The Water Works and Sewer Board of the City of Birmingham

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Cahaba River/Lake Purdy Watershed Protection Policy

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1 Rationale and Purpose

A Policy requiring approval for development in the Cahaba River/Lake Purdy Watershed, as delineated on the map in Appendix A, in order to manage/control pollution from erosion, wastewater disposal, storm water runoff and use of toxic or hazardous substances in said Watershed, and in order to protect the public water supply.

The health, welfare and economic well-being of the citizens and businesses in the Birmingham, Alabama Metropolitan Area is inextricably tied to the quality and quantity of the source waters in the Cahaba River/Lake Purdy Watershed located in Jefferson, Shelby and St. Clair Counties. This source of water supply faces a continuing threat from the cumulative and episodic impacts of pollution sources generated by certain land uses and activities in the watershed.

The Cahaba River/Lake Purdy Watershed supplies a substantial amount of raw water for drinking and other public uses in addition to industrial uses. High impact land uses and unmanaged development can contribute to the degradation of water quality of Cahaba River/Lake Purdy both directly and indirectly through the degradation of contributing waters. Conversely, low impact uses and responsibly planned and managed development can ensure the safety of this public water supply. Low impact land uses, such as maintenance of undeveloped buffers adjacent to streams and reservoirs offer the following benefits:

- Maintenance and aiding the management of the chemical, physical, and biological integrity of the water resources.
- Filtration of nutrients and toxics.
- Reduction of erosion and serving to minimize sediment entering streams.
- Contribution to maintaining stable stream banks.
- Supporting infiltration of storm water runoff.
- Helping sustain base flow for streams.
- Providing a portion of the organic matter that is a source of food and energy for the aquatic ecosystem.
- Facilitating the growth of tree canopy that shades streams helping to control water temperatures and encouraging desirable aquatic species;
- Providing riparian wildlife habitat.
- Providing scenic value and recreational opportunity.

- Ultimately helping to minimize public investment necessary to treat water for human consumption.

The Cahaba River/Lake Purdy Watershed Protection Policy is intended to provide protection of the Cahaba River/Lake Purdy Watershed for use as a public water supply reservoir. The establishment of this policy is intended to protect public health, ensure the availability of safe drinking water, and minimize degradation of the water supply source through requiring implementation of structural and non-structural "Best Management Practices" applicable to construction sites as well as existing and future land uses. The policy will further protect the Cahaba River/Lake Purdy Watershed by:

- Prohibiting and regulating of potential key contaminating land uses and activities.
- Requiring performance standards for non-point source pollutants and privately owned wastewater treatment facilities.
- Requiring site development plans.
- Providing exemptions and review controls.
- Establishing enforcement measures for non-compliance.

This policy is intended to serve as a management tool to provide notification to the Board of ongoing or proposed land development activities, which either alone or combined with other activities in the Watershed, may cause contamination to or degradation of the water supply. Through implementation of this Policy, the Board's general expectations are to;

- Minimize the discharge of pollutants, originating from both point and non-point sources, into waters within the Cahaba River/Lake Purdy Watershed.
- Minimize the adverse impacts of erosion and sedimentation.
- Minimize the discharge of phosphorus and other nutrients into waters within the Cahaba River/Lake Purdy Watershed which may accelerate the eutrophication processes.

This policy will also support the Board's effort in its requirements to meet Federal and State drinking water standards in a more efficient manner. Furthermore, this Policy articulates an anti-degradation goal for source waters of the Board's water supply system. This Policy is declared to monitor those activities in the Watershed that threaten the quality and quantity of the water supply.

The Board reserves the right to re-examine this Policy periodically to ensure that it continues to further these goals and intent. Without limiting the foregoing, and without limiting the Board's rights to continue, modify, amend, suspend, waive or revoke any or all of this Policy at any time in accordance with applicable law, the Board intends to re-examine this Policy within ten (10) years after the effective date hereof to ascertain

whether, and to what extent, this Policy should be modified or amended so that it continue to serve the intended purposes.

2 Definitions

The following terms shall have the stated meanings when used in this Policy, except where otherwise specifically defined otherwise:

1. ***Acre*** shall mean a unit of area equal to 43,560 square feet.
2. ***ADEM*** shall mean the Alabama Department of Environmental Management.
3. ***Agency*** shall mean any local, state or federal department, agency, board, public benefit corporation, public authority, commission, district, or governing body, including any city, county, and other political entity of the State.
4. ***Alteration or modification*** shall mean any change in physical configuration, intensity of use, location, plans, design, site, capacity, treatment standard or method, or other change in a regulated or noncomplying regulated activity. This term shall not include routine repairs or maintenance of structures and equipment.
5. ***Approval*** shall mean any final decision by an agency to issue a permit, certificate, license, lease, renewal or other entitlement or to otherwise authorize a proposed project or activity.
6. ***Bankfull elevation*** shall mean the elevation of incipient flooding in a well defined channel or, where the channel bank is less clearly defined, the water surface elevation given a discharge with a 1.5 year return interval.
7. ***Best Management Practices (BMPs)*** shall mean those practices that effectively manage Stormwater Runoff quality and volume. In addition it means the methods, measures or practices determined to be the most practical and effective in preventing or reducing the contamination or degradation of the water supply. Best management practices include, but are not limited to, structural and nonstructural controls as well as operations and maintenance procedures, that can be applied before, during or after regulated activities to achieve the purposes stated herein.
8. ***Board*** shall mean the Board of Directors of the Birmingham Water Works and Sewer Board.
9. ***Buffer*** shall mean a vegetated area free of impervious cover adjacent to a stream, river, natural drainage way or lake.
10. ***Cahaba River/Lake Purdy Watershed,*** for the purposes of this policy, shall mean all areas which drain to the Lake Purdy Reservoir and Cahaba River upstream of the U.S. Highway 280 dam.
11. ***Clearing*** shall mean the removal from land of trees, shrubs, grass, varied ground cover and other vegetation useful for windbreaks, water retention and maintenance of topsoil.

12. ***Commercial Development*** shall mean all development other than open space, a single-family residence, or single-family subdivision development.

13. ***Construction Best Management Practices Plan (CBMPP)*** shall mean a plan of best management practices developed for used during construction activities.

14. ***Combined Sewer and Stormwater Collection System (CSS)*** *shall mean a system that combines stormwater and sewerage.*

15. ***County*** shall mean Jefferson, Shelby or St. Clair County and any of its applicable Commissions, Departments, and Committees.

