



# **LIVING WATERS**

## **Restoration Events Guide**

**For Stream Cleanup, Tree Planting  
& Water Quality Monitoring Projects**

**[www.BlessedEarthSE.com](http://www.BlessedEarthSE.com)**

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Thank you for joining the Living Waters campaign as we work to protect the Mississippi River and surrounding watershed. This Guide includes resources and guidelines for organizing events to help promote clean water in rivers and streams are included in this guide.

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### Revelation 22:1-2

**“Then he showed me a river of the water of life, clear as crystal, coming from the throne of God and of the Lamb, in the middle of its street. On either side of the river was the tree of life, bearing twelve kinds of fruit, yielding its fruit every month; and the leaves of the tree were for the healing of the nations.”**

## Introduction: Why Your Contribution is Important

Water is as important to life as the air we breathe. The human body is composed mostly of water (about 60%). Luckily our planet is composed of about two-thirds water. Of this water, the majority (97%) is salt water found in oceans. Only a very small percentage is freshwater that we can drink. If all the water on Earth was contained in one 30 gallon bathtub, one gallon of that would be freshwater, and only 1 teaspoon is water that is accessible to drink. Protecting and restoring that water is crucial.

### Water in Scripture

Water is equally important to our spiritual life. Water flows throughout scripture. Biblical stories include Jesus meeting a Samaritan woman at a well, Jesus' baptism, and Jesus cleansing the feet of his disciples with water. Water may symbolize righteousness, purity, wisdom, healing, and eternal life. "Whoever believes in me, as the Scripture has said, 'Out of his heart will flow rivers of living water.'" John 7:38.

The Blessed Earth Southeast Living Waters program was developed to connect people of faith to help restore our water and streams while restoring themselves spiritually. Our current focus is on the Mississippi River and its tributaries.





## **America's River**

Whether or not you live near the Mississippi River, you are likely part of the Mississippi River Watershed, which is the area drained by the river and its tributaries. This watershed covers an area of nearly 1.2 million square miles including all of Tennessee and Arkansas, portions of Louisiana and Mississippi, and several other states (a total of 32). Protecting and restoring this watershed is important to everyone in this area!

The River is vital to our economy, communities, and quality of life. 20 million people get their drinking water from the Mississippi river. "The agricultural products and the huge agribusiness industry that has developed in the [Mississippi River] basin produce 92% of the nation's agricultural exports, 78% of the world's exports in feed grains and soybeans, and most of the livestock and hogs produced nationally," reports the National Parks Service. The river also supports a vast amount of wildlife and promotes biodiversity.

Yet 1 Mississippi reports that the Mississippi River is in dramatic decline. 90% of the floodplain (where floodwaters would normally drain) is cut off from the river by levees. The remaining 10% has been altered by dykes, dams and dredging, making it incapable of supporting historic levels of fish and wildlife population. Excess fertilizers on farms - particularly nitrogen and phosphorus - threaten our water and habitats downstream contributing to a "dead zone" in the Gulf of Mexico, which is approximately 6,952 square miles.

## **Your Action and Prayer Can Make A Difference**

1 Mississippi has developed the "River Citizens" program and offers "10 Actions", found in the Appendix of this Guide, with many steps you can take to make a difference for the Mississippi River. One of those 10 actions is, "Volunteer for the river by attending River cleanups, tree plantings, and restoration work."

We can help you carry out these Stream Cleanup, Tree Planting, and Water Quality Monitoring events. Our goal is to engage people of faith to engage in action, and prayer, for rivers and streams in their area. This Guide provides direction and support for volunteers who would like to lead events with their faith or community groups. These events may take place on church grounds, park, community areas, or even on private property that is adjacent to a stream or river.

Thank you for your work on behalf of our rivers and streams. We offer technical support, resources, free trees, and much more for registered events. Please remember to register your event with Blessed Earth Southeast so we can help!

# General Guidelines for Restoration Events



These are general guidelines for outdoor restoration, tree planting, stream cleanup, and water quality monitoring events and activities. You'll find specific instructions for each type of event on the following pages, which should be used along with these instructions.

1. Read through this Guide and determine which type of event you will be conducting. Read specific instructions for the type of event - Stream Cleanup, Tree Planting, or Water Quality Monitoring - before proceeding with the following steps.
2. Register your event at: <https://blessedearthtn.com/livingwaters-signup>.
  - a. For qualified events in the Southeastern U.S. we may be able to provide guidance, help connect you with free resources, and help promote your event to make your project a success!
  - b. Questions? Reach out to us at [contact@blessedearthtn.org](mailto:contact@blessedearthtn.org).
3. Get permission from landowners, local leaders and regulatory agencies if necessary. Some organizations may ask your group to submit Proof of Insurance coverage for the event.
4. Conduct a field reconnaissance trip to determine logistics, such as how you will access the site and how you will get trees, tools and other materials necessary for the project to the site.
5. Set the date and time for your event.
6. Recruit Volunteers:
  - a. Make a list of and contact potential volunteers;
  - b. Make sure the volunteers are capable of the project work requirements
    - i. When working in or near waterways or if using any vehicles or heavy equipment, be sure that volunteers and especially children will be closely supervised.
    - ii. Small children with adult supervision can help with tree planting.
    - iii. Assign small team leaders. They can help manage and train new volunteers that arrive after the start of the event.
  - c. Partner with a community group, school, or other group.
7. Make a list of materials needed and secure them. Refer to the guidelines for Stream Cleanup, Tree Planting, or Water Quality Monitoring for specifics.

