist with over fifty years of experience with the organisms that live in the main channel of the Cahaba River and its major tributaries. This Little Cahaba River that is the subject of my opinions is the one that flows into and exits from Lake Purdy before entering the Cahaba River.[1]

I have authored and co-authored over fifty peer-reviewed scientific papers with several papers dealing with aquatic organisms living in the Cahaba River drainage (Exhibit A). One is a monographic multiyear study of the fishes of the Cahaba River system (Pierson, Howell, et al., 1989), and another is a three-year study of fishes and macroinvertebrates in the Cahaba River system (Davenport, Howell et al., 2005). I have also co-authored papers on fishes of the Bankhead National Forest (Dycus and Howell, 1974) and the Locust Fork of the Black Warrior River system (Barclay and Howell, 1973). By collecting aquatic organisms in both undisturbed and disturbed stream systems, I have had years of first-hand experience with the effects of constructions upstream which involve the clearing of the land and disruption of the soil. I have witnessed streams vibrant with life, and streams totally dead with several feet of fine muddy sediments covering the stream bottom.

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[1] The Little Cahaba River located in Bibb County below Montevallo is not of consideration herein. The one involved in ALDOT's proposed road and bridge has its headwaters in a small section of St. Clair County but then enters Jefferson and Shelby counties for most of its course.

Stream organisms are much like the proverbial "Canary in the Mine". When the canary dies, miners know that the air is not fit for humans to breathe. Likewise, when a stream is severely contaminated either fish kills take place or multiple fishes are sick and physically deformed. When populations of native species decline, this is evidence that something in the water is toxic. This is more disturbing when that surface water, even after standardized treatment, becomes our drinking water.

My hope is that my children and grandchildren, and those of all citizens of Birmingham, will continue to have access to quality drinking water. When I found grossly deformed fishes with tumors during the 1970's, I alerted the public via *The Birmingham News* of cancer causing cresol being released into Birmingham's streams (Exhibit D). I alerted *The Birmingham News* and made numerous public speeches to the citizens of our state about multiple fish kills on the Cahaba and Black Warrior River systems. I gave slide shows and television interviews showing my fellow citizens heavily polluted water and grossly deformed fishes (Exhibit D). Alerting the public of toxic surface waters through scientific publications and newspapers is what I have done all of my academic career. I have studied feminization of male fishes and masculinization of female fishes with Dr. Ronald Jenkins of Samford University and Dr. Rob Angus of UAB. I was the first biologist to alert the biological world of the masculinization of female fishes by male-like hormones in the environment (Howell, Black and Bortone, 1980). These involuntary cross-gender changes are caused by hormonal chemicals in the water. This cross-gender effect on humans is just now being studied.

I have been retained as an expert witness on multiple occasions. In some cases my report has supported the side opposed by some environmentalists. In other cases, my report has opposed some developments, in favor of environmental concerns. In all cases, I've always sought the best scientific data on which to base my opinions.

I am being compensated at the rate of $150 per hour by Burr and Forman, LLP, for my time incurred on this project ($250 per hour for time spent in testimony).

It is a mistake to build a road and bridge crossing over the Little Cahaba River anywhere below Lake Purdy. This short stretch of river carries the water to the Highway 280 Reservoir where, following treatment, the majority of citizens of Birmingham receive their drinking water. My extensive objections to ALDOT's plan are discussed throughout this opinion.

III. INTRODUCTION

A. Definitions

Silt is granular material of a size between sand and clay. Silt may occur as a soil (often mixed with sand or clay) or as sediment mixed in suspension with water (also known as a suspended load) and soil in a body of water such as a river. It may also exist as soil deposited at the bottom of a water body, like mudflows from landslides. Silt has a moderate specific area with a typically non-sticky, plastic feel. Silt usually has a floury feel when dry, and a slippery feel when wet. Silt can be visually observed with a hand lens, exhibiting a sparkly appearance.

Siltation or **siltification** is the pollution of water by silt. It refers both to the increased concentration of suspended sediments, and to the increased accumulation (temporary or permanent) of fine sediments on stream bottoms where they are undesirable. Siltation is most often caused by soil erosion or sediment spill.

Sedimentation is the excessive input of fine sediment (sand, silt, clay) into water. This is the most prevalent form of pollution currently affecting streams and rivers in the United States. Although sedimentation can occur naturally, a variety of human activities can lead to abnormally high rates of sediment input, upsetting this balance and resulting in increased concentrations of sediment in the water column (i.e., increased turbidity) and increased deposition of sediment on the stream bottom. Both of these factors can have serious adverse effects on the biota and ecology of streams.

Turbidity is the cloudiness of water caused by large numbers of individual particles that are generally invisible to the naked eye, similar to smoke in air. Turbidity is a key test of water quality. Water can contain suspended solid matter consisting of particles of many different sizes. While some suspended material will be large enough and heavy enough to settle rapidly to the stream bottom, very small particles will settle only very slowly or not at all if regularly agitated or the particles are colloidal.

B. Dirt and Silt-Laden Pollution

Almost all sources of dirt and silt contain toxins such as animal fecal wastes, pathogenic organisms, fertilizers, herbicides, insecticides, and an array of other toxic chemicals such as heavy metals. These noxious soil intrusions into our rivers can be deadly to aquatic organisms (see Exhibit B). Human drinking water has been rendered toxic by combining noxious chemicals and disease-causing microorganisms that adhere to silt and sediment. Several large groups of people in Japan and Iraq have died from eating fish contaminated with methylmercury. Large sections of our Tennessee River were closed to fishing for several years due to fishes being loaded with methylmercury.

Siltation covers the algae and mosses preventing adequate photosynthesis - the basis of all life in the river. Siltation also robs the water of oxygen. Macroinvertebrates are smothered and die from lack of photosynthetic food sources; mussels die because of gill clogging and burial under silt and other sediments from construction; and, sensitive fishes die because of low dissolved oxygen, clogged gills, and smothering of eggs.

C. Role of Little Cahaba River in Providing Drinking Water Sources

The upper Little Cahaba River is impounded in Shelby County where it forms Lake Purdy. Approximately one-third of Lake Purdy is located in Shelby County, while the remainder is in Jefferson County. Lake Purdy is the larger of two reservoirs for Birmingham's drinking water[2]. ADEM reports that largemouth bass in Lake Purdy in 2018 are contaminated with mercury. The outflow from Lake Purdy creates the lower stretch of the Little Cahaba River which is largely Birmingham's drinking water source. This Little Cahaba River contributes greatly to the Highway 280 Reservoir as the mouth of the Little Cahaba River enters that reservoir below the water works intake valve. Here waters from both rivers intermix. At present, the water quality from the Little Cahaba entering this second reservoir is believed to be of better quality than waters from the main Cahaba River. Any upstream road and bridge both during and after construction, will increase the turbidity load of our drinking water. ***Removal of this excess turbidity could become an economic and technical problem which could lead to an increase in the water bill of the citizens of Jefferson and Shelby counties.***

[2] The Little Cahaba River flows into the other reservoir which is maintained by a low level dam a few meters below the Cahaba River bridge crossing at Highway 280.

IV. EFFECTS OF SILTATION ON AQUATIC ECOSYSTEMS AND HUMAN DRINKING WATER

A. Siltation effects on aquatic ecosystems

Both siltation and its sedimentation alone are harmful to a river ecosystem and organisms living therein. They are more problematic because harmful micro-organisms and toxins can and do hitchhike onto the silt and sediment. The health of a river ecosystem and its organisms is, again, the canary. Healthy ecosystems lead to healthy drinking water; unhealthy ecosystems lead to unhealthy drinking water.

One of the earliest published studies on the effects of siltation in aquatic ecosystems was published by M. M. Ellis (1936). He found that many stream parameters are affected by siltation including changes in water temperature, light penetration, electrolytes, bottom conditions and retention of organic matter. Using silt injected into a laboratory-simulated aquatic ecosystem, his experimental data showed a high mortality for mussels living in either gravel-bedded or sand-bedded channels. Ellis' study of adverse effects of silt was strengthened by experiments performed by Shaw and Maga (1943). They had both control and experimental groups of salmon eggs that were placed into a gravel nest and mining silt was periodically introduced into the flumes of water passing over the eggs. When the eggs hatched, they found an average of 64 percent decrease in survival of experimental fry as compared to that of the controls. All subsequent studies based on this model showed similar results. Literally hundreds of studies have been done on the adverse effects of silt intrusion into streams inhabited by freshwater fishes, mussels and macroinvertebrates.[3]

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[3] Kjelland, et al, 2015.

B. Birmingham's Response to Turbidity caused by Siltation and Sedimentation

The Shades Mountain Water Treatment Plant's website states, "An Alabama water treatment plant achieves excellence despite ***extreme turbidity fluctuations***, ***disinfection byproduct challenges*** and a complex distribution system." The website also states, "The plant has been part of the U. S. EPA Area-Wide Optimization Program (AWOP) since 1998 to ***limit the threat of microbiological contamination by reducing filtered water turbidity*** (italics are mine)." The Treatment Plant's turbidity goal is more stringent than the regulations, says the Treatment Plant Chief Operator. "We try to keep turbidity below 0.05 NTU[4] 95 percent of the time. It's a challenge because we have 46 filters and raw water turbidity that can change from 10 NTU to 400 NTU in a few hours." The article on the website continues, "The alkalinity and conductivity in Lake Purdy is much higher than in the Cahaba River and requires a higher dosage of ferric sulfate to treat the increase in dissolved solids." The Chief Operator says, "Since the river water turbidity can increase to 300 to 400 NTU within hours of heavy rainfall, operations feed a cationic polymer to the pre-sedimentation basin, reducing turbidity to 40 to 50 NTU before primary coagulant is added at the flash mixer."[5] Here the water is filtered and treated for drinking.

While the Treatment Plant may receive heavily silted water from the Cahaba River/Little Cahaba River pool at Hwy 280, at times up to 1,000

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[4] NTU's=Nephelometric Turbidity Units which are measured by a Turbidimeter, and is used to measure turbidity in water. The Turbidimeter is an instrument which measures the intensity of light scattered at 90 degrees as the light beam passes through a sample of water). EPA's standards are set for 0.5 NTU's or less, while ADEM's recommendations are 0.25 NTU's or less. Thus, Birmingham's Shades Mountain Water Treatment Plant strives to do better than this with a 0.05 NTU or less limit (including an interview of an official of the Shades Mountain Water Treatment Plant).

[5] https://www.tpomag.com/editorial/2015/10/shades_mountain_water_treatment_plant_tackles_turbidity_disinfection

NTU's or higher, the plant treats the water physically and chemically in order to attain a level of 0.05 NTU's. It is costly to achieve the Treatment Plant's goal. When the water is over 100 NTU's, it will result in an increase in costs because positive charged non-cationic polymers must be added in order to coagulate the excess silt causing it to settle to the bottom of the filtering pond. This is a primary treatment prior to the removal of coliform bacteria and viruses by chlorination. The Cahaba Pumping Station maintains a fish tank containing live fishes which are periodically tested with water from the Little Cahaba River in order to assure that the water has not been heavily contaminated and is safe to be treated and used for drinking water.

Building the proposed road and bridge (and all subsequent development) will require removal of timber and grading of the soil which will exponentially increase siltation during heavy rainfall and high winds.[6] This will inevitably lead to bank erosion which will further increase siltation. This will continue once construction has been completed. The addition of vehicular traffic will add to atmospheric deposition which negatively affects not only the Little Cahaba River, but also Lake Purdy and the main Cahaba.

C. Siltation Effects on Human Health

Increased siltation in drinking water has affected humans in the United States. Not all toxins (e.g., hormones, some bacteria like *Cryptosporidium* spores) can be filtered from surface waters by water treatment plants. Some examples of how increased siltation affect human health follow:

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[6] Developers inevitably say that they will use "best management practices" ("BMP's). These best practices routinely fail to stop silt runoff.

The largest waterborne disease outbreak in the history of the U. S. occurred in Milwaukee, Wisconsin, during 1993. This alarming outbreak took place over a two week period and affected 403,000 citizens of an estimated 880,000 people who were served by a malfunctioning water treatment plant. The pathogenic organism was identified as a *Cryptosporidium* protozoan, which causes severe stomach cramps, diarrhea, dehydration and fever. It may cause death in the very young, elderly, or immuno-compromised persons. It was discovered that Milwaukee's Howard Avenue Water Purification Plant was contaminated, and treated water showed turbidity levels well above normal. The *Cryptosporidium* oocysts passed undetected through and unaffected by the filtration system of one of the water-treatment plants into the public drinking water.[7]

Another *Cryptosporidium* outbreak was discovered in Philadelphia, PA in response to the alarming mass hospitalization of many people for severe gastrointestinal illnesses. Morris et al. (1996; 1998) performed two studies on this outbreak. Each study showed a positive correlation between drinking water turbidity, contamination with *Cryptosporidium*, and hospitalization of citizens for gastrointestinal illnesses. Other studies had also shown a positive relationship between drinking water turbidity and hospitalization for gastrointestinal illnesses among children and the elderly in Philadelphia, PA (Schwartz et al., 1997; Schwartz et al., 2000). Rising turbidity levels are associated with rising levels of pathogenic organisms. Guerrant (1997) has noted that the thick-walled oocysts of *Cryptosporidium* are persistent in our environment and are resistant to fully chlorinated water supplies that meet existing turbidity standards in drinking water and swimming pools.

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[7] See "Milwaukee Cryptosporidiosis outbreak" at https://en.wikipedia.org/wiki/1993_Milwaukee_Cryptosporidiosis_outbreak

Outbreaks of Cryptosporidiosis are still occurring today. A couple of examples on the internet are: "*Cryptosporidium outbreak traced to Pennsylvania rescue farm*[8]." Another outbreak occurred in April 2018 in LaCrosse Wisconsin[9]. These are but a few examples of the dangers that can be caused by turbidity.

The data show that Cryptosporidiosis is almost always linked to increased turbidity. The organism's oocytes are so small that they pass through water filtration units. Road and bridge construction and environmental destruction almost always cause a substantial increase in turbidity.[10] And, pathogenic microbes are always eager for a free ride.

ALDOT's activities could greatly add to the turbidity load at the pumping station located on the main Cahaba River just upstream from its confluence with the Little Cahaba River. Additionally, the removal of the increased turbidity at the Treatment Plant would likely require greater expense, including additional chemicals in order to attain an NTU target level at 0.05. Excessive turbidity is costly. The water users will likely pay for the added expenses at the Treatment Plant.

V. EFFECTS OF SILTATION ON AQUATIC LIFE

Macroinvertebrates are most often tiny insect larvae that live in almost every conceivable habitat within a stream. They are especially common in the interstices of gravel beds and sand. Also, many species may be found among stream areas containing rotting woody detritus. The term

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[8] The Pennsylvania case arose from the Heaven On Earth farm near Easton Pennsylvania. http://www.foodsafetynews.com/2017/03/cryptosporidium-outbreak-traced-to-pennsylvania-rescue-farm/.

[9] "*Cryptosporidiosis outbreak in La Crosse County* (WI) https://www.news8000.com/news/cryptosporidiosis-outbreak-in-la-crosse-county/730249969.

[10] The Project may increase the possibility that Cryptosporidiosis could occur in Birmingham.

"macro" means "large". So, macroinvertebrates, although relatively small, are large enough to be seen with the human eye. There are literally hundreds of species of these larvae that inhabit an undisturbed stream. These organisms are used to help biologists determine the health of a stream. This is based on the fact that some macroinvertebrate species are very tolerant of siltation and pollution while others are less tolerant. Some organisms are indicators of excellent stream health, for example, stonefly and mayfly larvae. Certain chironomid larvae, when present in large numbers, are indicators of poor quality streams. They are often found below sewage treatment plants and/or in streams choked with organic debris and low dissolved oxygen levels. The government has set standards for determining which communities of macroinvertebrates are indicators of excellent or poor quality of water. For an example of use of such organisms to determine health of a stream, see the three-year Cahaba River report by Davenport, Howell et al., 2005.

Siltation also negatively affects the growth of photosynthetic algae and mosses within a stream. If turbidity is too great for adequate light penetration for photosynthesis, these plants die with a concurrent drop in dissolved oxygen levels. As plants form the basis of the food chain within a stream, the macroinvertebrates die if the plants die. Tiny fishes, such as minnows that feed upon the plants, may die because of lack of food and oxygen. This, too, affects top predators such as sunfishes (bluegills, bass, catfish, etc.).