16. ***Developer*** shall mean the person undertaking or performing development within the scope of this Policy.

17. ***Development*** shall mean:

    i. All land modification activity, including activities associated with the construction of buildings, roads, paved storage areas and parking lots for single family residential subdivisions as well as multi-family, retail, medical, educational, and commercial structures.

    ii. Any disturbing construction activities or human-made change of the land surface including clearing of vegetative cover, excavating, leveling, grading, contouring, and the deposit of refuse, waste or fill.

18. ***Discharge*** shall mean the intentional or unintentional disposal, deposit, injection, emission, application, dumping, spilling, leaking, washing off, release, running off, draining or placing of any solid, semi-solid, liquid, or any other non-gaseous waste or other substance into or onto any land or water or into any wastewater collection or treatment system so that such waste or other substance may directly or indirectly enter into any watercourse, wetland, reservoir, reservoir stem, controlled lake or groundwater.

19. ***Disposal*** shall mean the discharge, deposit, injection, dumping, spilling, leaking, or placing of any material into or on any land or water so that such material or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground water.

20. ***Effective Date*** shall mean the date this Policy becomes effective, which shall be upon completion of any conditions set forth in the approval

21. ***Effluent*** shall mean water or wastewater that flows out from a wastewater treatment plant or other treatment process.

22. ***Erosion*** shall mean the wearing away or the movement of soil by such physical agents as wind or water that is exacerbated by such practices as the disturbance of ground cover by stripping or removing vegetation, construction activity, or tilling.

23. ***Excavation*** shall mean the removal of earthen material, rock, or soil to create a depression below the original topography.

24. ***Exfiltration*** shall mean wastewater that leaks out of a wastewater collection or treatment system into the surrounding environment, through faulty joints, defective pipes, cracks in pipes, connections, or at manholes.

25. ***Existing*** shall mean physically constructed, functioning and operational prior to the effective date of this Policy.

26. ***Facility*** shall mean a structure, room or other physical feature designed to perform a particular function and that makes possible some activity.

27. ***Fertilizer*** shall mean any commercially produced mixture, generally containing phosphorus, nitrogen and/or potassium, except compost, that is applied to the ground to increase the supply of nutrients to plants.

28. ***Fill*** shall mean to build up the level of (low-lying land) with material such as earth or gravel.

29. ***Final Stabilization*** shall mean all soil disturbing activities at the site that have been completed and a uniform (e.g. unevenly disturbed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background vegetative cover for the area has been established on all unpaved areas and areas not covered by permanent structures, or equivalent permanent stabilization measures, such as rip-rap, gabions, or geotextile fabric, have been employed.

30. ***Groundwater*** shall mean any water beneath the land surface in the zone of saturation. The zone of saturation is where water fills all available pore spaces.

31. ***Grading*** shall mean the intentional raising or lowering the ground surface.

32. ***Hazardous material*** shall mean any material that is either:

    Defined as a hazardous material, substance or waste by one or more of the following:

    i. Superfund Amendment and Reauthorization Act of 1986,
    ii. Identification and Listing of Hazardous Wastes, 40 C.F.R. §261,
    iii. Toxic Substances Control Act of 1976, and
    iv. Resource Conservation and Recovery Act of 1976, as amended;

    And/Or

    Considered hazardous to a water supply (as defined in the Hazardous Materials Spill Emergency Handbook, American Waterworks Association, 1975, as revised) including specifically the following general classes of materials:

    i. Oil and oil products.

    ii. Radioactive materials.

    iii. Any material transported in large commercial quantities that is a very soluble acid or base, highly biodegradable, or can create a severe oxygen demand.

    iv. Biologically accumulative poisons.

v. The active ingredients of poisons that are or were ever registered in accordance with the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended (7 USC 135 et seq.).

vi. Substances highly lethal to mammalian or aquatic life.

33. ***Individual sewage treatment system*** shall mean an on-site subsurface sewage treatment system serving residential properties and receiving sewage without the admixture of industrial wastes or other wastes in quantities of less than 1,000 gallons per day.

34. ***Infiltration*** shall mean water, other than wastewater, that enters a wastewater collection system, including sewer service connections, from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow.

35. ***Inflow*** shall mean water other than wastewater that enters a wastewater collection system, including sewer service connections, from sources such as, but not limited to, roof leaders, cellar drains, yard drains, area drains, foundation drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street wash waters, or drainage. Inflow does not include, and is distinguished from, infiltration.

36. ***Intermittent stream*** shall mean a watercourse that during certain times of the year goes dry or whose lowest annual mean discharge during seven consecutive days with a recurrence interval of ten years (MA7CD/10) is less than 0.1 cubic foot per second and which periodically receives groundwater inflow. A drainage ditch, swale or surface feature that contains water only during and immediately after a rainstorm or a snow melt shall not be considered to be an intermittent stream.

37. ***Landowner*** shall mean any person holding legal or equitable title to or having a fee simple ownership interest in land.

38. ***Land User*** shall mean any person operating, leasing, renting or having made other arrangements with the landowner by which the landowner authorizes use of his or her land.

39. ***MSDS*** *shall mean material safety data sheets*

40. ***Nonpoint source pollution*** shall mean pollution sources which are diffuse and do not have a single point of origin or are not introduced into a receiving stream from a point source.

41. ***Operator*** shall mean any person who leases, operates, controls or supervises a facility.

42. ***Owner*** shall mean a person who is the record owner (whether one or more persons) of property or the person or agent in charge or control of the property. "Owner" includes successors to the person who is the owner at the time of application or issuance of a permit and includes persons with a life estate or leasehold interest pursuant to a written ground lease having a term greater than five (5) years, but

excludes persons having an interest merely for security for the payment of an obligation, except that such person shall be included if he forecloses a mortgage or other security interest and becomes an owner through purchase at the foreclosure sale.

43. ***Person*** shall mean any individual, partnership, firm association, joint venture, public or private corporation, commission, board, public or private institution, or any other legal entity.

44. ***Pesticide*** shall mean (i) any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any insects, rodents, fungi, weeds, or other forms of plant or animal life or viruses, except viruses on or in living humans, or other animals or (ii) any substance or mixture of substances intended as a plant regulator, defoliant or desiccant.

45. ***Perennial Stream*** is a stream or river (channel) that has continuous flow in parts of its bed all year round during years of normal rainfall.

46. ***Policy*** shall mean the Cahaba River/Lake Purdy Watershed Protection Policy.

47. ***Political Subdivision*** shall mean a city, county, district or authority created under Alabama State Law.

48. ***Pollutant*** shall mean unpermitted dredged spoil, solid waste, incinerator residue, wastewater, effluent, garbage, sewage sludge, munitions, chemical waste, biological material, radioactive material, heat, wrecked or discarded equipment, rock, sand, and industrial and municipal waste discharged into water.

49. ***Professional Engineer*** shall mean a person who, by reason of his or her special knowledge of the mathematical and physical sciences and the principals and methods of engineering analysis and design, acquired by engineering education and engineering experience, is qualified to practice engineering and has been license by the State of Alabama Board of Registration for Professional Engineers and Professional Land Surveyors as a professional engineer.

50. ***Radioactive material*** shall mean any material in any form that emits radiation spontaneously.

51. ***Redevelopment*** shall mean the process of developing land that is or has been previously developed to the completion of its intended use. The subsequent development of land in phases shall not be considered as redevelopment.

52. ***Reservoir*** shall mean Lake Purdy.

53. ***Residential lot(s)*** shall mean any parcel of land of five acres or less, any point on the boundary line of which is less than one-half mile from any point on the boundary line of another such lot in the same tract, unless any such lot may not legally be used for residential purposes. Without limiting the generality of the foregoing, the term "residential" shall include temporary, seasonal and permanent residential use.

54. ***Sediment*** shall mean organic or mineral solids or colloids that are transported by the process of hydrologic, hydraulic, or atmospheric transport, including but not limited to erosion.

55. ***Sewage*** shall mean water-carried human wastes from residences, building, industrial establishments or other places, together with such ground, surface, storm or other waters as may be present [Title 22, Section 22-22-1 et seq., Code of Alabama 1975].

56. ***Site*** shall mean any lot or parcel of land or contiguous combination thereof upon which the proposed development or activity will take place.

57. ***Slope*** shall mean the inclination of the ground surface expressed as the ratio between horizontal distance to vertical distance in percent.

58. ***Solid waste*** shall mean all putrescible and non-putrescible materials or substances that are discarded, abandoned, or rejected as being spent, useless, worthless or in excess to the owners at the time of such discard or rejection, including but not limited to garbage, refuse, industrial and commercial waste, sludges from air or water treatment facilities, rubbish, tires, ashes, contained gaseous material, incinerator residue, construction and demolition debris, discarded automobiles and except where exempt from State Law.

59. ***Stakeholders*** shall mean people who have an interest of any kind in a business or transaction related to developing land in the Watershed.

60. ***Stormwater*** shall mean that portion of precipitation that is in excess of the evaporative or infiltrative capacity of soils, or the retentive capacity of surface features, that flows off the land by surface runoff or by subsurface interflow to watercourses, wetlands, reservoirs, reservoir stems and controlled lakes, i.e., that portion of the water supplied to surface drainage that is not groundwater or base flow.

61. **S*tream*** shall mean a well defined channel that can convey running water.

62. ***Subdivision*** shall mean any tract of land which is divided into five or more parcels of five acres or less, along an existing or proposed street, highway, easement or right-of-way, for sale or for rent as residential lots. A tract of land shall constitute a subdivision upon the sale, rental or offer for sale or lease of the fifth residential lot there from within any consecutive three year period.

63. ***Subsurface sewage treatment system (SSTS)*** shall mean any underground system used for collecting, treating, and disposing of sewage into the ground

64. ***Tributary*** shall mean any surface water body which is hydraulically connected to Cahaba River or Lake Purdy within the Cahaba River/Lake Purdy Watershed and at a greater hydraulic potential than the U.S. Highway 280 dam.

65. ***Vegetation*** shall mean plant life or total plant cover on a land surface.

66. ***Wastewater Collection systems*** shall mean all equipment and apparatus, including waste water lines and appurtenances, pumping stations, treatment works, and disposal facilities involved in the operation of sanitary disposal of wastewater.

67. ***Wastewater treatment plant*** shall mean any facility which treats wastewater or discharges treated effluent in the watershed, and which requires a permit, installed for the purpose of treating, neutralizing, stabilizing or disposing of wastewater by removal of contaminants accomplished by unit operations or processes or by a combination of such operations and processes, including any combination of the following: preliminary treatment, flow equalization, primary settling, biological treatment, chemical treatment, secondary settling, filtration, aeration, disinfection, sludge processing, or any other processes as may be applicable to a given design for a wastewater treatment plant.

68. ***Water supply*** shall mean the Cahaba River/Lake Purdy public water supply system, and includes all watercourses, wetlands, reservoirs, reservoir stems and tributaries thereto.

69. ***Watercourse*** shall mean a visible path through which surface water travels on a regular basis, including an intermittent stream, which is tributary to the water supply. A drainage ditch, swale or surface feature that contains water only during and immediately after a rainstorm shall not be considered to be a watercourse.

70. ***Watershed*** shall mean an area of land that drains downstream to the lowest point.

71. ***Watershed Protection District*** shall mean an area of land surrounding bodies of water for the purpose of managing building and land uses, which uses could contribute to the pollution of surface water.

72. ***Wetland*** shall mean an area that is inundated or saturated by surface or ground water at a frequency or duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, as defined by the U.S. Environmental Protection Agency pursuant to Section 404 of the Federal Clean Water Act, in 33 CFR 328.3b.

3 Applicability

3.1 Activities

This Policy shall apply to all persons undertaking, or proposing to undertake new residential and/or new commercial development lying within the Cahaba River/Lake Purdy Watershed. This policy shall also apply to all persons undertaking, or proposing to undertake redevelopment activities that would require a modification to existing water service lying within the Cahaba River/Lake Purdy Watershed.

This policy shall apply to all commercial developments regardless of size, and residential developments 5 acres or greater in size individually or collectively for phased projects which total 5 or more acres.

3.2 Location

The Cahaba River/Lake Purdy Watershed Protection Policy shall apply to all lands identified as lying within the Cahaba River/Lake Purdy Watershed as delineated in Appendix A.