Freshwater mussels are also negatively affected by activities that alter their habitat. These include logging, road and bridge construction, farming, housing developments, mining, livestock, and other land uses (Watters, 1999). Such activities release runoff of silt, sediments, salts, and pollutants which often adversely affect mussel populations (Allan and Flecker, 1993). Two federally endangered species of mussels were found during 2006 in the Little Cahaba River: Finelined pocketbook (*Hamiota altilis*) and Rayed kidneyshell (*Ptychobranchus formanianus*) (Gangloff, 2006). The Rayed kidneyshell was not found eleven years later (Gangloff, 2017) but may still exist there. In this later study, Gangloff stated that, "Residential and infrastructure development remain the primary threats to water quality in the Little Cahaba River." Interestingly, Gangloff cited his unpublished study documenting the decline of endangered mussels in the South Toe River, NC, that appears to be linked to "sediments associated with the expansion of US Highway 19E corridor." Williams et al (2008), in their major book on Alabama mussels, cite siltation and sedimentation as an on-going threat to the freshwater mussels of Alabama. Likewise, the U. S. Fish and Wildlife Service, in listing 11 species of mussels for Threatened and Endangered status discussed factors that could adversely affect these mussels. One such factor relates to the Little Cahaba River as they stated, "*Actions that would significantly increase sediment deposition within the stream channel to a degree that appreciably reduces the value of the critical habitat for both the long term survival and recovery of the species. Such activities could include, but are not limited to, excessive sedimentation from livestock grazing, road construction, timber harvest, off-road vehicle use, and other watershed and floodplain disturbances.*" (Federal Register/Vol. 68, No. 58/Wednesday, March 26, 2003/Proposed Rules).

Alabama has 303 species of freshwater fishes, with 20 species being endemic. Only Tennessee, with 320 species, has a greater number.

Fishes, like the macroinvertebrates and mussels discussed above, are adversely affected by similar ecosystem disruptions: turbidity, chemical and domestic pollution, and dams. In fishes, turbidity can disrupt spawning, increase disease susceptibility, reduce hatching success and may cause direct mortality (Berry et al., 2003). The U. S. Fish and Wildlife Service has listed 16 species of freshwater fishes in Alabama as either threatened or endangered[11].

The rare Blue Shiner minnow once lived in the upper Little Cahaba River but has not been found in that river since 1962. The Blue Shiner's last collection was made in the main Cahaba River during 1967, above the pool on highway 280, which serves as the raw water source for our drinking water.

VI. RECENT RECOGNITION OF TOXINS AFFECTING OUR SOURCE OF DRINKING WATER

A. *ADEM's 2018 Draft List Shows Little Cahaba River As Impaired by Metals (Mercury) and Atmospheric Deposition*

The Alabama Department of Environmental Management has released its 2018 Alabama Draft 303(d) List. Our public drinking water source, the Little Cahaba River (Lake Purdy), is listed for the first time because of pollution by "metals (mercury) by atmospheric deposition." (see Exhibit E).[12] This new listing is troubling.

"EPA's 303(d) Program helps states in submitting lists of impaired waters and developing TMDLs. A TMDL (Total Maximum Daily Load) establishes the maximum amount of a pollutant allowed in a waterbody and serves as the starting point or planning tool for restoring water quality." (www.epa.gov/tmdl). A TMDL for mercury has not yet been established for the State of Alabama. When a TMDL is established, that will determine the maximum amount of mercury that the Cahaba and

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[11] https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?state=AL&status=listed

[12] http://adem.alabama.gov/programs/water/wquality/Draft2018AL303dList.pdf (website accessed on July 28, 2018); see also https://www.alabamapublichealth.gov/tox/assets/al-fish-advisory-2018.pdf

Little Cahaba River systems can receive and still fall within the safe limits of the U.S. EPA water quality standards. **It is my opinion that the TMDL for mercury in the Cahaba and Little Cahaba rivers needs to be established as soon as possible, and certainly before any upstream road and bridge construction which could contribute even greater amounts of mercury to our major drinking water source.**

ADEM's 303(d) list contains information such as "the waterbody name, county(s) in which the listed segments are located, cause(s) for the use impairment, the source(s) of the pollutant(s) causing the impairment, the size of the impaired segments, and the location of the listed waterbodies."[13]

Atmospheric deposition occurs when airborne chemical particles fall out onto the land and into waterways. The deposition of nitrogen, sulfur, mercury, and other chemicals can lead to degradation of land and water quality.[14]

Dr. Robert E. Pitt (2000) first reported mercury in the upper Cahaba River watershed above the Highway 280 reservoir. He stated, "However, no data pertaining to the Little Cahaba River is included." His data came from samples collected between 1970 and 1990, most from the 1980's. The State of Alabama had established Mercury Acute Criterion to protect aquatic life as: 2.4 micrograms of mercury per liter of water (μg/l), and the Mercury Chronic Criterion as: 0.012 μg/l. The mean mercury concentrations for the upper Cahaba River was 0.32 μg/l. Dr. Pitt stated, "All of the detected mercury analyses was generally 1 μg/l, substantially greater than the chronic aquatic life standard and criterion of 0.012 μg/l and greater than the EPA health criterion of 0.144 and

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[13]http://www.mobilebaynep.com/images/uploads/library/303d_fact_sheet_and_table_for_comment.pdf

[14] https://www.epa.gov/cmaq/estimating-atmospheric-deposition-cmaq

0.146 μg/l." He continued, "All of the detected mercury observations also exceeded the human criteria by up to 100 times."[15]

Mercury and other contaminants in streams and reservoirs may accumulate in fishes and reach elevated concentrations that can pose a health risk to people who eat them. The Alabama Department of Public Health issued its 2018 "Alabama Fish Consumption Advisories." Among many bodies of waters listed, they advised people to limit themselves to one largemouth bass meal per month for those bass caught in "Purdy Reservoir, forebay area (Shelby County)." This advisory was given because of elevated levels of mercury in those fish.[16]

The EPA mandates that water boards across the nation submit a Consumer Confidence Report (CCR) to its customers each year. It is good news that the Birmingham Water Works Board 2018 CCR[17] listed mercury as "ND" or non-detectable for Birmingham's drinking water after filtration and purification. This CCR does not list the concentrations of mercury or other contaminants in the raw water source from which the BWWB draws its drinking water.

The most recent public "**Source Water Assessment**" report created by the BWWB is from 2013. The Source Water Assessment is a report on contaminants from the raw water pumped out of the Cahaba River/Little Cahaba River/Lake Purdy sources into the Water Treatment Plant. The BWWB Assessment notes that ADEM listed on the 303(d) the following concerns as to water quality: "siltation, nutrients, pathogens, and other habitat alterations." ADEM also listed Lake Purdy

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[15] http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.649.7316&rep=rep1&type=pdf

[16] https://www.alabamapublichealth.gov/tox/assets/al-fish-advisory-2018.pdf

[17] www.bwwb.org/waterquality.

as "considered supporting, but there are threats to the designated uses of water supply, aquatic life and recreation due to nutrients and the trophic state of the lake waters."[18] So, in 2018 we are warned to eat no more than one largemouth bass per month from Lake Purdy because of mercury. Now, with an advisory concerning mercury contamination at Lake Purdy, the public needs water source information more recent than 2013.**

Looking again at BWWB's CCR 2018[19], it states in part, "The following is a list of the raw water along with the susceptibility rating of the contaminant source and the contaminant sources: **Mercury -Cahaba River -moderate susceptibility (highways, secondary roads, and railroad).**"

I and my family have been drinking Birmingham water for over fifty years. Fortunately, we have remained healthy. I am glad of the non-detection levels of mercury in our purified drinking water. The public also needs assurance that contaminants in these sources will not continue to rise. ***The BWWB wisely points to highways, secondary roads, and railroads as sources of mercury and other contaminants.***

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[18] The Water Works Board of the City of Birmingham. 2013. Source Water Assessment Program-Cahaba River. Revised September 2013. Available at BWWB main office at 3600 First Avenue North, Birmingham, AL 35283, 35 pages.

**The BWWB's last formal assessment report for the source waters was in 2013. The BWWB reports that it has continued to test the source water. However, it appears that the method of testing the source water is by "grab" sampling which generally test waters very near the surface. Concentrations of mercury are greatest in the bottom sediments. It is important to test both the sediment and water near the surface, as well as the fish, to determine the presence and levels of mercury.

[19] Birmingham Water Works Board 2018 Annual Quality Report.

B. Mercury: Its Properties

Mercury is a heavy metal found in air, water, and soil. There are three forms of mercury: elemental mercury, inorganic mercury compounds, and organic mercury compounds. These three forms have different properties, toxicity, and usage. Elemental mercury is liquid at room temperature. It may be released into the air as a vapor when coal and other fossil fuels are burned (gasoline, diesel, oils, etc.). It also becomes airborne at lead smelting plants. Airborne elemental mercury is dangerous as it may be breathed in by humans, and it contributes to atmospheric deposition of mercury into streams where it can be transformed into organic methylmercury, a toxic compound which accumulates in top predatory animals (e.g. largemouth bass), and in humans who may eat those predators. Inorganic mercury compounds form when mercury combines with other elements such as oxygen or carbon to form compounds or salts. These less toxic compounds are used in industry. Mercury based cosmetics are used elsewhere but are banned in the United States. Organic mercury compounds form when water and soil microorganisms convert elemental and inorganic mercury to a highly neurotoxic compound called methylmercury which bioaccumulates in the food-chain.[20]

C. Human Exposure to Mercury

Humans may breathe in air containing vapors of elemental mercury which may be present in workplaces such as dental offices, smelting operations, and locations where mercury has been spilled or released. High levels of mercury vapors can cause severe lung damage. Chronic exposure to low vapor concentrations may cause neurological disturbances, memory problems, and other health issues. In the body, elemental mercury can be converted to inorganic mercury. Humans may

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[20] https://www.cdc.gov/biomonitoring/pdf/Mercury_FactSheet.pdf

be exposed to inorganic mercury compounds if they are used in their workplace. If inorganic mercury compounds are eaten, they may cause digestive damage. Long-term exposure can cause effects such as those seen above in elemental mercury toxicity. Organic mercury is very harmful to humans if they eat large amounts of fish and/or shellfish contaminated with methylmercury. It can cause damage to the nervous system.[21]

D. Mercury in Drinking Water is A Serious Concern

Mercury is a worldwide pollutant of much concern. Mercury enters our aquatic ecosystem either by atmospheric deposition or by a point-source discharge. The primary source of waterborne mercury comes from atmospheric deposition, most often from coal-fired power plants, and burning of other fossil fuels, such gasoline or diesel fuel burned by motor vehicles. Mercury enters the water and the biotransformation of inorganic mercury begins to take place at the air-water interface by *cyanobacteria.*[22] Inorganic mercury enters the water but is converted into methylmercury which increases its toxicity. It bioaccumulates as it moves up the aquatic food-chain. The greatest concentration is in tissues of the top predators, usually fishes.[23]

When mercury enters the water, certain species of sulfate (SO4=) processing bacteria take up the inorganic mercury and, through complex metabolic processes, convert it into methylmercury (CH3HG+). This organic form of mercury is many times more toxic than inorganic mercury.[24]

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[21] https://www.cdc.gov/biomonitoring/pdf/Mercury_FactSheet.pdf
[22] www.ncbi.nlm.nih.gov/pmc/articles/PMC1797140/

[23] https://water.usgs.gov/nawqa/mercury/MercuryFAQ.html
[24] https://pubs.usgs.gov/fs/1995/fs216-95

Coal-fired power plants, oil combustion, and municipal and medical waste incineration are the major human induced sources to the atmosphere. Abandoned mines and industrial effluents represent point sources of mercury contamination to aquatic ecosystems.[25]

Won et al., 2007 reported that "vehicles in idling or in driving mode, fueled with gasoline or diesel or liquefied petroleum gas, emit mercury in the air, mostly Hg0. Although this source is smaller than other sources, like large industrial plants, they suggest that it is a significant source because vehicles' emissions are close to the human breathing zone, and as a source, it is difficult to control." **Sediment samples collected in water bodies throughout the US showed a positive correlation between proximity to vehicular traffic sources and elevated mercury concentrations** (Callender and Rice 2000). Although the amount of mercury from automobiles is not as great as that from coal-fired power plants or various types of waste incinerators, they are still a source of mercury emissions.

The Safe Drinking Water Act requires EPA to establish safe levels of chemicals in drinking water, called Maximum Contaminant Level (MCL). The enforceable MCL for mercury has been set at 2 parts per billion (ppb) because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.[26]

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[25] https://toxics.usgs.gov/pubs/hg/summary.html

[26] https://www.freedrinkingwater.com/water-contamination/mercury-contaminants-removal-water.htm

ADEM's recent report of mercury in the source for Birmingham's drinking water needs to be monitored closely. Further development may only compound this problem in Lake Purdy and the Little Cahaba River.

E. Sex Hormones in Rivers

The American Chemical Society in its "Environmental Policy: Past, Present, and Future Special Issue", has raised concerns about the increased feminization of fishes and other aquatic organisms. They stated, ***"Recent observed feminization of aquatic animals has raised concerns about estrogenic compounds in water supplies and the potential for these chemicals to reach drinking water. Public perception frequently attributes this feminization to oral contraceptives (OCs) in wastewater and raises concerns that exposure to OCs in drinking water may contribute to the recent rise in human reproductive problems."*** (Wise et al., 2010). The extent of oral contraceptives and its metabolites released into sewage treatment systems can be roughly measured. Sewage and waste water treatment plants do not remove steroids such as estrogenic metabolites and androgenic metabolites. These plants release low levels of the main estrogenic compound in OCs, 17 alpha-ethinylestradiol, which has been detected in some surface waters (Benotti et al, 2009). Normally the amount of feminizing hormones are greater than those of masculinizing hormones except in rivers receiving effluent from paper processing mills (Jenkins et al., 2001; Jenkins et al., 2003; Carson et al, 2008). Certainly, feminizing hormones are much more prevalent in our rivers below sewage treatment plants than masculinizing ones. There are many chemicals in our rivers, both natural and man-made, that mimic estrogenic and androgenic hormones and are able to disrupt natural functions of these hormones in both animals and humans. Hayes et al 2010, Sumpter 1998, and Jobling et al., 2006 reviewed the discovery of numerous populations of feminized fishes below sewage treatment plants. The first masculinized fishes were discovered in the U S. by Howell, Black and Bortone, 1980, a specific condition associated with paper mill effluent. Sewage treatment plants such as that at Trussville and Leeds are located above our drinking water sources on the Cahaba River and Little Cahaba River respectively. These would be sources of feminization in drinking water should levels of these hormones exceed the threshold for sexual changes. And, these hormones are active in exceedingly small amounts.

Harvard Medical School is concerned about the increasing amounts of drugs in our streams, lakes and other drinking water sources.[27]

These are usually metabolites from prescription drugs for birth control, blood pressure control, thyroid problems, and chemotherapeutic drugs for cancer patients, etc. Studies on these aquatic pollutants are relatively new and not much is presently known about their effects on the ecosystem or human drinking water.

VII. Final Words

In a landmark review paper, Wheeler et al., (2005) stated, ***"New highways are pervasive, pernicious threats to stream ecosystems because of their short- and long-term physical, chemical, and biological impacts."*** These scientists present sound evidence from reviewing many peer-review papers that road building has many detrimental effects on the health of a stream's ecosystem. These harmful effects occur in three steps: (1) initial road construction; (2) road presence; and (3) subsequent landscape urbanization. The road construction step causes localized disturbances that subside with time.

[27] https://www.health.harvard.edu/newsletter_article/drugs-in-the-water

However, Steps 2 and 3 cause physical and chemical impacts that are persistent. They state, ***"Our review reveals that the landscape urbanization stage is clearly the greatest threat to stream habitat and biota, as stream ecosystems are sensitive to even low levels (<10%) of watershed urban development."***

My extensive experiences in the Cahaba River System, including the Little Cahaba River, form the basis for the opinions articulated in this report. I presently expect to provide these opinions at possible hearings and trial. Additional information may become available that may affect my opinions. As expressed earlier, the opinions expressed herein are my own and not those of my former employers, or any other persons or organizations.

If ALDOT's proposed road and bridge construction takes place, housing developments and businesses will spring up. And, more people will follow. This would mean more pollutants from a multitude of human and animal sources. It also means more wastes that must be treated in a sewage treatment plant before entering our streams. Hopefully, our drinking water source will be physically located above such development and protected in perpetuity in an undisturbed natural area set aside for the sole purpose of providing pure drinking water for Birmingham's citizens for generations to come. This is the wisest course of action---and one that our citizens understand.