4 Watershed Protection Criteria

4.1 Buffers

The Board values all lands within the Watershed; however some lands because of their close proximity to its water supply, the Board requires greater restrictions for the protection of its water supply. To aid in that protection, the Board has established buffers in and around the water resources.

Buffers include all areas within the Cahaba River/Lake Purdy Watershed which are within, or are:

i. A distance of 100 ft from the Cahaba River/Lake Purdy full pool elevation and the bankfull elevation of perennial streams measured horizontally.

ii. A distance of 25 ft from the bankfull elevation of intermittent streams measured horizontally.

iii. A distance of 100 ft from wetlands measured horizontally.

Buffers are intended to provide the maximum source water protection. Through the establishment of these buffers, the Board forecasts minimization of erosion and sedimentation potential, reduction of land application nutrient and toxics, and maximization of rainwater infiltration. The following practices and activities are permitted within a buffer:

i. Restoration projects to restore stream bank integrity and native vegetation.

ii. Maintenance, repair, and extension of most public and private utility lines or related infrastructure.

iii. Invasive species control or removal.

iv. Passive recreational uses.

Since the Board has a goal to protect waterways and aquatic resources from the short and long term impacts of development activities, certain activities are prohibited within a buffer. Under no circumstances may any part of any septic system, including field lines, wastewater irrigation, privately owned wastewater collection or treatment systems, or golf courses, be located in a buffer. Management of the buffers is encouraged to develop healthy and dense buffer areas that improve water quality protection and groundwater recharge.

Or, in lieu of the above described stream buffer requirements, a developer may institute reasonable and sound engineering controls designed and approved by a Professional Engineer (PE). In designing applicable engineering controls, the PE shall demonstrate that the designed water quality protective measures are equal to or greater than those provided for in Section 4.1, "Buffers," set forth above.

4.2 Hazardous or Toxic Materials/Substances

The intent of this Policy is to minimize the potential for hazardous and/or toxic materials to enter the Cahaba River/Lake Purdy water source to the maximum extent practicable. Entities utilizing hazardous materials as defined by one or more of the following:

i. Superfund Amendment and Reauthorization Act of 1986.
ii. Identification and Listing of Hazardous Wastes, 40 C.F.R. §261.
iii. Toxic Substances Control Act of 1976.
iv. Resource Conservation and Recovery Act of 1976, as amended.

And/Or,

Is considered hazardous to a water supply source as defined in the Hazardous Materials Spill Emergency Handbook, American Water Works Association, 1975 as revised.

shall in accordance with those regulations develop and submit a Spill Prevention, Control and Countermeasures (SPCC) Plan to the Board for review..

At a minimum, this plan shall include the following elements:

1. Disclosure statements describing the types (including MSDS), quantities, and storage locations of all contaminants that will be part of the proposed project.
2. Contaminant handling and spill prevention techniques.
3. Spill reporting procedures, including a list of affected agencies to be contacted in the event of a spill, including the local fire department and the Board.
4. Spill recovery plans, including a list of available equipment.
5. Spill clean-up and disposal plans including wash-down runoff, etc.
6. A leak detection and corrosion control monitoring program
7. A statement that a summary of the approved plan, including procedures and emergency contact information shall be posted in one or more conspicuous onsite locations within the line of sight where a spill is most likely to occur.

4.3 Wastewater Collection and Treatment Systems

4.3.1 Minimum Requirements

i. Unless otherwise approved by this Policy, the design, construction, or operation of a wastewater treatment plant is prohibited where such design, construction, or

operation, or storage which is reasonably likely to lead to a discharge, of wastewater or wastewater effluent into the environment (including into groundwater), and which is reasonably likely to cause degradation of surface water quality or of the water supply.

ii. No new wastewater treatment plants with a surface discharge, or expansion or alteration or modification of existing wastewater treatment plants, shall cause a contravention of the water quality standards set forth by the Alabama Department of Environmental Management (ADEM).

iii. The owner or operator of a facility which disposes of wastes regulated pursuant to the Federal Categorical Pretreatment Standards, 40 CFR Part 403, shall submit a copy of the engineering report, plans and specifications prepared by a Professional Engineer, in compliance with 40 CFR Parts 403, 406-471, ADEM Water Division – Water Quality Program, Chapter 335-6-5 and any applicable local regulations, to the Board for review.

iv. No user shall ever increase the use of process water or in any other way attempt to dilute a discharge, as a partial or complete substitute for adequate treatment to achieve compliance with discharge limits unless expressly authorized by an applicable pretreatment standard or requirement.

v. A privately owned treatment system shall submit applications and modifications to its NPDES permit to the Board for review. Copies of NPDES permit renewals shall be submitted to the Board.

vi. The design of new wastewater treatment plants, and the plans and specifications resulting from that design, require the review and approval of the Alabama Department of Environmental Management (ADEM) and review of the Board. The construction of new wastewater treatment plants shall be in conformance with the plans and specifications approved by ADEM.

vii. The design for an expansion or an alteration or modification of existing wastewater treatment plants, and the plans and specifications resulting from that design, require the review and approval of both ADEM and the Board. The construction of the expansion or alteration or modification shall be in accordance with the plans and specifications reviewed by ADEM.

viii. All wastewater treatment plants shall provide standby power units sufficient to run the entire plant in order to ensure uninterrupted reliable operation in the event of utility power failure and these units shall be equipped with an alarm and automatic start-up capability.

ix. All alarm systems shall require telemetering to a central location with around the clock operator presence or, in the alternative, to an operator's residence so that a response shall be initiated immediately.

x. Combined sewage systems (CSS) are prohibited from discharging within the watershed.

xi. All new service connections shall be installed and tested in accordance with acceptable engineering and construction practices.

xii. All pipe bedding shall be a minimum of 4 inches crushed stone aggregate meeting the requirements of ASTM D448 No. 57 or 67.

xiii. All PVC pipe backfill shall be a minimum of 6 inches crushed stone aggregate meeting the requirements of ASTM D448 No. 57 or 67.

xiv. The Board may require an engineering report, construction plans and specifications, and any environmental assessments and determinations when reviewing any Request of Water Availability pursuant to this subdivision for a new wastewater collection system, or a proposed alteration or modification of a wastewater collection system.

xv. All wastewater collection systems connected to a wastewater treatment plant which discharges within the watershed shall be designed, operated and maintained in such manner as to prevent inflow or infiltration which causes the strength of the wastewater influent to the wastewater treatment plant to be diluted to a level that adversely affects the efficacy of the NPDES permitted discharge.