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EXHIBIT A

DR. HOWELL'S CURRICULUM VITAE

CURRICULUM VITAE

William Mike Howell, Ph.D.

Professor *emeritus,* Samford University

HOME ADDRESS: Homewood, Alabama

DATE OF BIRTH: 8 June 1940

EDUCATION:

1962 B.S., University of Alabama (Biology, Education)

1964 M.S., University of Alabama (Biology)

1968 Ph.D., University of Alabama (Biology/Vertebrate Zoology/Ichthyology)

PRESENT POSITION:

Professor of Biology *emeritus*

Samford University

2006-to present

PAST POSITIONS:

1994-2006 - Professor of Biology, Samford University

1986-93 - Professor and Chair, Department of Biology, Samford University, Birmingham, Alabama

1984-86 - Professor of Biology, Samford University

1979-84 - Professor and Head, Department of Biology, Samford University

1976-79 - Professor of Biology, Samford University

1974-76 - Associate Professor, Department of Biology, Samford University

1972-74 - Assistant Professor of Ecology & Systematics, Cornell University, Ithaca, NY 14850

1969-72 - Associate Professor, Department of Biology, Samford University

1966-69 - Assistant Professor of Biology, Department

Samford University

1965-66 - Graduate Teaching Assistant, Department of Biology, University of Alabama 35486

1962-65 - National Defense Education Act Fellow, Department of Biology, University of Alabama

SCHOLASTIC AND HONORARY AWARDS:

1982 - Elected to Omicron Delta Kappa national leadership organization

1979 - Elected to Phi Kappa Phi national honor society

1977 - Buchanan Award for Excellence in Classroom Teaching

1975 - Listed among top five outstanding professors, Cornell University by Ho Nun De Kah Honor Society

1967 - Elected to Society of the Sigma Xi Scientific Honor Society

1965 - Beta Beta Beta National Biological Honorary Society

1965 - Graham Prize in Biology

1962-65 - NDEA Title IV Fellow

TEACHING EXPERIENCE:

Forty years of teaching experience.

Six years at Samford University, 1966-72

Two years at Cornell University, 1972-74.

Thirty-two years at Samford University, 1974-2007

RESEARCH INTERESTS:

Endangered Fish Species

Vertebrate chromosome structure and function

Systematics of freshwater fishes

Effects of pollutants on freshwater fishes

Effects of siltation on drinking water

Silver staining of vertebrate chromosomes

Masculinization of fishes by exposure to biodegraded plant sterols

Spiders of the Eastern U.S.

Butterflies of Alabama

Backyard biodiversity

GRANT AWARDS:

Samford University Research Fund Grant numbers 48, 59, 62, and 64, totaling $1,850 for the years 1974-76 to study the mechanism of silver binding to human chromosomes.

National Science Foundation Grant No. NSF PCM 76-82828. 1976-78. $16,000 grant to study nucleolus organizer regions in human chromosomes.

National Science Foundation Grant No. DEB 76-84195. 1976-78. $34,000 grant to study fish chromosomes.

National Science Foundation Grant No. PCM 79-17344. 1980-82. $38,498 grant to study silver staining patterns in nucleolus organizer regions of human metaphase chromosomes derived directly from solid tumor cells.

Samford University Research Fund Grant No.13. 1985-87. $2,000 grant to study plant sterol-induced changes in secondary sex characteristics of the mosquitofish, *Gambusia affinis*.

EPA Grant #R826130-01 1998-2000. $321,000 grant to develop a short-term in vivo screening system for endocrine disruptors utilizing mosquitofishes (co-investigator with Dr. Rob Angus of UAB, principal investigator).

PROFESSIONAL SOCIETIES:

American Society of Ichthyologists and Herpetologists

Somatic Cell Genetics Conference

Southeastern Fishes Council (one of several founders of this society)

Alabama Fisheries Association

Alabama Academy of Sciences (current trustee)

EDITORIAL BOARD:

Appointed to editorial board, *Copeia,* American Society of Ichthyologists and Herpetologists, 1978

Appointed to editorial board, *Brazilian Journal of Genetics,* now renamed, *Genetics and Molecular Biology* 1997

Appointed to editorial board, *Genetics and Molecular Research,* 2002

TRUSTEESHIP:

Named to the Board of Trustees of the Alabama Academy of Science, 2010 to present

PEER REVIEWER FOR SCIENTIFIC JOURNALS: I have been a frequent reviewer for manuscripts in the following journals:

American Midland Naturalist *Chromosoma*

Copeia

Genetics and Molecular Biology

Jour. Histochemistry & Cytochemistry

Stain Technology

The Brazilian Journal of Genetics

The Southwestern Naturalist

Transactions Americans Fisheries Society

INVITED SPEAKER: The following are select topics on which I have been invited to speak:

"Silver Staining of Chromosomes: Visualization of Ribosomal Gene Activity" Biology - Forum Invited Speaker Series, 18 October 1979 at University of Alabama.

"Bioethics" -Forum on Bioethics, 27 April 1981 at Comer Auditorium, University of Montevallo.

"Silver Staining of Chromosomes and Cell Organelles" Invited talk, September 1982 at Wayne State University, Detroit, Michigan.

"Vertebrate Chromosomes Structure"- Invited Speaker Series, 23 March 1984 at Department of Biological Sciences, Mississippi State University, Starkville, MS.

"Environmental Formation of Androgens and Fish Masculinization"- October 18, 1999. Invited Speaker at The Symposium Marking the 20th Anniversary of the first Meeting on Estrogens in the Environment. Center for Bioenvironmental Research at Tulane and Xavier Universities, New Orleans, LA.

TRAVEL:

Served as Professor-in-Residence at Samford University's London Study Centre, London, England, August-December 1987. Traveled extensively throughout England, Wales, Scotland, Ireland and France.

COURSES TAUGHT:

General Biology	Biology of Fishes
Zoology	Biogeography (Graduate)
Vertebrate Field Zoology	Ichthyology (Graduate)
Invertebrate Field Zoology	General Science for School Teachers
Genetics	
Man & the Environment	Endangered Species
Human Anatomy & Physiology	
Speciation (Graduate)	

LIST OF BOOKS, PUBLICATIONS AND THESIS

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Howell, W. M. and C. R. Duckett. 1971. Somatic chromosomes of the lamprey, *Ichthyomyzon gagei* (Agnatha: Petromyzonidae). *Experientia* 27(2):222-223.

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EXHIBIT B

NEWSPAPER CLIPPINGS OF MY STATEMENTS ON EFFECTS OF SILT AND DIRT ON HEALTH OF RIVERS

THE ADVERTISER
Montgomery, Alabama
DAILY

MAR -19-91

Experts: Dirt can be deadly for Alabama's waterways

Associated Press Report

BIRMINGHAM — Dirt can be a deadly source of pollution when it washes from manufacturing and farmlands into Alabama's waterways, environmental officials said.

Samford University biologist Mike Howell said the dirt, or silt, has been particularly damaging to the Cahaba River, which runs through the Birmingham area collecting runoff from factories, subdivisions and farms.

Mr. Howell has studied the Cahaba's decline for 28 years. Silt can bury fish eggs, clog gills, cover food sources and rob a river of oxygen, Mr. Howell said.

He recalled taking fish samples from one Shelby County area of the river between Helena and Montevallo called Boothton ford.

"We could go in and pick up 40 to 45 species there. This was in the mid-to late 1960s," he said. "Now, you're lucky if you get 20 species. And the siltation there is covering all the rocks, and the water gets very murky."

Environmental officials say this change is typical of other river systems across the state.

"I get a lot of people who say it is just more dirt in the water. How can it be that bad?" said Tim Forrester, who oversees surface mining and non-point source pollution for the Alabama Department of Environmental Management.

In many cases, that dirt can carry pesticides that eventually could find their way into drinking water wells, he said.

State and federal environmental protection agencies have made strides in reducing pollution from point sources such as factories. But they acknowledge they only are beginning to understand the extent of silt damage.

The polluted dirt can include fertilizers that wash off lawns and farms; sediment from improperly managed construction sites; animal waste from livestock and poultry operations; and chemicals and heavy metals that wash from city streets.

For the last two years, ADEM officials have conducted well-water sampling in areas where large amounts of pesticides are used. In 1989, they found that 12 of 50 wells sampled contained trace amounts of 11 pesticides.

None of the levels exceeded drinking water standards.

Last year, the department resampled the 12 wells where the pesticides were found, plus 48 other wells. They found that only one of the original 12 wells tested positive for pesticides. But they also found well water in 10 new wells contained trace amounts of pesticides, while water in nine wells failed to meet drinking water standards.

The department plans to continue the study by building eight to 10 monitoring wells in Geneva, Houston, Henry, Baldwin, Madison and DeKalb counties, which show the highest use of pesticides.

"What's interesting about all this," said Richard Esposito, a hydrogeologist with ADEM, "is this is affecting people who are in a pristine environment out in the country, and they are doing it to themselves."

Silt pollution called threat to state rivers

1991

775

The Associated Press

BIRMINGHAM — It looks harmless, but environmental officials warn that dirt washing from factories and farms into Alabama waterways can kill marine and plant life.

Samford University biologist Mike Howell said the dirt, or silt, has been very damaging to the Cahaba River, which runs through the Birmingham area collecting runoff from factories, subdivisions and farms.

Howell has studied the Cahaba's decline for 28 years. Silt can bury fish eggs, clog gills, cover food sources and rob a river of oxygen, Howell said.

He recalled taking fish samples from one Shelby County area of the river between Helena and Montevallo called Boothton ford.

"We could go in and pick up 40 to 45 species there. This was in the mid-to late 1960s," he said. "Now, you're lucky if you get 20 species. And the siltation there is covering all the rocks, and the water gets very murky."

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See SILT, page B1

Silt

Continued from page B1

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DECATUR DAILY
Decatur, Alabama
DAILY

MAR -19-91

Biologist: Silt damaging Cahaba River

BIRMINGHAM (AP) 41 It looks harmless, but environmental officials warn that dirt washing from factories and farms into Alabama waterways can kill marine and plant life. Samford University biologist Mike Howell said the dirt, or silt, has been very damaging to the Cahaba River, which runs through the Birmingham area collecting runoff from factories, subdivisions and farms.

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EXHIBIT C

Dr. W. Mike Howell's Professional Activities (thru 2018)

1. Trained as a classical taxonomist/systematist and evolutionary biologist.

2. Sees himself as a field biologist who likes to find environmental problems and then to use the laboratory to solve those problems.

3. At age 24, Discovered and named the now federally-endangered watercress darter from springs in the Birmingham area

4. Was the first native Alabama scientist to describe a new species of fish

5. Later, described two more new species of fishes from Alabama

6. Received Ph.D. in Biology from University of Alabama at Tuscaloosa in 1968

7. Took a teaching position at Samford University in 1966

8. He and his graduate students in the 1970's did fish studies on Black Warrior River Tributaries: Fishes of the Locust Fork of the Black Warrior River; Fishes of the Bankhead National Forest of Alabama; Fishes of the Mulberry Fork of the Black Warrior River.

9. After 6 years at Samford University, he obtained a professorship at Cornell University where he was Asst. Professor of Ecology and Systematics and curator of one of the world's largest freshwater fish collections.

10. After two frigid winters at Cornell, he returned to Samford University where he has spent 38 years before retiring May (2006)

11. During late 60's and early 70's he developed new cytogenetic techniques for studying fish chromosomes

12. Established chromosome numbers for phylogenetically important organisms such as Amphioxus, lampreys, lungfish (as well as many teleost fishes).

13. Developed a cytogenetic staining method using silver to selectively stain the nucleolus organizer regions on human chromosomes

14. His silver staining technique is currently being used by human genetics labs around the world for studying nucleolus organizer regions.

15. During early 1980's discovered the first masculinizing hormone in the environment…a hormone capable of growing male parts on female fishes

16. Worked with Samford's Ron Jenkins and UAB's Rob Angus, to identify the first male hormone, androstenedione, as an environmental pollutant

17. Worked with Samford's Ron Hunsinger to develop a procedure for solubilizing hormones to treat fishes in an aquatic medium

18. Developed and patented the Teaching-Photographic Tank for studying and photographing fishes in the environment without harming them

19. Published over 60 peer-reviewed scientific papers

20. Received Alabama Wildlife Federation's Governor's Award as Conservation Educator of the Year for 1995

21. Published the first all color photographic field guide to the Spiders of the Eastern U. S. (along with Samford's Ron Jenkins) during 2004

22. Published a book on Butterflies of Alabama with co-author Vitaly Charny during 2010.

23. Also, currently working on the effects of hormones and other chemicals and their effects on natural fish populations

24. Worked on plant hormone, 24-epibrassinolide, and along with 5 department members published an important paper in Genetics and Molecular Biology.

24. Published a book entitled, "*Art in Nature: Digitally Altered Images of Animals and Plants*"

25. Had published this November, 2017 with ex-Samford student, and now an M.D./Ph.D, Dr. David Aarons, on the discovery of two endangered species of fishes in a spring near Pinson, AL

26. Published paper in the journal *Gene* on vertebrate chromosome evolution with Dr. Radka Symonova of Czech Republic.

EXHIBIT D

Bham News 11-5-70

CRESOLS DO DAMAGE

Fish in county endangered, Samford professor claims

BY WILLIAM SARTOR

News staff writer

Fish are fewer and several species are on the verge of extinction in Jefferson County because of pollution said Samford University biology professor Dr. Mike Howell.

Howell told GASP members Wednesday night that in Jefferson County one very rare species of darter, which is found no where else, is in danger of becoming extinct because of phenolic compounds which are being discharged into the county streams.

He said when he started working around Birmingham collecting fish samples, the Five Mile Creek area was filled with cresols.

"There I first started to find deformed fish," he said.

HOWELL SAID THAT in the Five Mile Creek "something was wrong with 80 per cent of the fish that we collected."

Some were grossly discolored, others misshappened by spinal curvatures, enlarged organs and other defects.

"When we examined these fish and analyzed their body tissues, we found they were heavily contaminated with cresols," he said.

Citing the case of a five-legged frog, he said the cresols also made the body developing processes go askew so that weird mutations occur.

HOWELL SAID THIS pollution problem dates to 1949 and that it is endangering fish life throughout the county.

It is getting progressively worse, too: He cited an Alabama Water Improvement Commission report that showed only 18 parts per million cresols in Five Mile Creek in 1949 and recent study which showed the creek waters now contained 5,000 parts per million cresols, **making it "the most polluted river in the state."**

He said that pollution along the Warrior is destroying the Warrior is destroying property values and especially affecting fishing camp owners.

"IF ALL OF the fish are killed because of pollution, it will have a drastic effect on the economy because a lot of the people depend on fish for food and income," he said.

"It will ruin a multimillion dollar industry."

Howell said he was of the opinion that industry "could try harder" to control its discharges of pollutants in the streams

"After all, they have been under orders to stop polluting," he said.

Cause hasn't been determined

Black Warrior fish kill total may be as high as 500,000

A Samford University biologist said as many as 500,000 fish could have been destroyed in Black Warrior River fish kills reported Friday by the State Department of Conservation.

Dr. Mike Howell said the dead bass, bream, catfish and suckers were scattered along a 25-mile stretch of the Locust Fork of the Warrior in extreme western Jefferson County.

An official in the Conservation Department's Game and Fish Division said preliminary studies of the river indicate there is a low oxygen content in the water, but no cause has been determined.

Dr. Howell said he saw evidences of cresol, an industrial waste, in the water. Lee Walls of the conservation department said the water is full of industrial wastes and other effluents, including sewage from treatment plants along the river.

The greatest number of the dead fish Friday were believed to be somewhere on the twisting stream between Five Mile Creek and Birmingport, Birmingham's industrial port.

Jefferson County Road Department workers told a reporter who had searched in vain for the fish, they saw "hundreds" of dead fish in the river just south of Five Mile Creek Monday. They said large quantities of a substance which looked and smelled like creosote was in the water then.

Fishermen near Birmingport said the dead fish had not yet floated down the river to that point.

This week's fish kills apparently destroyed about two-thirds of the total number of fish killed in the river during 1969. Dr. Howell said about 750,000 fish were destroyed in the same portion of the Black Warrior last year.

State officials said it is "very possible" other kills along the slow-moving stream will be discovered in the next few days.

B'Ham. Post-Herald – 15 AUG 1970

Creosote found in area rivers

BY ANN WRIGHT

Creosote, which has been found to cause cancer in fish, has been found in streams and rivers around Jefferson County, according to Dr. Mike Howell of the Samford University biology department.

Dr. Howell suggested that the infested streams are unsafe for humans and fish in his talk Monday to members of the AAUW at Temple Emanu-El.

Dr. Howell explained that creosote is the substance removed by super-heating of coal during the process of making coke. The hot coal is then cooled with water that is released into a nearby stream or river, thus polluting the water.

Dr. Howell showed slides of several streams containing creosote while he discussed the effects of the chemical on our environment. For example, the creek running through Ensley Park has caught fire several times because of the many toxic chemicals found in it. He also talked about Possum Creek which smells so bad you can not even get near it. He also showed two different creeks, one red and one black, and explained the discoloration was due to chemicals released into them.

He went on to say that fish found in these streams have deformities such as spinal curvature. Parasites are also found on them and tumors have grown within the body.

Dr. Howell said the Jefferson County Health Department has warned citizens that every stream in the county is polluted and to stay out of them and not to drink from them.

Another guest speaker was Mrs. Robert Burns, founder of the Alabama Conservancy.

Mrs. Burns introduced a proposal which the AAUW will support to preserve a Wilderness Area in the Bankhead Forest located in northwest Alabama.

At this time the forest has a multiple use. It is used for water, wildlife, recreation and timber, the dominate use being timber. And now the state's oldest national forest is being threatened by a decision to remove large amounts of timber non-selectively. With the preservation of this wilderness, a small area will be left for wildlife and recreation, the speaker said.

VOICE OF THE PEOPLE

3 Nov 1970

Warrior Fish Kill

B'ham News

During the past three years numerous fish kills have occurred in the waterways from Birmingham to Dauphin Island on the Gulf of Mexico. Most of these kills that have been reported have been attributed to too little dissolved oxygen, according to the Alabama Department of Conservation and the Alabama Water Improvement Commission.

Except for a few acute kills from known pesticide accidents, these kills have always been associated with increased stream flow following periods of heavy rain. The heavy rains in the Birmingham area recently caused a marked increase in the flow of the Warrior River, scuffing up of the bottom sediments that had been accumulating for a long period. Poisons in these sediments caused the mass fish kill which included five-and six-inch bass and bream in the Black Warrior near Winter's Camp.

During the last three years I have witnessed several unreported minor fish kills and a few of the major kills. Because I have been on a schedule of monitoring both bottom sediments and the water for toxic substances in the Black Warrior River, I can report that the big kills last fall and again this year were not results of too little dissolved oxygen, although low dissolved oxygen may have been a contributing factor.

The principal cause of the death of these fish has been toxic heavy metals which has been resuspended from bottom sediments. The acidity from drainage from abandoned coal mines contributed to the metal toxicity and death by lowering the acidity, which increased the solubility and the concentration of these toxic metals.

The behaviors of dying fish were not those characteristic of oxygen suffocation, but were characteristic of fish dying from the kind of acute toxicity generally associated from heavy metals and some pesticides.

During this time of the year bottom samples of sediments have repeatedly demonstrated a build-up of toxic materials from the late summer and early fall, containing mostly toxic metals, but also high concentrations of chlorinated hydrocarbon pesticides complexed with the organic portion of the sediment.

The major fish kills and many unreported kills of fish-food invertebrate animals have been associated with scuffed up and resuspended bottom sediments, following heavy rains. During prolonged periods of low rainfall and runoff, bottom materials build up an average of two feet in the Black Warrior River below the Holt Dam, where low oxygen is the principal cause of fish kills. In this area large quantities of oxygen-consuming materials built up both on the bottom and in solution. These give rise to large populations of nuisance blue-green algae, which also give rise to low dissolved oxygen conditions. Furthermore, these blue-greens also give rise to toxic substances, and tend to concentrate both heavy metals and chloronated hydrocarbon pesticides.

On several occasions the public attention has been attracted to water pollution by massive fish kills in the Black Warrior River below Birmingham. What the public did not know, however, was the deterioration in water quality at several times when fish did not die, but valuable populations of fish-food planktonic organisms were severely reduced or wiped out from pollution that did not result in massive fish kills.

The past three summers were noted for many fish kills in the Mobile Bay estuary attributed to a combination of paper mill wastes and pesticides from industries that manufacture pesticides.

LOUIS G. WILLIAMS, PhD,
Aquatic Ecologist,
Dept. of Biology,
University of Alabama,
P. O. Box 1927, University.

EXHIBIT E

https://adem.alabama.gov/programs/water/wquality/Draft2018AL303dList.pdf
Accessed: July 28, 2018 by W. Mike Howell

2018 Alabama Draft §303(d) List

Assessment Unit ID	Waterbody Name	Type	River Basin	County	Uses	Causes	Sources	Size	Unit Type	Downstream / Upstream Locations	Year Listed	Priority
AL03150201-0101-200	Callaway Creek	R	Alabama	Elmore	Fish & Wildlife	Nutrients	Agriculture Municipal	13.02	miles	Bouldin tailrace canal / its source	2010	H
AL03150201-0104-302	Three Mile Branch	R	Alabama	Montgomery	Fish & Wildlife	Pathogens (E. coli)	Urban development	7.65	miles	Lower Wetumpka Road / its source	2010	L
AL03150201-0104-302	Three Mile Branch	R	Alabama	Montgomery	Fish & Wildlife	Pesticides (Dieldrin)	Unknown source	7.65	miles	Lower Wetumpka Road / its source	2002	L
AL03150201-0104-302	Three Mile Branch	R	Alabama	Montgomery	Fish & Wildlife	Siltation (habitat alteration)	Urban development	7.65	miles	Lower Wetumpka Road / its source	2010	L
AL03150201-0105-300	Mill Creek	R	Alabama	Autauga Elmore	Fish & Wildlife	Siltation (habitat alteration)	Urban development	8.71	miles	Still Creek / its source	2010	L
AL03150201-1006-101	Mulberry Creek	R	Alabama	Autauga Dallas	Swimming Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	22.20	miles	Alabama River / Harris Branch	2016	L
AL03150201-1207-301	Sixmile Creek	R	Alabama	Dallas	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	1.23	miles	Alabama River / Fourmile Creek	2012	L
AL03150203-0103-200	Coffee Creek	R	Alabama	Dallas Perry	Fish & Wildlife	Nutrients	Pasture grazing	7.67	miles	Tayloe Creek / its source	2010	L
AL03150203-0103-200	Coffee Creek	R	Alabama	Dallas Perry	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	7.67	miles	Tayloe Creek / its source	2010	L
AL03150203-0103-200	Coffee Creek	R	Alabama	Dallas Perry	Fish & Wildlife	Siltation (habitat alteration)	Pasture grazing	7.67	miles	Tayloe Creek / its source	2010	L
AL03150203-0108-110	Bear Creek	R	Alabama	Dallas Perry	Fish & Wildlife	Pathogens (E. coli)	Aquaculture Pasture grazing	16.79	miles	Bogue Chitto Creek / its source	2018	L
AL03150203-0805-101	Alabama River (Claiborne Lake)	L	Alabama	Clarke Monroe Wilcox	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	714.80	acres	McCalls Creek / Bear Creek	2008	L
AL03150203-0805-102	Alabama River (Claiborne Lake)	L	Alabama	Wilcox	Swimming Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Dam construction Flow regulation/modification	304.23	acres	Bear Creek / Frisco Railroad Crossing	1996	L
AL03150203-0805-103	Alabama River (Claiborne Lake)	L	Alabama	Wilcox	Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Dam construction Flow regulation/modification	474.72	acres	Frisco Railroad Crossing / Pursley Creek	1996	L
AL03150203-0805-104	Alabama River (Claiborne Lake)	L	Alabama	Wilcox	Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Dam construction Flow regulation/modification	524.33	acres	Pursley Creek / River Mile 131	2000	L
AL03150203-0805-105	Alabama River (Claiborne Lake)	L	Alabama	Wilcox	Public Water Supply	Organic enrichment (CBOD, NBOD)	Dam construction Flow regulation/modification	109.31	acres	River Mile 131 / Beaver Creek	2000	L
AL03150203-0703-101	Alabama River (Claiborne Lake)	L	Alabama	Wilcox	Public Water Supply	Organic enrichment (CBOD, NBOD)	Dam construction Flow regulation/modification	310.63	acres	Beaver Creek / Rockwest Creek	1996	L
AL03150203-0802-111	Pursley Creek (Claiborne Lake)	L	Alabama	Wilcox	Swimming Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Dam construction Flow regulation/modification	6.64	acres	Alabama River / end of embayment	1996	L
AL03150203-0110-100	Bogue Chitto Creek	R	Alabama	Dallas Perry	Fish & Wildlife	Siltation (habitat alteration)	Agriculture Pasture grazing	60.49	miles	Alabama River / its source	2010	L
AL03150203-0101-100	Washington Creek	R	Alabama	Dallas Perry	Fish & Wildlife	Pathogens (E. coli)	On-site wastewater systems Pasture grazing	17.24	miles	Bogue Chitto Creek / its source	2016	L
AL03150204-0405-102	Alabama River	R	Alabama	Clarke Monroe	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	12.35	miles	Pigeon Creek / Claiborne Lock and Dam	2012	L
AL03150204-0105-100	Alabama River (Claiborne Lake)	L	Alabama	Clarke Monroe	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	2,051.55	acres	Claiborne Lock and Dam / McCalls Creek	2008	L
AL03150204-0101-111	Tallatchee Creek (Claiborne Lake)	L	Alabama	Monroe	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	20.58	acres	Alabama River / end of embayment	2008	L
AL03160109-0203-101	Mulberry Fork	R	Black Warrior	Blount Cullman	Fish & Wildlife	Nutrients	Agriculture Industrial Municipal	2.52	miles	Marriott Creek / Mill Creek	1998	H
AL03160109-0203-102	Mulberry Fork	R	Black Warrior	Blount Cullman	Fish & Wildlife	Nutrients	Agriculture Industrial Municipal	17.27	miles	Mill Creek / Broglen River	1998	H
AL03160109-0203-102	Mulberry Fork	R	Black Warrior	Blount Cullman	Fish & Wildlife	Siltation (habitat alteration)	Agriculture Industrial Municipal	17.27	miles	Mill Creek / Broglen River	1998	L
AL03160109-0109-102	Mulberry Fork	R	Black Warrior	Blount Cullman	Fish & Wildlife	Siltation (habitat alteration)	Agriculture	18.23	miles	Broglen River / Blount County Road 6	1998	L
AL03160109-0101-150	Riley Maze Creek	R	Black Warrior	Cullman Marshall	Fish & Wildlife	Total dissolved solids	Municipal	4.13	miles	Tibb Creek / its source	2006	H
AL03160109-0101-600	Tibb Creek	R	Black Warrior	Cullman Marshall	Fish & Wildlife	Total dissolved solids	Municipal	5.13	miles	Mulberry Fork / its source	2006	H

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AL03160109-0503-100	Wolf Creek	R	Black Warrior	Walker	Fish & Wildlife	Siltation (habitat alteration)	Surface mining-abandoned	38.40	miles	Lost Creek / Alabama Highway 102	1998	L
AL03160109-0602-601	Old Town Creek	R	Black Warrior	Walker	Fish & Wildlife	Nutrients	Surface mining-abandoned	2.71	miles	Mulberry Fork / Pinhook Creek	2006	L
AL03160109-0602-601	Old Town Creek	R	Black Warrior	Walker	Fish & Wildlife	Siltation (habitat alteration)	Surface mining-abandoned	2.71	miles	Mulberry Fork / Pinhook Creek	2006	L
AL03160109-0604-900	Baker Creek	R	Black Warrior	Walker	Fish & Wildlife	Siltation (habitat alteration)	Unknown source	7.01	miles	Mulberry Fork / its source	2006	L
AL03160110-0305-201	Clear Creek (Smith Lake)	L	Black Warrior	Winston	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	346.47	acres	Sipsey Fork / Coon Creek	2010	L
AL03160110-0306-201	Sipsey Fork (Smith Lake)	L	Black Warrior	Winston	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	1,321.71	acres	County Road 41 / Brushy Creek	2010	L
AL03160110-0306-901	Butler Branch (Smith Lake)	L	Black Warrior	Winston	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	119.74	acres	Sipsey Fork / end of embayment	2010	L
AL03160110-0408-110	Rock Creek (Smith Lake)	L	Black Warrior	Cullman Winston	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	1,946.62	acres	Sipsey Fork / White Oak Creek	2010	L
AL03160110-0505-103	Ryan Creek (Smith Lake)	L	Black Warrior	Cullman	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	4,547.96	acres	Coon Creek / Rock Creek	2010	L
AL03160110-0401-100	Blevens Creek	R	Black Warrior	Cullman Winston	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	19.14	miles	Rock Creek / its source	2016	L
AL03160111-0106-100	Slab Creek	R	Black Warrior	Blount Marshall	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Collection system failure Pasture grazing	24.98	miles	Locust Fork / its source	2018	L
AL03160111-0204-111	Blackburn Fork (Inland Lake)	L	Black Warrior	Blount	Public Water Supply Swimming	Metals (Mercury)	Atmospheric deposition	1,389.78	acres	Inland Lake dam / extent of reservoir	2018	L
AL03160111-0307-400	Black Creek	R	Black Warrior	Jefferson	Fish & Wildlife	pH	Surface mining-abandoned	6.36	miles	Cunningham Creek / its source	2014	H
AL03160111-0407-103	Fivemile Creek	R	Black Warrior	Jefferson	Swimming Fish & Wildlife	Pathogens (E. coli)	Collection system failure Urban runoff/sewers	9.07	miles	Alabama Highway 79 / its source	2018	L
AL03160111-0408-102	Village Creek	R	Black Warrior	Jefferson	Limited Warmwater Fishery	Pesticides (Dieldrin)	Urban runoff/storm sewers	12.60	miles	Second Creek / Woodlawn Bridge	2006	L
AL03160111-0408-103	Village Creek	R	Black Warrior	Jefferson	Limited Warmwater Fishery	Pesticides (Dieldrin)	Urban runoff/storm sewers	4.04	miles	Woodlawn Bridge / its source	2006	L
AL03160112-0106-111	Valley Creek (Bankhead Lake)	L	Black Warrior	Jefferson	Public Water Supply Swimming Fish & Wildlife	Nutrients	Municipal	119.67	acres	Black Warrior River / end of embayment	2016	L
AL03160112-0304-110	Pegues Creek	R	Black Warrior	Tuscaloosa	Fish & Wildlife	Metals (Chromium)	Surface mining-abandoned	4.23	miles	Black Warrior River / its source	2006	L
AL03160112-0304-110	Pegues Creek	R	Black Warrior	Tuscaloosa	Fish & Wildlife	Metals (Lead)	Surface mining-abandoned	4.23	miles	Black Warrior River / its source	2006	L
AL03160112-0304-110	Pegues Creek	R	Black Warrior	Tuscaloosa	Fish & Wildlife	Siltation (habitat alteration)	Surface mining-abandoned	4.23	miles	Black Warrior River / its source	2006	L
AL03160112-0305-110	Daniel Creek	R	Black Warrior	Tuscaloosa	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	10.42	miles	Black Warrior River / its source	2018	L
AL03160112-0305-110	Daniel Creek	R	Black Warrior	Tuscaloosa	Fish & Wildlife	Siltation (habitat alteration)	Surface mining-abandoned	10.42	miles	Black Warrior River / its source	2014	L
AL03160112-0305-110	Daniel Creek	R	Black Warrior	Tuscaloosa	Fish & Wildlife	Total dissolved solids	Surface mining-abandoned	10.42	miles	Black Warrior River / its source	2014	L
AL03160112-0413-102	North River (Lake Tuscaloosa)	L	Black Warrior	Tuscaloosa	Public Water Supply Swimming	Metals (Mercury)	Atmospheric deposition	3,840.14	acres	Lake Tuscaloosa dam / Binion Creek	2010	L
AL03160112-0411-101	North River (Lake Tuscaloosa)	L	Black Warrior	Tuscaloosa	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	968.62	acres	Binion Creek / extent of reservoir	2010	L
AL03160112-0410-111	Binion Creek (Lake Tuscaloosa)	L	Black Warrior	Tuscaloosa	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	305.18	acres	North River / end of embayment	2010	L
AL03160112-0503-100	Cottondale Creek	R	Black Warrior	Tuscaloosa	Fish & Wildlife	Pathogens (E. coli)	On-site wastewater systems Pasture grazing	9.58	miles	Hurricane Creek / its source	2016	L
AL03160113-0201-100	Mill Creek	R	Black Warrior	Tuscaloosa	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Pasture grazing	10.36	miles	Warrior Lake / its source	2018	L
AL03160113-0302-110	Elliotts Creek	R	Black Warrior	Hale	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	24.74	miles	Warrior Lake / its source	2018	L
AL03160113-0602-300	Carthage Branch	R	Black Warrior	Tuscaloosa	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	3.98	miles	Warrior Lake / its source	2018	L