xvi. All wastewater collection systems shall be designed, operated and maintained to prevent exfiltration from such systems.

xvii. All new onsite sewage treatment and disposal systems shall be designed, constructed, and maintained in accordance with Alabama State Board of Health's On-Site Sewage Disposal Regulations (Alabama Administrative Code 420-3-1) as well as the local county regulations.

xviii. New or expanded privately-owned wastewater treatment plant that discharge directly to surface waters shall meet the following minimum effluent limits for total phosphorus, expressed as a monthly average:

a. Facilities with an average design flow less than 100,000 gallons per day (gpd) shall achieve a monthly average total phosphorus concentration of 0.5 mg/L or less, unless more stringent limits are required by ADEM.

b. Facilities with an average design flow equal to or greater than 100,000 gallons per day (gpd) shall achieve a monthly average total phosphorus concentration of 0.1 mg/L or less, unless more stringent limits are required by ADEM.

4.3.2 Performance Security

1. All owners or operators of privately owned and operated wastewater treatment plants in the watershed shall, prior to commencement of construction of such wastewater treatment plants, deposit with the Board a performance bond for the completion of the construction of the wastewater treatment plant and an additional bond or other guaranty for the payment of labor and material furnished in the course of such construction. Sixty days following the completion of construction and payment of labor and materials, such bonds or other guaranties shall be released. Additionally, prior to commencement of operation of the approved wastewater treatment plant, the owners or operators of the approved wastewater treatment plant shall provide a surety bond, or a reasonable guaranty, that they shall continue to maintain and operate the system through perpetuity. The surety bond or guaranty shall be in an amount sufficient to insure the full and faithful performance by the owners or operators of the wastewater treatment plants, and their successors and assigns, with regard to their obligation to properly maintain and operate the wastewater treatment plants in accordance with all requirements of law and according to the conditions set by the Board in its approval; provided, however, that such surety bond or guaranty shall not be required by the Board where the owners or operators of the wastewater treatment plant have provided a surety bond or guaranty for the maintenance and operation of the wastewater treatment plant to the local governing body, in an amount necessary to insure the full and faithful performance of the operation and maintenance of the wastewater treatment plant; provided further, that such surety bond or guaranty shall not be required where the owner or operator of the wastewater treatment plant is a village, town, county or city. The Board may, at its discretion, increase the amount of such surety bond or guaranty, but not to exceed an amount necessary to insure the full and faithful performance of the operation of the wastewater treatment plant. All such bonds shall be prepared on the forms of bonds authorized by the Board and shall have as a surety such company or companies that shall be approved by the Board and are authorized to do business in the State of Alabama.

2. The Board may authorize the provision of other security, including cash, if the Board finds that compliance with the bond requirement is not reasonably possible and the public interest would be served by such authorization. The alternative security shall be deposited with the Board.

3. Whenever an owner or operator of a wastewater treatment plant deposits securities or other obligations with the Board in lieu of a performance bond, it shall be with the understanding that the Board, or his or her successors, may sell and use the proceeds thereof for any purpose for which the principal or surety on such bond would be liable under the terms of the approval. If money is deposited with the Board, the owner or operator of the wastewater treatment plant shall not be entitled to receive interest on such money from the Board.

4.4 Stormwater Management

For any use, development or redevelopment, stormwater runoff shall be controlled by the use of best management practices (BMPs) consistent with the water quality protection provisions of the ADEM Administrative Code Chapter 335-6-12-.02(c).

Runoff Volume Limits and Pollutant Control

Runoff volumes after construction is completed and during site occupancy may not exceed the maximum runoff volumes calculated using: the set of one-year storms, the area-weighed runoff curve number for the predevelopment surface soils' hydrologic group listed in Table 4-1.

Table 4-1.
One Year Design Storm Volumes

			Inches of runoff allowed for sites having soils of			
Hydrologic Soil Group			A	B	C	D
Allowable Curve Number*			60	70	80	85
One Year Rains						
Storm Duration (hours)	**Rain Intensity** (in/hr)	**Total Rain** (in)	**Runoff** (in)			
0.5	2.3	1.2	0.00	0.03	0.15	0.27
1	1.5	1.5	0.01	0.08	0.29	0.46
2	1.0	1.9	0.05	0.21	0.5	0.73
3	0.7	2.1	0.08	0.29	0.63	0.88
6	0.4	2.5	0.18	0.46	0.89	1.18
12	0.3	3.0	0.33	0.72	1.25	1.59
24	0.1	3.5	0.55	1.03	1.65	2.03

* based on maximum of pre- and post development curve number

For new development or redevelopment, the post-development total phosphorus and total suspended solids loads shall not exceed the pre-development load. The technical

methods for evaluating compliance with this criterion are provided in the technical guidance in Appendix B.

Land development shall minimize impervious cover consistent with the proposed use or development.

The owner shall allow access of the site to the Board for periodic inspections by the Board to certify they are in compliance with the requirements of this Policy.

4.5 Erosion and Sedimentation Control

Erosion and Sedimentation shall be controlled throughout the development process. Development of measures adhering to ADEM requirements shall be considered as meeting the requirement for erosion and sedimentation control. The permittee shall make the Construction Best Management Practices Plan (CBMPP) inspection records and reports available to Board upon request. Site disturbance must be phased to limit soil erosion, and final stabilization shall be accomplished with each phase.

5 Site Development Plan Process

A Site Development Plan for all development and re-development shall be developed by a Professional Engineer registered by the State of Alabama.

The plan shall set forth an informative, conceptual and schematic representation of the proposed activity by means of maps, graphs, charts, or other written or drawn documents so as to enable the Board an opportunity to make a reasonably informed decision regarding the proposed activity. The plan at a minimum shall contain:

1. A site plan.
2. Erosion and sediment control plan.
3. Wastewater collection and treatment system plans.
4. Stormwater management plan.
5. A spill prevention and control plan.

The plan components may be and are encouraged to be combined into an overall Site Development Plan to reduce duplication; however, all of the conditions and requirements of each plan component must be satisfied before a water service contract may be issued. All such plans shall be submitted to the Board for review and comment.

5.1 Preparer Qualifications

1. Site Development Plans shall be prepared by the developer's Professional Engineer (PE). This requirement may be waived if the Board deems such to be unnecessary due to the type, scale and/or location of the proposed development does not necessitate such plans.