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AL03160113-0704-100	Cottonwood Creek	R	Black Warrior	Hale Marengo Perry	Fish & Wildlife	Organic Enrichment (CBOD, NBOD)	Municipal Pasture grazing	11.42	miles	Big Prairie Creek / its source	2006	L
AL03160113-0704-100	Cottonwood Creek	R	Black Warrior	Hale Marengo Perry	Fish & Wildlife	Siltation (habitat alteration)	Municipal Pasture grazing	11.42	miles	Big Prairie Creek / its source	2006	L
AL03160113-0704-100	Cottonwood Creek	R	Black Warrior	Hale Marengo Perry	Fish & Wildlife	Nutrients	Municipal Pasture grazing	11.42	miles	Big Prairie Creek / its source	2006	L
AL03160113-0708-100	Big Prairie Creek	R	Black Warrior	Hale Perry	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Aquaculture Pasture grazing	44.16	miles	Lake Demopolis / its source	2018	L
AL03160113-0801-200	Needham Creek	R	Black Warrior	Greene	Fish & Wildlife	Total dissolved solids	Aquaculture	8.96	miles	Dollarhide Creek / its source	2014	L
AL03140104-0104-100	Blackwater River	R	Blackwater	Escambia	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	2.78	miles	AL-FL state line / its source	2004	L
AL03150202-0503-102	Cahaba River	R	Cahaba	Bibb	Outstanding Alabama Water Swimming	Pathogens (E. coli)	Municipal Pasture grazing Urban runoff/storm sewers	10.58	miles	AL Hwy 82 / lower Little Cahaba River	2016	L
AL03150202-0103-103	Little Cahaba River	R	Cahaba	Jefferson	Fish & Wildlife	Total dissolved solids	Industrial Municipal	13.75	miles	Lake Purdy / its source	2018	L
AL03150202-0103-102	Little Cahaba River (Lake Purdy)	L	Cahaba	Jefferson Shelby	Public Water Supply	Metals (Mercury)	Atmospheric deposition	961.95	acres	Lake Purdy dam / extent of reservoir	2018	L
AL03150202-0402-100	Mahan Creek	R	Cahaba	Bibb Chilton	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Pasture grazing	15.47	miles	Little Cahaba River / its source	2018	L
AL03150202-0505-100	Affonee Creek	R	Cahaba	Bibb	Swimming	Pathogens (E. coli)	Pasture grazing	18.51	miles	Cahaba River / its source	2018	L
AL03150202-0506-200	Walton Creek	R	Cahaba	Bibb Perry	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	5.45	miles	Cahaba River / its source	2016	L
AL03150202-0901-100	Childers Creek	R	Cahaba	Dallas	Fish & Wildlife	Siltation (habitat alteration)	Pasture grazing	18.79	miles	Cahaba River / its source	2006	L
AL03130002-0907-100	Moores Creek	R	Chattahoochee	Chambers	Fish & Wildlife	Siltation (habitat alteration)	Land development	11.40	miles	Chattahoochee River / its source	2012	L
AL03130002-0907-101	Moores Creek	R	Chattahoochee	Chambers	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing Urban runoff/storm sewers	11.40	miles	Chattahoochee River / its source	2018	L
AL03130002-1105-100	Osanippa Creek	R	Chattahoochee	Chambers Lee	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	27.32	miles	Lake Harding / its source	2018	L
AL03130002-1106-100	UT to Halawakee Creek	R	Chattahoochee	Lee	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Pasture grazing	14.19	miles	Halawakee Creek / its source	2018	L
AL03130002-1107-110	Halawakee Creek	R	Chattahoochee	Chambers Lee	Fish & Wildlife	Siltation (habitat alteration)	Land development	16.57	miles	Three miles upstream of County Road 79 / its source	2012	L
AL03130003-0505-102	Uchee Creek	R	Chattahoochee	Russell	Public Water Supply Swimming Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	11.59	miles	County Road 39 / Island Creek	2018	L
AL03130003-0505-111	Uchee Creek (Walter F George Lake)	L	Chattahoochee	Russell	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	105.15	acres	Chattahoochee River / end of embayment	2010	L
AL03130003-0605-100	Ihagee Creek	R	Chattahoochee	Russell	Swimming Fish & Wildlife	Siltation (habitat alteration)	Land development Silviculture activities	15.73	miles	Chattahoochee River / its source	2012	L
AL03130003-0605-100	Ihagee Creek	R	Chattahoochee	Russell	Swimming Fish & Wildlife	Pathogens (E. coli)	Collection system failure On-site wastewater systems Pasture grazing	15.73	miles	Chattahoochee River / its source	2016	L
AL03130003-1205-100	Cowikee Creek (Walter F George Lake)	L	Chattahoochee	Barbour	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	1,739.13	acres	Chattahoochee River / end of embayment	2010	L
AL03130003-1204-100	South Fork Cowikee Creek	R	Chattahoochee	Barbour	Swimming Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	30.39	miles	Walter F George Lake / its source	2016	L
AL03130003-1307-111	Barbour Creek (Walter F George Lake)	L	Chattahoochee	Barbour	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	656.59	acres	Chattahoochee River / end of embayment	2016	L
AL03130003-1307-111	Barbour Creek (Walter F George Lake)	L	Chattahoochee	Barbour	Swimming Fish & Wildlife	Siltation (habitat alteration)	Agriculture	656.59	acres	Chattahoochee River / end of embayment	1998	L
AL03130003-1307-100	Barbour Creek	R	Chattahoochee	Barbour	Fish & Wildlife	Siltation (habitat alteration)	Agriculture	18.77	miles	Walter F George Lake / its source	1998	L

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AL03130003-1600-100	Chattahoochee River (Walter F George Lake)	L	Chattahoochee	Barbour Henry	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	10,029.53	acres	Walter F George dam / Cowikee Creek	2016	L
AL03130004-0801-100	Chattahoochee River	R	Chattahoochee	Houston	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	14.14	miles	AL-FL state line / Woods Branch	2016	L
AL03130004-0206-100	Bennett Mill Creek	R	Chattahoochee	Henry	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	5.81	miles	Chattahoochee River / its source	2016	L
AL03130004-0405-100	Abbie Creek	R	Chattahoochee	Barbour Henry	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Municipal Pasture grazing	42.53	miles	Chattahoochee River / its source	2016	L
AL03130004-0403-110	Peterman Creek	R	Chattahoochee	Henry	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	12.43	miles	Abbie Creek / its source	2016	L
AL03130004-0602-500	Cedar Creek	R	Chattahoochee	Henry Houston	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	4.04	miles	Omusee Creek / its source	2008	L
AL03130012-0101-100	Limestone Creek	R	Chipola	Houston	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Pasture grazing	10.80	miles	Big Creek / its source	2018	L
AL03130012-0101-410	Cypress Creek	R	Chipola	Houston	Fish & Wildlife	Nutrients	Municipal Urban runoff/storm sewers	8.11	miles	Limestone Creek / its source	1998	L
AL03130012-0101-410	Cypress Creek	R	Chipola	Houston	Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Municipal Urban runoff/storm sewers	8.11	miles	Limestone Creek / its source	1998	L
AL03130012-0202-210	Bruners Gin Creek	R	Chipola	Houston	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	5.43	miles	Rocky Creek / its source	2018	L
AL03130012-0203-110	Cowarts Creek	R	Chipola	Houston	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Municipal Pasture grazing	21.72	miles	AL-FL state line / its source	2016	L
AL03140201-0304-110	Judy Creek	R	Choctawhatchee	Barbour Dale	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	23.64	miles	West Fork Choctawhatchee River / its source	2018	L
AL03140201-0501-201	Beaver Creek	R	Choctawhatchee	Houston	Fish & Wildlife	Nutrients	Municipal Urban runoff/storm sewers	2.09	miles	Newton Creek / Dothan WWTP	1998	L
AL03140201-0501-201	Beaver Creek	R	Choctawhatchee	Houston	Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Municipal Urban runoff/storm sewers	2.09	miles	Newton Creek / Dothan WWTP	1998	L
AL03140201-0203-200	Panther Creek	R	Choctawhatchee	Dale Henry	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	7.63	miles	East Choctawhatchee River / its source	2018	L
AL03140201-0401-100	Lindsey Creek	R	Choctawhatchee	Barbour	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	12.48	miles	West Choctawhatchee River / its source	2018	L
AL03140201-0402-300	Pauls Creek	R	Choctawhatchee	Barbour	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	7.59	miles	West Choctawhatchee River / its source	2018	L
AL03140201-0602-200	Killebrew Factory Creek	R	Choctawhatchee	Dale	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	3.52	miles	Choctawhatchee River / its source	2018	L
AL03140201-0701-300	Bear Creek	R	Choctawhatchee	Dale	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	12.37	miles	Claybank Creek / its source	2018	L
AL03140201-0702-100	Claybank Creek	R	Choctawhatchee	Dale	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	11.64	miles	Lake Tholocco / its source	2018	L
AL03140201-1001-300	Pine Log Branch	R	Choctawhatchee	Geneva	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	4.09	miles	Hurricane Creek / its source	2018	L
AL03140201-1002-100	Pates Creek	R	Choctawhatchee	Geneva Houston	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	8.51	miles	Choctawhatchee River / its source	2018	L
AL03140201-1004-300	Hurricane Creek	R	Choctawhatchee	Geneva	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Collection system failure Pasture grazing	15.66	miles	Choctawhatchee River / its source	2018	L
AL03140201-1004-600	Dowling Branch	R	Choctawhatchee	Geneva	Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Agriculture Municipal Urban runoff/storm sewers	2.10	miles	Cox Mill Creek / its source	1998	L
AL03140201-0901-100	Harrand Creek	R	Choctawhatchee	Coffee Dale	Fish & Wildlife	Siltation (habitat alteration)	Urban runoff/storm sewers	9.71	miles	Claybank Creek / its source	2006	L
AL03140201-0901-200	Indian Camp Creek	R	Choctawhatchee	Coffee	Fish & Wildlife	Siltation (habitat alteration)	Land development Urban runoff/storm sewers	3.98	miles	Harrand Creek / its source	2004	L
AL03140201-0904-300	Brackin Mill Creek	R	Choctawhatchee	Coffee Dale	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	4.90	miles	Claybank Creek / its source	2018	L
AL03140201-1203-101	Choctawhatchee River	R	Choctawhatchee	Geneva Houston	Swimming Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Collection system failure Pasture grazing	29.07	miles	Pea River / Alabama Highway 12	2018	L

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AL03140201-1203-101	Choctawhatchee River	R	Choctawhatchee	Dale Geneva Houston	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	29.07	miles	Pea River / Alabama Highway 12	2010	L
AL03140201-1003-102	Choctawhatchee River	R	Choctawhatchee	Dale Houston	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	6.45	miles	Alabama Highway 12 / Brooking Mill Creek	2010	L
AL03140201-0407-101	West Fork Choctawhatchee River	R	Choctawhatchee	Dale	Swimming Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	5.08	miles	Choctawhatchee River / falls 1/2 mile upstream of AL Hwy 27	2016	L
AL03140201-0407-102	West Fork Choctawhatchee River	R	Choctawhatchee	Dale	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	1.79	miles	falls 1/2 mile upstream of AL Hwy 27 / Judy Creek	2016	L
AL03140201-0406-100	West Fork Choctawhatchee River	R	Choctawhatchee	Barbour Dale	Swimming Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	32.53	miles	Judy Creek / its source	2016	L
AL03140201-0407-400	Big Creek	R	Choctawhatchee	Dale	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	6.53	miles	West Fork Choctawhatchee River / its source	2016	L
AL03140201-1102-500	Blanket Creek	R	Choctawhatchee	Coffee	Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Municipal	5.71	miles	Double Bridges Creek / its source	2010	L
AL03140202-0906-101	Pea River	R	Choctawhatchee	Geneva	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	3.87	miles	Choctawhatchee River / Laddon Creek	2010	L
AL03140202-0603-101	Pea River	R	Choctawhatchee	Coffee	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	8.09	miles	Bucks Mill Creek / US Highway 84	2010	L
AL03140202-0603-102	Pea River	R	Choctawhatchee	Coffee	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	11.76	miles	US Highway 84 / Red Oak Creek	2010	L
AL03140202-0202-110	Spring Creek	R	Choctawhatchee	Bullock	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	11.13	miles	Pea River / its source	2018	L
AL03140202-0204-110	Big Sandy Creek	R	Choctawhatchee	Bullock	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	11.32	miles	Pea River / its source	2018	L
AL03140202-0505-100	Pea River	R	Choctawhatchee	Coffee Dale	Swimming Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	10.85	miles	Halls Creek / US Hwy 231	2016	L
AL03140202-0505-200	Halls Creek	R	Choctawhatchee	Coffee	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	5.54	miles	Pea River / its source	2018	L
AL03140202-0301-200	Buckhorn Creek	R	Choctawhatchee	Pike	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	15.97	miles	Pea River / its source	2016	L
AL03140202-0504-200	Huckleberry Creek	R	Choctawhatchee	Coffee Dale	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	3.47	miles	Pea River / its source	2016	L
AL03140202-0601-200	Patrick Creek	R	Choctawhatchee	Coffee	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	5.18	miles	Beaverdam Creek / its source	2016	L
AL03140202-0610-101	Pea River	R	Choctawhatchee	Geneva	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Collection system failure Pasture grazing	12.11	miles	Flat Creek / Snake Branch	2018	L
AL03140202-0702-110	Flat Creek	R	Choctawhatchee	Coffee Covington Geneva	Swimming Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	24.26	miles	Eightmile Creek / its source	2016	L
AL03140203-0105-100	Choctawhatchee River	R	Choctawhatchee	Geneva	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	4.45	miles	AL-FL state line / Pea River	2010	L
AL03140203-0201-100	Wrights Creek	R	Choctawhatchee	Geneva	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	8.96	miles	AL-FL state line / its source	2016	L
AL03150105-1002-102	Coosa River (Weiss Lake)	L	Coosa	Cherokee	Swimming Fish & Wildlife	Pathogens (E. coli)	Sources outside state	6,567.86	acres	Spring Creek / AL-GA state line	2016	L
AL03150106-0803-100	Coosa River (Logan Martin Lake)	L	Coosa	St. Clair Talladega	Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	10,945.46	acres	Logan Martin Dam / Broken Arrow Creek	1998	*
AL03150106-0603-111	Coosa River (Logan Martin Lake)	L	Coosa	Calhoun St. Clair Talladega	Public Water Supply Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	1,449.31	acres	Broken Arrow Creek / Trout Creek	1998	*
AL03150106-0603-112	Coosa River (Logan Martin Lake)	L	Coosa	St. Clair Calhoun	Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	783.90	acres	Trout Creek / Neely Henry Dam	1998	*
AL03150106-0802-111	Clear Creek (Logan Martin Lake)	L	Coosa	Talladega	Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	624.28	acres	Coosa River / end of embayment	1998	*
AL03150106-0803-311	Easonville Creek (Logan Martin Lake)	L	Coosa	St. Clair	Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	1,260.19	acres	Coosa River / end of embayment	1998	*
AL03150106-0514-111	Choccolocco Creek (Logan Martin Lake)	L	Coosa	Talladega	Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	1,125.61	acres	Coosa River / end of embayment	2014	*