2. Each print of a plan drawing or map shall bear the original signature, date and embossed seal of the Professional Engineer of record. Where an electronic submittal is allowed, the submittal shall meet the electronic signature and seal requirements of the Alabama State Board for Licensure for Professional Engineers & Land Surveyors (Administrative Code 330-X-2-(11)(b)), as amended.

5.2 Minimum Standards and Improvements Required

1. Any improvement required by this Policy, or any other Policy of the Board shall be installed at the cost of the developer unless other agreements have been reached between the developer and the Board and/or any State or Federal agency.

2. Any improvements must also comply with the provisions of all applicable Federal, State, and local laws.

6 Covenants

6. Watershed Protection Covenants

In addition to the provisions of this Policy, in order to provide greater protection of its water supply, the Board reserves the right to require Developers to subject their development to certain covenants that are consistent with, but in certain circumstances may be more restrictive than, the requirements of this Policy.

7 Review Process

7.1 Review

7.1.1 A Request for Water Service for a land development occurring wholly or partly in the Watershed shall be submitted to the Birmingham Water Works and Sewer Board and shall be accompanied by a Site Development Plan prepared in accordance with the requirements set forth in Section 6.

7.1.2 The applicant shall submit three (3) copies of the applicable plans (site plan, erosion and sedimentation control plan, stormwater management plan, wastewater collection and treatment system plan and/or spill prevention, countermeasures and control plan) prepared by a licensed professional engineer to the Board for review.

7.1.3 Plans for development in the Watershed shall be evaluated by the Board to ensure that the development or redevelopment is in compliance with the requirements of this Policy, with the following additional requirements:

7.1.3.1 Sufficient management practices are in place to remove or neutralize those pollutants that present a potential impact to the Water Supply.

7.1.3.2 Grading and removal of vegetation at a development site is minimized and erosion and sediment control measures are in place and properly installed.

7.1.3.3 Businesses involved in potential contaminating activities within the Watershed, must submit a Spill Prevention Control and Countermeasures Plan for approval.

7.1.3.4 The Board shall return notification of plan review results to the developer, including recommended conditions or modifications. In the event that the results and/or recommended conditions or modifications are acceptable to the developer, the plan shall be so modified, if required, and a water service contract forwarded to Owner for execution.

8 Enforcement

8.1 Violations

It is a violation of this Watershed Protection Policy:

- For any landowner or land user subject to this Policy to conduct development activity after a stop-work order has been issued.
- For any landowner or land user subject to this Policy to fail to maintain the WWTP in accordance with the reviewed maintenance plan.
- For any landowner or land user subject to this Policy to otherwise commence, construct or engage in development activity in a manner that violates any provision of this Policy.
- For any landowner or land user to fail to comply with any term or condition of an approved water service contract.
- Elements of the Watershed Protection enforcement process are shown graphically in Appendix D.

8.2 Stop-Work Order

If, at any time, the Board determines that development activities have occurred or are occurring without full compliance with this Policy, the Board may issue a stop-work order (Appendix D). The stop-work order will direct that no further development take place until the landowner or land user and/or developer comes into full and complete compliance with this Policy. Upon issuance of a stop-work order, the Board will delay water service until full compliance with the Policy is met. The stop-work order shall be in writing and delivered by certified mail, in the case of an approved water service contract, may be posted at the site. The stop-work order will specify the deficiencies that cause the development to be out of compliance. If the development is occurring on an unapproved site, or if no location has been designated or maintained for the posting of notices, a complaint will be filed with the appropriate jurisdiction. Any areas disturbed in association with the land development activity shall be stabilized in accordance with ADEM erosion and sedimentation control requirements prior to stopping work. Continuance of work after a stop-work has been issued may cause the Board to revoke the water service contract.

8.3 Appeal by Developer

A developer may appeal the issuance of a stop-work order to the Board General Manager by submitting in writing a concise statement of any reason or reasons that the stop-work order should not have been issued. An appeal of the stop-work order must be received in

the office of the Board General Manager within 10 calendar days from the date that the stop-work order is posted. The Board General Manager may decide the appeal based upon the reasons stated in the appeal or may request additional information from the Board staff or the appellant.

8.4 Approval Revocation

A developer shall have 10 calendar days from the date that the stop-work order is posted to comply with the terms and conditions of this Policy. If the developer has appealed the stop-work order and the General Manager does not decide the appeal in the developer's favor, the developer shall have 10 calendar days from the date of the General Manager's decision to comply with the terms and conditions of this Policy. If the developer fails to comply within this period, Board may revoke the water service contract.

8.5 Penalty

Any person violating provisions of this Policy shall be subject to termination of water service from the Board and the Board may file a complaint with the appropriate regulatory agency.

8.6 Other Remedies and Injunction

Compliance with the provisions of this Policy may also be enforced through any and all other remedies at law or in equity including, but not limited to, enforcement by injunction.

9 Conflict with Other Regulations

Where the standards and management requirements as set out in this Policy are in conflict with other laws, regulations, and policies or other environmental protection measures, the more restrictive shall apply.

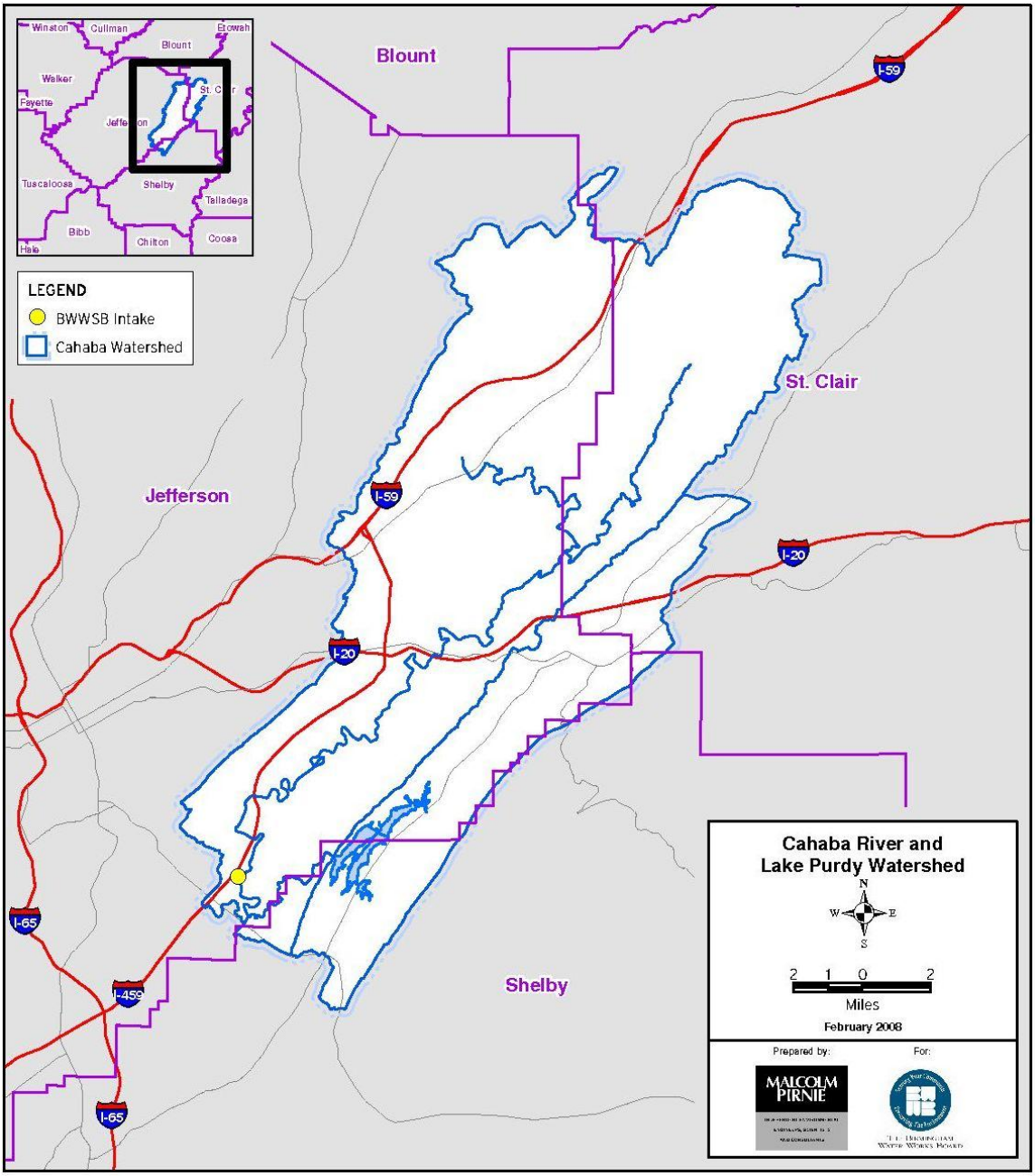
9.1 Municipalities without a Water Quality Protection Policy

Those municipalities within the boundary of the Watershed that do not have a water quality protection Policy that is at least as stringent as this Policy are encouraged to enter into an Interlocal Agreement or Memorandum of Understanding with Board stating that they will adopt and administer a water quality protection Policy for new development or redevelopment within their jurisdiction consistent with this Policy.

9.2 Agreements

The Board may pursue Memoranda of Understanding or Interlocal Agreements with municipalities and other Political Subdivisions or governmental entities within the boundary of the Watershed to develop and implement stormwater controls for activities within their jurisdiction that may cause pollution from stormwater.

APPENDIX A


Winston
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Blount
Walker
Fayette
Jefferson
St. Clair
Tuscaloosa
Shelby
Talladega
Bibb
Chilton
Coosa
Hale
LEGEND
BWWSB Intake
Cahaba Watershed
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February 2008
Prepared by:
For:
MALCOLM PIRNIE

APPENDIX B
TECHNICAL GUIDANCE FOR EVALUATION OF COMPLIANCE WITH STORMWATER QUALITY REQUIREMENTS

The Board's Cahaba River/Lake Purdy Watershed Protection Policy requires that the post-development pollutant load in runoff not exceed pre-development levels. This technical guidance describes the use of the Simple Method (Schueler, 1987) for evaluation of compliance with this requirement. The stormwater management plan for each development should use these methods to demonstrate compliance with the Policy.

1. The Simple Method for Pollutant Load Computation

The Simple Method estimates the annual stormwater runoff pollutant loads for urban areas. The technique requires a modest amount of information, including the subwatershed drainage area and impervious cover, stormwater runoff pollutant concentrations, and annual precipitation. With the Simple Method, the developer can either break up land use into specific areas, such as residential, commercial, industrial, and roadway and calculate annual pollutant loads for each type of land, or utilize more generalized pollutant values for land uses such as new suburban areas, older urban areas, central business districts, and highways.

The Simple Method estimates pollutant loads for chemical constituents as a product of annual runoff volume and pollutant concentration, as:

$$\mathbf{L_p = 0.226 * R * C * A}$$

Where: L_p = Annual load (lbs)
R = Annual runoff (inches)
C = Pollutant concentration (mg/l)
A = Area (acres)
0.226 = Unit conversion factor

Annual Runoff

The Simple Method calculates annual runoff as a product of annual rainfall volume, and a runoff coefficient (R_v). Runoff volume is calculated as:

$$\mathbf{R = P * P_j * R_v}$$

Where: R = Annual runoff (inches)
P = Annual rainfall (inches)
Pj = Fraction of annual rainfall events that produce runoff (usually 0.9)
Rv = Runoff coefficient

In the Simple Method, the runoff coefficient is calculated based on impervious cover in the subwatershed according to the following relation:

$$\mathbf{R_v = 0.05 + 0.9 I_a}$$

Where: I_a = Impervious fraction, expressed as a whole number.

Impervious Cover

The developer shall compute pre- and post-development percent impervious cover for the development, for use in the Simple Method calculations. For the purposes of the calculation, open water, unpaved roads, and other permanently unvegetated areas shall be considered impervious.

Event Mean Concentrations

Table 1 summarizes the event mean concentrations of total phosphorus and total suspended solids to be used with the Simple Method.

Table 1 – Event Mean Concentrations for Use with the Simple Method

LANDUSE	TP (mg/L)	TSS (mg/L)
Cultivated Crops	0.4	637
Forest	0.15	45
Developed, < 40% Impervious	0.2	84
Developed, > 40% Impervious	1.08	84
Golf Course	0.3	45
Open Water	0.1	0
Pasture/Hay	0.2	45
Other undeveloped	0.2	45

Best Management Practices Computations

If the post-development load is predicted to exceed the pre-development load, the difference between the two represents the load that must be removed. Structural best management practices may be selected to achieve the required load reduction.