Assessment Unit ID	Waterbody Name	Type	River Basin	County	Uses	Causes	Sources	Size	Unit Type	Downstream / Upstream Locations	Year Listed	Priority
AL03150106-0605-211	Dye Creek (Logan Martin Lake)	L	Coosa	St. Clair	Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	144.97	acres	Coosa River / end of embayment	1998	*
AL03150106-0604-111	Blue Eye Creek (Logan Martin Lake)	L	Coosa	St. Clair	Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	305.45	acres	Coosa River / end of embayment	1998	*
AL03150106-0408-111	Cane Creek (Logan Martin Lake)	L	Coosa	Calhoun	Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	35.96	acres	Coosa River / end of embayment	1998	*
AL03150106-0108-111	Big Wills Creek (Neely Henry Lake)	L	Coosa	Etowah	Fish & Wildlife	Nutrients	Agriculture Industrial Municipal	514.85	acres	US Hwy 411 / end of embayment	2018	L
AL03150106-0107-111	Black Creek (Neely Henry Lake)	L	Coosa	Etowah	Fish & Wildlife	Nutrients	Agriculture Urban runoff/storm sewers	348.36	acres	US Highway 411 / end of embayment	2018	L
AL03150106-0108-102	Big Wills Creek	R	Coosa	Etowah	Swimming Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	24.76	miles	Neely Henry Lake / Little Sand Valley Creek	2018	L
AL03150106-0103-100	Big Wills Creek	R	Coosa	Etowah DeKalb	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Collection system failure Pasture grazing	51.63	miles	Little Sand Valley Creek / 100 yards below Allen Branch	2018	L
AL03150106-0408-100	Cane Creek	R	Coosa	Calhoun	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Collection system failure Pasture grazing	30.68	miles	Logan Martin Lake / its source	2018	L
AL03150106-0602-100	Broken Arrow Creek	R	Coosa	St. Clair	Fish & Wildlife	Siltation (habitat alteration)	Agriculture Pasture grazing	21.37	miles	Coosa River / its source	2010	L
AL03150106-0514-100	Choccolocco Creek	R	Coosa	Calhoun Talladega	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Pasture grazing	33.03	miles	Logan Martin Lake / UT from Boiling Spring	2018	L
AL03150106-0514-100	Choccolocco Creek	R	Coosa	Calhoun Talladega	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	33.03	miles	Logan Martin Lake / UT from Boiling Spring	2010	L
AL03150106-0507-102	Choccolocco Creek	R	Coosa	Calhoun	Public Water Supply Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	2.37	miles	UT from Boiling Spring / Hillabee Creek	2010	L
AL03150106-0507-102	Choccolocco Creek	R	Coosa	Calhoun	Public Water Supply Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	2.37	miles	UT from Boiling Spring / Hillabee Creek	1996	*
AL03150106-0806-100	Wolf Creek	R	Coosa	Shelby St. Clair	Fish & Wildlife	Siltation (habitat alteration)	Surface mining Urban development	16.70	miles	Kelly Creek / its source	2010	L
AL03150106-0806-100	Wolf Creek	R	Coosa	Shelby St. Clair	Fish & Wildlife	Turbidity	Surface mining Urban development	16.70	miles	Kelly Creek / its source	2010	L
AL03150106-0808-100	Kelly Creek	R	Coosa	Shelby St. Clair	Swimming Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	33.58	miles	Lay Lake / its source	2018	L
AL03150107-0106-100	Tallaseehatchee Creek	R	Coosa	Talladega	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	16.74	miles	Lay Lake / Howard dam	2018	L
AL03150107-0106-100	Tallaseehatchee Creek	R	Coosa	Talladega	Fish & Wildlife	Total dissolved solids	Industrial Municipal	16.74	miles	Lay Lake / Howard dam	2010	H
AL03150107-0104-100	Shirtee Creek	R	Coosa	Talladega	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Pasture grazing	4.94	miles	Tallaseehatchee Creek / its source	2018	L
AL03150107-0104-100	Shirtee Creek	R	Coosa	Talladega	Fish & Wildlife	Total dissolved solids	Industrial Municipal	4.94	miles	Tallaseehatchee Creek / its source	2010	H
AL03150107-0203-100	Weewoka Creek	R	Coosa	Talladega	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	18.32	miles	Tallaseehatchee Creek / its source	2018	L
AL03150107-0503-110	Coosa River (Lay Lake)	L	Coosa	Chilton Coosa Shelby Talladega	Public Water Supply Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	10,559.35	acres	Lay Dam / Southern RR Bridge	1996	*
AL03150107-0301-102	Coosa River (Lay Lake)	L	Coosa	Shelby Talladega	Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	803.88	acres	Southern RR Bridge / River Mile 89	1996	*
AL03150107-0301-102	Coosa River (Lay Lake)	L	Coosa	Shelby Talladega	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	803.88	acres	Southern RR Bridge / River Mile 89	2010	L
AL03150106-0810-102	Coosa River (Lay Lake)	L	Coosa	Shelby St. Clair Talladega	Public Water Supply Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	698.04	acres	River Mile 89 / Logan Martin Dam	1996	*
AL03150106-0810-102	Coosa River (Lay Lake)	L	Coosa	Shelby St. Clair Talladega	Public Water Supply Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	698.04	acres	River Mile 89 / Logan Martin Dam	2010	L
AL03150107-0406-111	Waxahatchee Creek (Lay Lake)	L	Coosa	Chilton Shelby	Public Water Supply Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	770.68	acres	Coosa River / end of embayment	1996	*

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Assessment Unit ID	Waterbody Name	Type	River Basin	County	Uses	Causes	Sources	Size	Unit Type	Downstream / Upstream Locations	Year Listed	Priority
AL03150107-0501-111	Peckerwood Creek (Lay Lake)	L	Coosa	Coosa Talladega	Public Water Supply Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	165.92	acres	Coosa River / end of embayment	1996	*
AL03150107-0304-111	Dry Branch (Lay Lake)	L	Coosa	Shelby	Public Water Supply Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	112.04	acres	Coosa River / end of embayment	1996	*
AL03150107-0205-111	Yellowleaf Creek (Lay Lake)	L	Coosa	Shelby	Public Water Supply Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	178.73	acres	Coosa River / end of embayment	1996	*
AL03150107-0106-111	Tallaseehatchee Creek (Lay Lake)	L	Coosa	Talladega	Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	13.46	acres	Coosa River / end of embayment	1996	*
AL03150107-0106-111	Tallaseehatchee Creek (Lay Lake)	L	Coosa	Talladega	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	13.46	acres	Coosa River / end of embayment	2010	L
AL03150106-0703-111	Talladega Creek (Lay Lake)	L	Coosa	Talladega	Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	60.66	acres	Coosa River / end of embayment	1996	*
AL03150106-0703-111	Talladega Creek (Lay Lake)	L	Coosa	Talladega	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	60.66	acres	Coosa River / end of embayment	2010	L
AL03150106-0808-111	Kelly Creek (Lay Lake)	L	Coosa	St. Clair	Public Water Supply Swimming Fish & Wildlife	Priority organics (PCBs)	Contaminated sediments	6.49	acres	Coosa River / end of embayment	1996	*
AL03150106-0808-111	Kelly Creek (Lay Lake)	L	Coosa	St. Clair	Public Water Supply Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	6.49	acres	Coosa River / end of embayment	2010	L
AL03150107-0405-100	Buxahatchee Creek	R	Coosa	Chilton Shelby	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Municipal	14.00	miles	Waxahatchee Creek / its source	2016	L
AL03150107-0801-100	Yellow Leaf Creek	R	Coosa	Chilton	Fish & Wildlife	Siltation (habitat alteration)	Agriculture	31.27	miles	Coosa River / its source	2010	L
AL03150107-0802-110	Walnut Creek	R	Coosa	Chilton	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Pasture grazing	15.66	miles	Mitchell Lake / its source	2018	L
AL03150107-0304-700	UT to Dry Branch	R	Coosa	Shelby	Fish & Wildlife	Nutrients	Municipal Urban runoff/storm sewers	1.58	miles	Dry Branch / its source	1996	L
AL03140301-0403-100	Feagin Creek	R	Escambia	Covington	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	7.76	miles	Gantt Lake / its source	2018	L
AL03140301-0404-111	Conecuh River (Gantt Lake)	L	Escambia	Covington	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	1,817.43	acres	Gantt Dam / extent of reservoir	2010	L
AL03140301-0405-101	Conecuh River (Point A Lake)	L	Escambia	Covington	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	610.56	acres	Point A Dam / extent of reservoir	2010	L
AL03140302-0506-101	Patsaliga Creek (Point A Lake)	L	Escambia	Covington	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	154.43	acres	Conecuh River / Buck Creek	2010	L
AL03140304-0506-300	Jernigan Mill Creek	R	Escambia	Escambia	Fish & Wildlife	Pathogens (E. coli)	On-site wastewater systems Pasture grazing	7.64	miles	Conecuh River / its source	2018	L
AL03140303-0704-100	Sepulga River	R	Escambia	Conecuh	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	14.48	miles	Conecuh River / Robinson Mill Creek	2010	L
AL03140304-0106-200	Sandy Creek	R	Escambia	Conecuh	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	5.76	miles	Mill Creek / its source	2018	L
AL03140304-0506-100	Conecuh River	R	Escambia	Escambia	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	12.70	miles	AL-FL state line / Mantle Branch	2004	L
AL03140304-0404-101	Murder Creek	R	Escambia	Escambia	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	8.45	miles	Conecuh River / Cedar Creek	2014	L
AL03140304-0404-200	Franklin Mill Creek	R	Escambia	Escambia	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	6.60	miles	Murder Creek / its source	2018	L
AL03140304-0305-101	Burnt Corn Creek	R	Escambia	Escambia	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	5.03	miles	Murder Creek / Sevenmile Creek	2010	L
AL03140304-0605-100	Little Escambia Creek	R	Escambia	Escambia	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	12.21	miles	AL-FL state line / Wild Fork Creek	2004	L
AL03140305-0102-100	Sizemore Creek	R	Escambia	Escambia	Swimming Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	14.28	miles	Big Escambia Creek / its source	2018	L
AL03140305-0302-100	Big Escambia Creek	R	Escambia	Escambia	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	17.03	miles	AL-FL state line / Big Spring Creek	2004	L
AL03170008-0402-110	Escatawpa River	R	Escatawpa	Mobile	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	70.66	miles	AL-MS state line / its source	2002	L
AL03170008-0502-110	Big Creek (Big Creek Lake)	L	Escatawpa	Mobile	Public Water Supply Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	2,724.87	acres	Big Creek Lake dam / Collins Creek	2008	L

Assessment Unit ID	Waterbody Name	Type	River Basin	County	Uses	Causes	Sources	Size	Unit Type	Downstream / Upstream Locations	Year Listed	Priority
AL03170008-0502-211	Hamilton Creek (Big Creek Lake)	L	Escatawpa	Mobile	Public Water Supply Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	583.14	acres	Big Creek / end of embayment	2008	L
AL03170008-0502-600	Boggy Branch	R	Escatawpa	Mobile	Fish & Wildlife	Metals (Iron)	Natural Wet weather discharge	3.62	miles	Big Creek Lake / its source	1998	L
AL03170008-0502-600	Boggy Branch	R	Escatawpa	Mobile	Fish & Wildlife	Metals (Lead)	Natural Wet weather discharge	3.62	miles	Big Creek Lake / its source	1998	L
AL03170008-0502-800	Collins Creek	R	Escatawpa	Mobile	Fish & Wildlife	Metals (Arsenic)	Unknown source	5.15	miles	Big Creek / its source	2006	M
AL03170009-0201-100	Mississippi Sound	E	Escatawpa	Mobile	Shellfish Harvesting Swimming Fish & Wildlife	Metals (Thallium)	Industrial	94.62	square miles	Segment classified for shellfish harvesting	2010	L
AL03170009-0201-100	Mississippi Sound	E	Escatawpa	Mobile	Shellfish Harvesting Swimming Fish & Wildlife	Pathogens (Enterococcus)	Urban runoff/storm sewers	94.62	square miles	Segment classified for shellfish harvesting	1998	L
AL03170009-0201-200	Portersville Bay	E	Escatawpa	Mobile	Shellfish Harvesting Swimming Fish & Wildlife	Pathogens (Enterococcus)	Municipal	18.81	square miles	Portersville Bay	1998	L
AL03170009-0201-300	Grand Bay	E	Escatawpa	Mobile	Shellfish Harvesting Swimming Fish & Wildlife	Pathogens (Enterococcus)	On-site wastewater systems	30.73	square miles	Grand Bay	2006	L
AL03160204-0403-112	Mobile River	R	Mobile	Baldwin Mobile	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	20.90	miles	Spanish River / Cold Creek	2000	L
AL03160204-0106-112	Mobile River	R	Mobile	Mobile	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	2.37	miles	Cold Creek / Barry Steam Plant	2014	L
AL03160204-0103-100	Mobile River	R	Mobile	Baldwin Mobile	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	5.72	miles	Tensaw River / its source	2014	L
AL03160204-0105-111	Cold Creek	R	Mobile	Mobile	Fish & Wildlife	Metals (Mercury)	Contaminated sediments	4.21	miles	Mobile River / Dam 1 1/2 miles west of US Highway 43	1996	L
AL03160204-0305-101	Chickasaw Creek	R	Mobile	Mobile	Limited Warmwater Fishery	Metals (Mercury)	Atmospheric deposition	4.43	miles	Mobile River / US Highway 43	2000	L
AL03160204-0305-102	Chickasaw Creek	R	Mobile	Mobile	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	6.64	miles	US Highway 43 / Mobile College	2000	L
AL03160204-0303-100	Chickasaw Creek	R	Mobile	Mobile	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	26.82	miles	Mobile College / its source	2000	L
AL03160204-0503-102	Bay Minette Creek	R	Mobile	Mobile	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	18.15	miles	Bay Minette / its source	2014	L
AL03160204-0504-300	Toulmins Spring Branch	R	Mobile	Mobile	Fish & Wildlife	Nutrients	Urban runoff/storm sewers	3.22	miles	Threemile Creek / its source	2008	L
AL03160204-0504-500	UT to Threemile Creek	R	Mobile	Mobile	Fish & Wildlife	Nutrients	Urban runoff/storm sewers	1.04	miles	Threemile Creek / its source	2008	L
AL03160204-0505-202	Tensaw River	R	Mobile	Baldwin	Outstanding Alabama Water Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	21.73	miles	Junction of Tensaw and Apalachee Rivers / Junction of Briar Lake	2002	L
AL03160204-0505-501	D'Olive Creek	R	Mobile	Baldwin	Fish & Wildlife	Siltation (habitat alteration)	Land development	0.51	miles	D'Olive Bay / Lake Forest dam	2008	M
AL03160204-0505-502	D'Olive Creek	R	Mobile	Baldwin	Fish & Wildlife	Siltation (habitat alteration)	Land development	4.57	miles	Lake Forest dam / its source	2008	M
AL03160204-0505-502	D'Olive Creek	R	Mobile	Baldwin	Fish & Wildlife	Pathogens (E. coli)	Collection system failure	4.57	miles	D'Olive Bay / its source	2018	L
AL03160204-0505-800	Joes Branch	R	Mobile	Baldwin	Fish & Wildlife	Siltation (habitat alteration)	Land development	1.57	miles	D'Olive Creek / its source	2008	M
AL03160204-0505-900	Tiawasee Creek	R	Mobile	Baldwin	Fish & Wildlife	Siltation (habitat alteration)	Land development	3.54	miles	D'Olive Creek / its source	2008	M
AL03160204-0505-905	UT to Tiawasee Creek	R	Mobile	Baldwin	Fish & Wildlife	Siltation (habitat alteration)	Land development	1.87	miles	Tiawasee Creek / its source	2008	M
AL03160204-0505-505	UT to D'Olive Creek	R	Mobile	Baldwin	Fish & Wildlife	Siltation (habitat alteration)	Land development	1.22	miles	D'Olive Creek / its source	2008	M
AL03160204-0202-200	Middle River	R	Mobile	Baldwin Mobile	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	9.72	miles	Tensaw River (RM 20.6) / Tensaw River (RM 37.7)	2014	L
AL03160204-0202-300	Mifflin Lake	E	Mobile	Baldwin	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	0.73	square miles	Tensaw River / its source	2014	L

Assessment Unit ID	Waterbody Name	Type	River Basin	County	Uses	Causes	Sources	Size	Unit Type	Downstream/ Upstream Locations	Year Listed	Priority
AL03160205-0203-110	Magnolia River	R	Mobile	Baldwin	Outstanding Alabama Water Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	12.41	miles	Weeks Bay / its source	2014	L
AL03160205-0204-402	Turkey Branch	R	Mobile	Baldwin	Swimming Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	5.16	miles	Baldwin CR 181 / its source	2018	L
AL03160205-0300-102	Mobile Bay	E	Mobile	Mobile	Shellfish Harvesting Fish & Wildlife	Pathogens (Enterococcus)	Urban runoff/storm sewers	168.29	square miles	Mobile Bay south of a line extending east from East Fowl River to lighted beacon FL2 and then to lighted beacon FLG 4 and then northeast to Daphne, except out 1000 feet offshore from Mullet Point to Ragged Point	1998	L
AL03160205-0300-202	Bon Secour Bay	E	Mobile	Baldwin	Shellfish Harvesting Swimming Fish & Wildlife	Pathogens (Enterococcus)	On-site wastewater systems Urban runoff/storm sewers	102.96	square miles	Bon Secour Bay east and south of a line from Mullet Point to Engineers Point, except out 1000 feet offshore from Fish River Point to Mullet Point	1998	L
AL03160205-0102-110	Halls Mill Creek	R	Mobile	Mobile	Fish & Wildlife	Siltation (habitat alteration)	Land development	11.30	miles	Dog River / its source	2012	L
AL03160205-0105-100	Deer River	R	Mobile	Mobile	Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Collection system failure Urban runoff/storm sewers	1.02	miles	Mobile Bay / its source	2006	L
AL03160205-0105-300	Middle Fork Deer River	R	Mobile	Mobile	Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Collection system failure Urban runoff/storm sewers	2.47	miles	Deer River / its source	2006	L
AL03160205-0104-110	Fowl River	R	Mobile	Mobile	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	20.56	miles	Mobile Bay / its source	2000	L
AL03160205-0202-210	Polecat Creek	R	Mobile	Baldwin	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	7.89	miles	Fish River / its source	2006	L
AL03160205-0202-510	Baker Branch	R	Mobile	Baldwin	Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Pasture grazing	6.15	miles	Polecat Creek / its source	2006	L
AL03160205-0204-112	Fish River	R	Mobile	Baldwin	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	30.01	miles	Weeks Bay / its source	1998	L
AL03160205-0204-700	Cowpen Creek	R	Mobile	Baldwin	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	7.12	miles	Fish River / its source	2008	L
AL03160205-0205-702	Fly Creek	R	Mobile	Baldwin	Swimming Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	3.32	miles	10 feet above MSL / its source	2018	L
AL03160205-0206-101	Bon Secour River	R	Mobile	Baldwin	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	9.12	miles	Bon Secour Bay / One mile upstream from first bridge above its mouth	2006	L
AL03160205-0206-102	Bon Secour River	R	Mobile	Baldwin	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	4.38	miles	One mile upstream from first bridge above its mouth / its source	2006	L
AL03160205-0206-102	Bon Secour River	R	Mobile	Baldwin	Swimming Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	4.38	miles	One mile upstream from first bridge above its mouth / its source	2018	L
AL03160205-0208-100	Oyster Bay	E	Mobile	Baldwin	Shellfish Harvesting Fish & Wildlife	Pathogens (Enterococcus)	Unknown source	0.95	square miles	Oyster Bay	2006	L
AL-Gulf-of-Mexico-1	Gulf of Mexico	E	Mobile	Baldwin Mobile	Shellfish Harvesting Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	205.77	square miles	Mississippi / Florida	1998	L
AL-Gulf-of-Mexico-2	Pelican Bay	E	Mobile	Mobile	Shellfish Harvesting Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	0.50	square miles	out to 1000 feet offshore from Dauphin Beach / out to 1000 feet offshore of Pelican Point	1998	L
AL-Gulf-of-Mexico-2	Pelican Bay	E	Mobile	Mobile	Shellfish Harvesting Swimming Fish & Wildlife	Pathogens (Enterococcus)	Unknown source	0.50	square miles	out to 1000 feet offshore from Dauphin Beach / out to 1000 feet offshore of Pelican Point	2018	L
AL03140106-0203-100	Dyas Creek	R	Perdido	Baldwin	Swimming Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	18.34	miles	Perdido River / its source	2018	L
AL03140106-0302-101	Brushy Creek	R	Perdido	Escambia	Fish & Wildlife	Metals (Lead)	Industrial Municipal	0.22	miles	AL-FL state line / Boggy Branch	2006	L

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AL03140106-0302-201	Boggy Branch	R	Perdido	Escambia	Fish & Wildlife	Metals (Mercury)	Industrial Municipal	1.59	miles	Brushy Creek / Atmore WWTP	2008	L
AL03140106-0302-202	Boggy Branch	R	Perdido	Escambia	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Urban runoff/storm sewers	0.14	miles	Atmore WWTP / Masland Carpets WWTP	2016	L
AL03140106-0302-203	Boggy Branch	R	Perdido	Escambia	Fish & Wildlife	Metals (lead)	Urban runoff/storm sewers	0.95	miles	Masland Carpets WWTP / its source	2016	L
AL03140106-0302-203	Boggy Branch	R	Perdido	Escambia	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Urban runoff/storm sewers	0.95	miles	Masland Carpets WWTP / its source	2016	L
AL03140106-0507-100	Styx River	R	Perdido	Baldwin	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	18.52	miles	Perdido River / Hollinger Creek	2002	L
AL03140106-0603-101	Blackwater River	R	Perdido	Baldwin	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	3.11	miles	Perdido River / Narrow Gap Creek	2004	L
AL03140106-0703-100	Perdido River	R	Perdido	Baldwin	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	21.93	miles	Perdido Bay / Jacks Branch	2006	L
AL03140107-0204-302	Perdido Bay	E	Perdido	Baldwin	Shellfish Harvesting Swimming Fish & Wildlife	Pathogens (Enterococcus)	Collection system failure On-site wastewater systems	1.29	square miles	Suarez Point / Lillian Bridge	2012	L
AL03140107-0103-100	Perdido Bay	E	Perdido	Baldwin	Shellfish Harvesting Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	4.21	square miles	Lillian Bridge / its source	2016	L
AL03150108-0405-102	Tallapoosa River	R	Tallapoosa	Cleburne	Outstanding Alabama Water Fish & Wildlife	Pathogens (E. coli)	Pasture grazing Sources outside state	31.60	miles	Cane Creek / AL-GA state line	2016	L
AL03150109-0105-102	Tallapoosa River (R L Harris Lake)	L	Tallapoosa	Randolph	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	5,356.95	acres	R L Harris dam / Little Tallapoosa River	2018	L
AL03150109-0303-100	High Pine Creek	R	Tallapoosa	Randolph Chambers	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Pasture grazing	13.74	miles	Tallapoosa River / Highway 431	2018	L
AL03150109-0308-100	Emuckfaw Creek	R	Tallapoosa	Clay Tallapoosa	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	23.51	miles	Tallapoosa River / its source	2018	L
AL03150109-0803-301	Sugar Creek (Lake Martin)	L	Tallapoosa	Tallapoosa	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	58.93	acres	Elkahatchee Creek / end of embayment	2012	L
AL03150110-0104-104	Sougahatchee Creek	R	Tallapoosa	Lee Macon Tallapoosa	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Pasture grazing	33.42	miles	Sycamore Creek / Sougahatchee Lake dam	2018	L
AL03150110-0104-101	Sougahatchee Creek (Yates Lake)	L	Tallapoosa	Tallapoosa	Public Water Supply Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	203.78	acres	Tallapoosa River / end of embayment	2016	L
AL03150110-0402-101	Channahatchee Creek (Yates Lake)	L	Tallapoosa	Elmore	Public Water Supply Swimming Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Nonpoint source runoff	62.63	acres	Tallapoosa River / end of embayment	2012	L
AL03150110-0402-102	Channahatchee Creek	R	Tallapoosa	Elmore	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	17.31	miles	Yates Lake / its source	2018	L
AL03150110-0202-300	Moores Mill Creek	R	Tallapoosa	Lee	Swimming Fish & Wildlife	Siltation (habitat alteration)	Land development Urban runoff/storm sewers	10.51	miles	Chewacla Creek / its source	2000	L
AL03150110-0304-100	Uphapee Creek	R	Tallapoosa	Macon	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Pasture grazing	21.16	miles	Tallapoosa River / its source	2018	L
AL03150110-0406-102	Tallapoosa River (Thurlow Lake)	L	Tallapoosa	Elmore Tallapoosa	Public Water Supply Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	538.60	acres	Thurlow dam / Yates dam	2012	L
AL03150110-0406-103	Tallapoosa River (Yates Lake)	L	Tallapoosa	Elmore Tallapoosa	Public Water Supply Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	1,595.89	acres	Yates dam / Martin dam	2018	L
AL03150110-0406-200	Mill Creek	R	Tallapoosa	Macon Tallapoosa	Fish & Wildlife	Siltation (habitat alteration)	Agriculture Pasture grazing	9.16	miles	Tallapoosa River / its source	2010	L
AL03150110-0406-200	Mill Creek	R	Tallapoosa	Macon Tallapoosa	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	9.16	miles	Tallapoosa River / its source	2018	L
AL03150110-0504-101	Calebee Creek	R	Tallapoosa	Macon	Fish & Wildlife	Siltation (habitat alteration)	Agriculture Surface mining	10.26	miles	Tallapoosa River / Macon County Road 9	1998	M
AL03150110-0604-100	Cubahatchee Creek	R	Tallapoosa	Macon	Swimming Fish & Wildlife	Siltation (habitat alteration)	Agriculture Surface mining	22.07	miles	Tallapoosa River / Coon Hop Creek	1998	M
AL03150110-0603-102	Cubahatchee Creek	R	Tallapoosa	Bullock Macon	Swimming Fish & Wildlife	Siltation (habitat alteration)	Agriculture Surface mining	22.37	miles	Coon Hop Creek / its source	1998	M
AL03150110-0702-100	Bughall Creek	R	Tallapoosa	Bullock Macon	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	31.44	miles	Old Town Creek / its source	2018	L

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AL03150110-0804-101	Line Creek	R	Tallapoosa	Macon Montgomery	Fish & Wildlife	Siltation (habitat alteration)	Agriculture Surface mining	10.29	miles	Tallapoosa River / Johnsons Creek	1998	M
AL03150110-0804-102	Line Creek	R	Tallapoosa	Macon Montgomery	Fish & Wildlife	Siltation (habitat alteration)	Agriculture Surface mining	5.51	miles	Johnsons Creek / Panther Creek	1998	M
AL03150110-0905-112	Tallapoosa River	R	Tallapoosa	Elmore Montgomery	Public Water Supply Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	10.07	miles	US Highway 231 / Jenkins Creek	2012	L
AL03150110-0904-300	Jenkins Creek	R	Tallapoosa	Montgomery	Fish & Wildlife	Siltation (habitat alteration)	Urban development	13.48	miles	Tallapoosa River / its source	2010	M
AL06030001-0204-111	Widows Creek (Lake Guntersville)	L	Tennessee	Jackson	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	97.65	acres	Tennessee River / end of embayment	2012	L
AL06030001-0204-101	Widows Creek	R	Tennessee	Jackson	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	1.29	miles	Lake Guntersville / Alabama Highway 277	2012	L
AL06030001-0205-102	Tennessee River (Lake Guntersville)	L	Tennessee	Jackson	Public Water Supply Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	2,400.28	acres	Pump Spring Branch / AL-TN state line	2012	L
AL06030001-0306-100	Little Coon Creek	R	Tennessee	Jackson	Fish & Wildlife	Siltation (habitat alteration)	Non-irrigated crop production Pasture grazing	16.30	miles	Coon Creek / AL-TN state line	2012	H
AL06030001-0202-500	Higdon Creek	R	Tennessee	DeKalb Jackson	Fish & Wildlife	Siltation (habitat alteration)	Pasture grazing Silviculture activities	4.16	miles	Miller Creek / AL-GA state line	2012	L
AL06030001-0705-111	Town Creek (Lake Guntersville)	L	Tennessee	Marshall	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	1,584.07	acres	Tennessee River / end of embayment	2016	L
AL06030001-0801-100	Cross Creek	R	Tennessee	DeKalb	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	7.53	miles	Short Creek / its source	2018	L
AL06030001-0904-101	Browns Creek (Lake Guntersville)	L	Tennessee	Marshall	Public Water Supply Swimming Fish & Wildlife	Nutrients	Agriculture	5,915.66	acres	Tennessee River / end of embayment	2012	L
AL06030001-0904-102	Browns Creek	R	Tennessee	Marshall	Fish & Wildlife	Nutrients	Agriculture Mining	11.86	miles	Lake Guntersville / its source	2012	L
AL06030001-0904-102	Browns Creek	R	Tennessee	Marshall	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	11.86	miles	Lake Guntersville / its source	2018	L
AL06030002-0106-101	Guess Creek	R	Tennessee	Jackson	Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Pasture grazing Unknown source	11.08	miles	Paint Rock River / Bee Branch	1998	L
AL06030002-0106-101	Guess Creek	R	Tennessee	Jackson	Fish & Wildlife	Unknown toxicity	Pasture grazing Unknown source	11.08	miles	Paint Rock River / Bee Branch	1998	L
AL06030002-0201-100	Clear Creek	R	Tennessee	Jackson	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	6.43	miles	Paint Rock River / its source	2018	L
AL06030002-0305-100	Beaverdam Creek	R	Tennessee	Madison	Fish & Wildlife	Siltation (habitat alteration)	Land development Non-irrigated crop production	22.14	miles	Brier Fork / its source	1998	L
AL06030002-0306-110	Brier Fork	R	Tennessee	Madison	Fish & Wildlife	Siltation (habitat alteration)	Land development Non-irrigated crop production	21.89	miles	Flint River / AL-TN state line	1998	L
AL06030002-0403-112	Flint River	R	Tennessee	Madison	Fish & Wildlife	Turbidity	Agriculture Land development	15.32	miles	Alabama Highway 72 / Mountain Fork	2006	L
AL06030002-0403-302	Chase Creek	R	Tennessee	Madison	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	2.14	miles	Acuff Spring / Alabama Highway 72	2018	L
AL06030002-0503-102	Huntsville Spring Branch	R	Tennessee	Madison	Fish & Wildlife	Metals (Arsenic)	Urban runoff/storm sewers	1.98	miles	Johnson Road (Huntsville Field) / Broglan Branch	2006	L
AL06030002-0601-300	Hughes Creek	R	Tennessee	Marshall Morgan	Fish & Wildlife	Siltation (habitat alteration)	Agriculture	2.87	miles	Cotaco Creek / its source	1998	H
AL06030002-0603-600	Mill Pond Creek	R	Tennessee	Marshall	Fish & Wildlife	Siltation (habitat alteration)	Agriculture	1.29	miles	Hog Jaw Creek / its source	1998	L
AL06030002-0602-102	West Fork Cotaco Creek	R	Tennessee	Morgan	Fish & Wildlife	Siltation (habitat alteration)	Agriculture	8.12	miles	Alabama Highway 67 / Frost Creek	1998	H
AL06030002-0902-100	Tennessee River (Wheeler Lake)	L	Tennessee	Madison Marshall	Swimming Fish & Wildlife	Nutrients	Agriculture	1,345.77	acres	Flint River / Guntersville dam	2014	L
AL06030002-0904-100	Tennessee River (Wheeler Lake)	L	Tennessee	Madison Marshall Morgan	Public Water Supply Fish & Wildlife	Nutrients	Agriculture	2,779.95	acres	Indian Creek / Flint River	2014	L
AL06030002-0906-102	Tennessee River (Wheeler Lake)	L	Tennessee	Madison Marshall	Public Water Supply Swimming Fish & Wildlife	Nutrients	Agriculture	334.49	acres	Cotaco Creek / Indian Creek	2014	L
AL06030002-1102-102	Tennessee River (Wheeler Lake)	L	Tennessee	Limestone Morgan	Public Water Supply Swimming Fish & Wildlife	Nutrients	Agriculture	2,587.33	acres	US Highway 31 / Flint Creek	2014	L