Both pre- and post-development load calculations should account for the structural best management practices (BMPs) used to reduce pollutant loads in runoff. To take credit for post-development BMPs, they must meet design standards as outlined in the *Georgia Stormwater Management Manual* prepared by the Atlanta Regional Commission. For areas draining to BMPs, loads calculated by the Simple Method should be reduced by the percentages shown in Table 2. The total load from the site should be expressed as the sum of loads from treated and untreated areas.

Table 2 – Design Pollutant Removal Efficiencies from the Georgia Stormwater Manual

STRUCTURAL CONTROL	TP REMOVAL EFFICIENCY	TSS REMOVAL EFFECIENCY
General Application Structural Controls		
Stormwater ponds	50	80
Stormwater wetlands	40	80
Bioretention areas	60	60
Sand filters	50	80
Infiltration trench	60	80
Enhanced dry swale	50	80
Enhanced wet swale	25	80
Limited Application Structural Controls		
Filter strip	20	50
Grass channel	25	50
Organic filter	60	80
Underground sand filter	50	80
Submerged gravel wetland	50	80
Gravity (oil-water) separator	5	40
Porous concrete	50	N/A
Modular porous paver systems	80	N/A
Alum treatment	80	90
Proprietary systems	Provided by manufacturer, based on third-party review	

2 Buffer Equivalency Calculations

The buffer equivalency calculation method presented here is adapted from the Virginia Chesapeake Bay Local Assistance (CBLAD) Resource Protection Area: Buffer Area Encroachments Guidance on the Chesapeake Bay Preservation Area Designation and Management Regulations. It involves a stepwise method for calculating the benefit of the complete 100-ft buffer, the reduction in benefit caused by the encroachment, and the additional stormwater quality controls required to offset that reduction.

Step 1: *Using the Simple Method described above, calculate the phosphorus load associated with sheet flow from upgradient areas draining onto the buffer*. The length of the upgradient area that will contribute sheetflow (as opposed to concentrated flow) should be determined as a function of the average slope as shown in Table 3.

Table 3 – Length of Upgradient Area Contributing Sheet Flow to a Buffer

[length measured parallel to maximum slope, starting at landward edge of 100-ft buffer]

AVERAGE SLOPE	LENGTH (FT)
0-2%	500
2-4%	450
4-7%	400
7-10%	350
10-13%	300
13-14%	250
14%+	200

Step 2: *Determine the maximum load (R_{MAX}) capable of being removed by the full 100-ft buffer.*

$$R_{MAX} = L \times 0.4$$

Step 3: *Determine the actual load removed (R_{ACT}) by the remaining, undisturbed buffer.*

$$R_{ACT} = L \times EFF$$

EFF values are based on the remaining buffer width, as shown in Table 4.

Table 4 – Encroached Buffer Removal Efficiencies

[length measured parallel to maximum slope, starting at landward edge of 100-ft buffer]

TOTAL BUFFER WIDTH (FT)	REMOVAL EFFICIENCY (EFF)
100 (no encroachment)	0.40
90 (10' encroachment)	0.37
80 (20' encroachment)	0.35
70 (30' encroachment)	0.32
60 (40' encroachment)	0.30
50 (max. encroachment)	0.25

Step 4: *Determine the load removal requirement (RR) of an "equivalent" BMP.*

$$RR = R_{MAX} - R_{ACT}$$

The load removal requirement is the difference between the maximum load removal (Step 2) and the load removal provided by the remaining buffer (from Step 3).

Step 5: *Select BMPs to achieve the required removal requirement.*

The load removal requirement associated with buffer encroachment should be added to the load removal requirement associated with preventing exceedance of pre-development loads from the entire site, addressed in section 1 of these technical criteria. BMPs may then be selected to achieve the total removal requirement.

References

Schueler, T. 1987. *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban Best Management Practices.* MWCOG. Washington, D.C.

Atlanta Regional Commission. *Georgia Stormwater Management Manual, Volume 2.* First Edition, 2001.

Developer's Steps for Obtaining a Watershed Permit

1. Receive Notification of Watershed Requirements

Complete application for water supply

2. Develop Baseline Watershed Protection Components

Develop Plans for the following:

1. Stormwater Management
2. Construction Stormwater Pollution Prevention
3. Site Development Plans

3a. Buffer Requirements (If Applicable)

- If the bankfull elevation of the Cahaba River, Lake Purdy, or a perennial tributary to either cross or come within 100 ft. distance to the development you must establish a 100 ft. buffer.
- If a wetland comes within 100 ft. distance to the development you must establish a 100 ft. buffer.
- If the bankfull elevation of intermittent tributaries cross or come within a 25 ft. distance to the development you must establish a 25 ft. buffer.

3b. Hazardous Materials Requirements (If Applicable)

If you will use hazardous materials you must submit the following plans:

1. Spill Prevention
2. Countermeasures
3. Control Plan

3c. Wastewater Requirements (If Applicable)

If Wastewater from the development site will be collected and treated in a privately owned treatment system you must submit the plans to ADEM for approval and to BWWSB for review including a performance bond.

4. Submit Application

Submit Complete Application to BWWSB (Environmental Services Department).

5. Review by BWWSB

Application reviewed by BWWSB

Approved?

Yes

6. Permit Issued

No

5a. Technical Revisions Requested by BWWSB

5b. Revise and Resubmit to BWWSB

BIRMINGHAM WATER WORKS AND SEWER BOARD

STOP-WORK ORDER

Name:_____Permit#_____

Address/Location for Stop-Work Order: _____

_____

In accordance with Birmingham Water and Sewer Board (Board) Watershed Protection Policy, You are hereby ordered to stop work in the aforementioned Work Area. You are to immediately and automatically conform to this stop work after being presented with a stop work order, as well as any other actions, as deemed necessary by the Board. Do not recommence construction work until authorized in writing by the Board or a court of appropriate jurisdiction. Continuance of work may cause the Board to revoke the water service contract for this Development.

Under this stop-work order you MAY NOT do the following until further notice:

Continue any construction

Reasons for Stop-Work Order:

_____

_____

_____

Conditions under which work may resume:

_____

_____

Stop-Work Order Issued by: _____

Date Issued: _____