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AL06030002-1102-103	Tennessee River (Wheeler Lake)	L	Tennessee	Limestone Madison Morgan	Swimming Fish & Wildlife	Nutrients	Agriculture	4,271.34	acres	Flint Creek / Cotaco Creek	2014	L
AL06030002-1107-102	Tennessee River (Wheeler Lake)	L	Tennessee	Lawrence Limestone Morgan	Swimming Fish & Wildlife	Nutrients	Agriculture	19,221.29	acres	five miles upstream of Elk River / US Highway 31	2014	L
AL06030002-1107-102	Tennessee River (Wheeler Lake)	L	Tennessee	Lawrence Limestone Morgan	Swimming Fish & Wildlife	PFOS	Industrial	19,221.29	acres	five miles upstream of Elk River / US Highway 31	2014	L
AL06030002-1205-100	Tennessee River (Wheeler Lake)	L	Tennessee	Lawrence Lauderdale Limestone	Public Water Supply Swimming Fish & Wildlife	Nutrients	Agriculture	13,441.12	acres	Wheeler dam / five miles upstream of Elk River	2014	L
AL06030002-0906-600	Limestone Creek (Wheeler Lake)	L	Tennessee	Limestone	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	2,338.94	acres	Tennessee River / end of embayment	2012	L
AL06030002-0501-110	Indian Creek	R	Tennessee	Madison	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Pasture grazing Urban runoff/ storm sewers	6.49	miles	US Highway 72 / its source	2018	L
AL06030002-0505-102	Indian Creek	R	Tennessee	Madison	Fish & Wildlife	Pathogens (E. coli)	Collection system failure Pasture grazing Urban runoff/ storm sewers	10.37	miles	Martin Road (Redstone Arsenal) / US Highway 72	2018	L
AL06030002-0505-111	Indian Creek (Wheeler Lake)	L	Tennessee	Madison	Public Water Supply Fish & Wildlife	Nutrients	Agriculture	257.28	acres	Tennessee River / end of embayment	2014	L
AL06030002-1014-101	Flint Creek (Wheeler Lake)	L	Tennessee	Morgan	Fish & Wildlife	Nutrients	Agriculture	851.41	acres	Tennessee River / Alabama Highway 67	2014	L
AL06030002-1014-103	Flint Creek	R	Tennessee	Morgan	Public Water Supply Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	9.10	miles	L&N Railroad / Alabama Highway 36	2012	L
AL06030002-0606-111	Cotaco Creek (Wheeler Lake)	L	Tennessee	Morgan	Swimming Fish & Wildlife	Nutrients	Agriculture	492.48	acres	Tennessee River / end of embayment	2014	L
AL06030002-1101-111	Swan Creek (Wheeler Lake)	L	Tennessee	Limestone	Swimming Fish & Wildlife	Nutrients	Agriculture	772.38	acres	Tennessee River / end of embayment	2014	L
AL06030002-1101-101	Swan Creek	R	Tennessee	Limestone	Fish & Wildlife	Nutrients	Agriculture Municipal Urban runoff/storm sewers	5.03	miles	Wheeler Lake / Alabama Highway 24	2008	L
AL06030002-1102-211	Bakers Creek (Wheeler Lake)	L	Tennessee	Limestone	Swimming Fish & Wildlife	Nutrients	Agriculture	157.02	acres	Tennessee River / end of embayment	2014	L
AL06030002-1102-211	Bakers Creek (Wheeler Lake)	L	Tennessee	Limestone	Swimming Fish & Wildlife	PFOS	Industrial	157.02	acres	Tennessee River / end of embayment	2016	L
AL06030002-1102-311	Dry Branch (Wheeler Lake)	L	Tennessee	Limestone	Swimming Fish & Wildlife	Nutrients	Agriculture	84.15	acres	Tennessee River / end of embayment	2014	L
AL06030002-1103-111	Round Island Creek (Wheeler Lake)	L	Tennessee	Limestone	Swimming Fish & Wildlife	Nutrients	Agriculture	408.15	acres	Tennessee River / end of embayment	2014	L
AL06030002-1103-111	Round Island Creek (Wheeler Lake)	L	Tennessee	Limestone	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	408.15	acres	Tennessee River / end of embayment	2016	L
AL06030002-1201-111	Spring Creek (Wheeler Lake)	L	Tennessee	Lawrence	Public Water Supply Swimming Fish & Wildlife	Nutrients	Agriculture	1,111.87	acres	Tennessee River / end of embayment	2014	L
AL06030002-1202-200	Neeley Branch	R	Tennessee	Lauderdale	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	3.61	miles	First Creek / its source	2018	L
AL06030002-1204-101	Second Creek (Wheeler Lake)	L	Tennessee	Lauderdale	Swimming Fish & Wildlife	Nutrients	Agriculture	610.22	acres	Tennessee River / end of embayment	2014	L
AL06030004-0404-102	Anderson Creek	R	Tennessee	Lauderdale	Fish & Wildlife	Siltation (habitat alteration)	Non-irrigated crop production Pasture grazing	9.31	miles	Snake Road bridge / its source	1998	L
AL06030004-0405-101	Elk River (Wheeler Lake)	L	Tennessee	Lauderdale Limestone	Swimming Fish & Wildlife	pH	Non-irrigated crop production Pasture grazing	1,569.21	acres	Tennessee River / Anderson Creek	1996	H
AL06030004-0405-101	Elk River (Wheeler Lake)	L	Tennessee	Lauderdale Limestone	Swimming Fish & Wildlife	Nutrients	Non-irrigated crop production Pasture grazing	1,569.21	acres	Tennessee River / Anderson Creek	2004	H
AL06030005-0301-200	Chandelower Creek	R	Tennessee	Colbert	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	5.95	miles	Rock Creek / its source	2018	L
AL06030005-0801-100	Tennessee River (Wilson Lake)	L	Tennessee	Colbert Lauderdale Lawrence	Public Water Supply Swimming Fish & Wildlife	Nutrients	Agriculture	13,363.37	acres	Wilson dam / Wheeler dam	2016	L
AL06030005-0105-111	Big Nance Creek (Wilson Lake)	L	Tennessee	Lawrence	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	44.57	acres	Tennessee River / end of embayment	2016	L

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AL06030005-0105-100	Big Nance Creek	R	Tennessee	Lawrence	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	24.75	miles	Wilson Lake / its source	2012	L
AL06030005-0801-201	McKiernan Creek (Wilson Lake)	L	Tennessee	Colbert	Public Water Supply Swimming Fish & Wildlife	Siltation (habitat alteration)	Agriculture	212.45	acres	Tennessee River / end of embayment	1998	L
AL06030005-0802-100	Pond Creek	R	Tennessee	Colbert	Agricultural & Industrial	Organic enrichment (CBOD, NBOD)	Non-irrigated crop production Urban runoff/storm sewers Natural	12.43	miles	Tennessee River / its source	1996	L
AL06030005-0802-100	Pond Creek	R	Tennessee	Colbert	Agricultural & Industrial	Metals (Arsenic)	Non-irrigated crop production Urban runoff/storm sewers Natural	12.43	miles	Tennessee River / its source	2006	L
AL06030005-0802-100	Pond Creek	R	Tennessee	Colbert	Agricultural & Industrial	Metals (Cyanide)	Non-irrigated crop production Urban runoff/storm sewers Natural	12.43	miles	Tennessee River / its source	2006	L
AL06030005-0802-100	Pond Creek	R	Tennessee	Colbert	Agricultural & Industrial	Metals (Mercury)	Non-irrigated crop production Urban runoff/storm sewers Natural	12.43	miles	Tennessee River / its source	2006	L
AL06030005-0803-400	Sweetwater Creek	R	Tennessee	Lauderdale	Fish & Wildlife	Habitat alteration	Channelization Streambank modification	4.41	miles	Tennessee River (Florence Canal) / its source	2016	L
AL06030005-0808-103	Tennessee River (Pickwick Lake)	L	Tennessee	Colbert Lauderdale	Fish & Wildlife	Nutrients	Agriculture	2,424.33	acres	lower end of Seven Mile Island / Sheffield Water Intake	2014	L
AL06030005-0808-104	Tennessee River (Pickwick Lake)	L	Tennessee	Colbert Lauderdale	Public Water Supply Fish & Wildlife	Nutrients	Agriculture	1,170.03	acres	Sheffield Water Intake / Wilson Dam	2014	L
AL06030005-1203-100	Tennessee River (Pickwick Lake)	L	Tennessee	Colbert Lauderdale	Public Water Supply Swimming Fish & Wildlife	Nutrients	Agriculture	19,370.33	acres	AL-TN state line / lower end of Seven Mile Island	2014	L
AL06030005-0605-111	Cypress Creek (Pickwick Lake)	L	Tennessee	Lauderdale	Public Water Supply Fish & Wildlife	Nutrients	Agriculture	57.00	acres	Tennessee River / end of embayment	2014	L
AL06030005-0605-111	Cypress Creek (Pickwick Lake)	L	Tennessee	Lauderdale	Public Water Supply Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	57.00	acres	Tennessee River / end of embayment	2016	L
AL06030005-0703-111	Spring Creek (Pickwick Lake)	L	Tennessee	Colbert	Fish & Wildlife	Nutrients	Agriculture	18.34	acres	Tennessee River / end of embayment	2014	L
AL06030005-0807-111	Cane Creek (Pickwick Lake)	L	Tennessee	Colbert	Public Water Supply Swimming Fish & Wildlife	Nutrients	Agriculture	41.43	acres	Tennessee River / end of embayment	2014	L
AL06030005-0902-111	Second Creek (Pickwick Lake)	L	Tennessee	Lauderdale	Public Water Supply Swimming Fish & Wildlife	Nutrients	Agriculture	677.22	acres	Tennessee River / end of embayment	2014	L
AL06030006-0102-700	Little Dice Branch	R	Tennessee	Franklin	Fish & Wildlife	Siltation (habitat alteration)	Surface mining-abandoned	3.83	miles	Bear Creek / its source	1998	L
AL06030006-0307-111	Bear Creek (Pickwick Lake)	L	Tennessee	Colbert	Swimming Fish & Wildlife	Nutrients	Agriculture	5,811.82	acres	Tennessee River / end of embayment	2014	L
AL06030006-0104-101	Bear Creek (Bear Creek Lake)	L	Tennessee	Franklin	Public Water Supply Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	653.54	acres	Bear Creek Lake dam / Alabama Highway 187	2006	L
AL06030006-0104-102	Bear Creek	R	Tennessee	Franklin Marion	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	22.31	miles	Alabama Highway 187 / Mill Creek	2014	L
AL06030006-0103-104	Bear Creek (Upper Bear Creek Lake)	L	Tennessee	Franklin Marion Winston	Public Water Supply Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	1,462.58	acres	Upper Bear Creek Dam / Pretty Branch	2008	L
AL06030006-0102-102	Bear Creek (Upper Bear Creek Lake)	L	Tennessee	Franklin Winston	Public Water Supply Swimming Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Agriculture	249.44	acres	Pretty Branch / Alabama Hwy 243	2016	L
AL06030006-0201-900	Harris Creek	R	Tennessee	Franklin	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	5.99	miles	Mud Creek / its source	2018	L
AL06030006-0203-101	Cedar Creek (Cedar Creek Lake)	L	Tennessee	Franklin	Public Water Supply Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	4,063.07	acres	Cedar Creek dam / extent of reservoir	2012	L
AL06030006-0205-111	Little Bear Creek (Little Bear Creek Lake)	L	Tennessee	Franklin	Public Water Supply Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	1,435.05	acres	Little Bear Creek Dam / Scott Branch	2012	L

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AL06030006-0304-102	Bear Creek	R	Tennessee	Colbert	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	10.12	miles	Pickwick Lake / AL-MS state line	2016	L
AL06030006-0304-500	Rock Creek	R	Tennessee	Colbert	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	20.74	miles	Bear Creek / its source	2018	L
AL03160103-0201-102	Beaver Creek	R	Tombigbee	Marion	Public Water Supply Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	6.91	miles	US Hwy 78 / its source	2018	L
AL03160105-0204-102	Luxapallila Creek	R	Tombigbee	Fayette Lamar	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing Municipal	25.25	miles	AL-MS state line / Fayette County Road 37	2016	L
AL03160105-0201-103	Luxapallila Creek	R	Tombigbee	Fayette Marion	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Collection system failure Pasture grazing	10.52	miles	County road crossing approximately 6 miles upstream from Alabama Highway 18 / US Highway 78	2018	L
AL03160105-0101-102	Luxapallila Creek	R	Tombigbee	Marion	Public Water Supply Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	9.53	miles	US Highway 78 / its source	2018	L
AL03160106-0504-100	Bogue Chitto	R	Tombigbee	Pickens	Fish & Wildlife	Nutrients	Agriculture	5.42	miles	Tombigbee River / AL-MS state line	2014	L
AL03160106-0504-111	Bogue Chitto (Gainesville Lake)	L	Tombigbee	Pickens	Swimming Fish & Wildlife	Nutrients	Agriculture	5.42	acres	Tombigbee River / end of embayment	2018	L
AL03160106-0504-100	Bogue Chitto	R	Tombigbee	Pickens	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	5.42	miles	Tombigbee River / AL-MS state line	2018	L
AL03160107-0306-101	Sipsey River (Gainesville Lake)	L	Tombigbee	Greene Pickens	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	383.92	acres	Tombigbee River / end of embayment	2010	L
AL03160108-1005-100	Bodka Creek	R	Tombigbee	Sumter	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	17.45	miles	Noxubee River / AL-MS state line	2018	L
AL03160108-1102-100	Noxubee River	R	Tombigbee	Sumter	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	23.99	miles	Tombigbee River / AL-MS state line	2016	L
AL03160201-0401-102	Tombigbee River (Demopolis Lake)	L	Tombigbee	Marengo Sumter	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	545.48	acres	Demopolis Lock and Dam / Black Warrior River	2018	L
AL03160201-0401-103	Tombigbee River (Coffeeville Lake)	L	Tombigbee	Marengo Sumter	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	668.76	acres	Sucarnoochee River / Demopolis Lock and Dam	2012	L
AL03160201-0504-200	Clear Creek	R	Tombigbee	Choctaw	Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	17.25	miles	Yantley Creek / its source	2018	L
AL03160201-0604-100	Horse Creek	R	Tombigbee	Marengo Clarke	Swimming Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	44.52	miles	Coffeeville Lake / its source	2018	L
AL03160202-0703-111	Sucarnoochee River (Coffeeville Lake)	L	Tombigbee	Sumter	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	10.81	acres	Tombigbee River / end of embayment	2012	L
AL03160203-0205-100	Salitpa Creek	R	Tombigbee	Clarke	Swimming Fish & Wildlife	Pathogens (E. coli)	Pasture grazing	43.34	miles	Tombigbee River / its source	2016	L
AL03160203-0903-102	Tombigbee River	R	Tombigbee	Clarke Washington	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	7.83	miles	Bassetts Creek / 1/2 mile downstream of Southern Railway Crossing	2016	L
AL03160203-1103-101	Tombigbee River	R	Tombigbee	Baldwin Clarke Mobile Washington	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	11.89	miles	Mobile River / upper end of Bilbo Island	2012	L
AL03160203-1103-102	Tombigbee River	R	Tombigbee	Clarke Washington	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition Contaminated sediments	3.75	miles	Upper end of Bilbo Island / Olin Basin canal	2004	L
AL03160203-1103-700	Bilbo Creek	R	Tombigbee	Washington	Swimming Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Unknown source	30.74	miles	Tombigbee River / its source	2004	L
AL03160203-1103-700	Bilbo Creek	R	Tombigbee	Washington	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	30.74	miles	Tombigbee River / its source	2008	L
AL03160203-1103-800	Olin Basin	L	Tombigbee	Washington	Fish & Wildlife	Metals (Mercury)	Contaminated sediments	85.73	acres	all of Olin Basin	1996	L
AL03140103-0102-102	Lightwood Knot Creek (Lake Frank Jackson)	L	Yellow	Covington	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	956.26	acres	Frank Jackson Lake dam / extent of reservoir	2010	L
AL03140103-0102-700	UT to Lake Frank Jackson 3-C	R	Yellow	Covington	Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Animal feeding operations Pasture grazing	1.05	miles	Lake Frank Jackson / its source	1998	L
AL03140103-0102-800	UT to Lake Frank Jackson 2-S	R	Yellow	Covington	Fish & Wildlife	Organic enrichment (CBOD, NBOD)	Animal feeding operations Pasture grazing	1.77	miles	Lake Frank Jackson / its source	1998	L
AL03140103-0203-100	Five Runs Creek	R	Yellow	Covington	Fish & Wildlife	Pathogens (E. coli)	Animal feeding operations Pasture grazing	30.72	miles	Yellow River / its source	2018	L
AL03140103-0402-100	Yellow River	R	Yellow	Covington	Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	14.87	miles	AL-FL state line / North Creek	2004	L

2018 Alabama Draft §303(d) List

Assessment Unit ID	Waterbody Name	Type	River Basin	County	Uses	Causes	Sources	Size	Unit Type	Downstream / Upstream Locations	Year Listed	Priority
AL03140103-0601-300	Lake Jackson	L	Yellow	Covington	Swimming Fish & Wildlife	Metals (Mercury)	Atmospheric deposition	415.46	acres	Within Florala and north of the Alabama-Florida state line	2010	L

* TMDL development for this pollutant is to be determined based upon ongoing RCRA/CERCLA program activities.