8. Promote your event in these places:
  - a. On social media. Use #LivingWaters and tag Blessed Earth Southeast and 1 Mississippi pages.
  - b. Your organization's website or email newsletter.
    - i. Events taking place in the Southeastern U.S. may be listed on the Blessed Earth Southeast website/social media, when you register your event.
  - c. Eventbrite or similar event websites.
  - d. Send a press release through local news channels.
9. Communicate with volunteers.
  - a. Help volunteers prepare with suggestions of what to wear or bring to the event. Examples: Bring rain gear, wear boots/old clothes that can get dirty or damaged, wear/bring sunscreen, bring a water bottle, wear a mask and bring extras.
  - b. Send volunteer waiver forms in advance (found in Appendix C - or you may use a waiver from your organization, school, or group.) Be sure to get permissions to use photos taken during the event.
  - c. Share any instructions in advance, so volunteers know what to expect and/or how to perform any duties. Include detailed information about social distancing and COVID-19 safety precautions you will take.
10. Implement your project.
  - a. Set up for the event.
    - i. Bring signage to show the location of your event and promote your group.
    - ii. Distribute equipment and supplies.
  - b. Set up a volunteer check-in area.
    - i. Be sure to provide water and snacks.
    - ii. Bring a first aid kit.
    - iii. Provide hand sanitizer.
    - iv. Include a sign in sheet and collect waiver forms. Invite people to sign up for the Blessed Earth Southeast and 1 Mississippi/River Citizens Email lists.
    - v. Distribute any promotional materials (Appendix F)
  - c. Welcome the volunteers
    - i. Lead an opening prayer, meditation, or blessing found in this guide.
    - ii. Explain duties and logistics.
    - iii. Assign team leaders
  - d. Make time for prayer, meditation, and community during or after the event.
11. Report, publicize and celebrate your success and make note of any challenges to be addressed in the future.
12. Send a report and pictures to your Blessed Earth Southeast event contact and we may feature this on our website and social media.

*Modified from "How to plan and implement a riparian reforestation project", Green Hands USA, America Volunteers*

# Stream Cleanup Events Supplemental Guidelines

Refer to the general guidelines for conducting restoration events. Following are specific instructions for this type of event:

- A. Tools and Materials – gloves, trash bags, shovels to remove buried items, weather appropriate clothing, waders, boots.
- B. General Methods:
  - a. Scout your river to identify the location where there is the most trash and debris to clean. Avoid areas with potential hazards including power lines, chemical containers, steep banks, rapidly flowing water, etd.
  - b. Spread your volunteers out to cover as much ground as possible and to maintain social distancing, but ensure they work in teams of at least two. Only assigned team leaders and volunteers should be in the stream. Children working near the stream and/or roadways should be closely supervised.
  - c. Have a central collection point for all the waste.
  - d. Sort, weigh and/or determine volumes and origins of the different types of waste and record this.
  - e. Recycle any of the material that can be recycled.
- C. Here is a more detailed guide to organizing a river cleanup from American Rivers:  
[https://s3.amazonaws.com/american-rivers-website/wp-content/uploads/2016/03/24220944/AR-Handbook\\_general-2014.pdf](https://s3.amazonaws.com/american-rivers-website/wp-content/uploads/2016/03/24220944/AR-Handbook_general-2014.pdf)
- D. Resources: Biodegradable gloves, recyclable garbage bags may be found online or at local natural foods stores, or try Eco Products: [www.ecoproducts.com](http://www.ecoproducts.com).



*Photo courtesy of USFWS Midwest*

# Tree Planting Events Supplemental Guidelines

Refer to the general guidelines for conducting restoration events. Following are specific instructions for this type of event:

## A. Tools and Materials

- a. Shovels, pickaxe, and other appropriate digging tools.
- b. Native Trees.
- c. Trash bags.

## B. Methods

- a. Plant hardy native trees, which use less water and are accustomed to the area's environmental conditions.
  - i. When you register for a Tree Planting Event in TN, AR, MS or LA, Blessed Earth Southeast may provide some free trees to help.
- b. Plant bare root seedlings in January through the first week in April.
- c. Plant trees less than 1" caliper trees from November – March.
- d. Work with your area forester to select the best trees for your project.
- e. Getting the trees into the ground properly is the most important task your volunteers will do to ensure survival. Ensure you know how to plant and that you can instruct others to use the same method.
  - i. See Tree planting guidelines from the Tennessee Department of Agriculture, Forestry Division in Appendix A.
  - ii. Another resource that may be helpful is [TreeCare.com](#), [Tree care made easy](#), [How to plant a tree](#).

## C. Resources

- a. See Table 1 - Native Tennessee Trees and Plants for Water's Edge and Moist Upland Sites, compiled by Harpeth River Watershed Association.
- b. [State Urban Forestry Contacts](#)
- c. [Arbor Day Foundation listing of tree types for your area](#)
- d. [Center for Watershed Protection's "Urban Watershed Forestry Manual"](#) and other tree planting resources.
- e. [Tennessee Department of Agriculture resources for reforestation projects](#) and [Tennessee Department of Forestry Resources](#)



# Water Quality Monitoring Events Supplemental Guidelines

Refer to the general guidelines for conducting restoration events. Following are specific instructions for this type of event:

## 1. Tools and Materials

- a. Camera or phone
- b. Trash bags
- c. Heavy Duty Tape measures - around 25 ft (optional since you'll be estimating measurements)
- d. Extra copies of Printed Data forms and Instructions (Appendix C and D) for each volunteer and/or Team leader.
- e. Clipboards, extra paper, pens, pencils, to record data
- f. Computer or phone
  - i. Internet connection for weather data
  - ii. GPS or Google Earth data

## 2. Methods

- a. Use Data Form and Instructions found in Appendix C and D
- b. Determine how you want to divide the tasks:
  - i. Teams may be grouped to work on specific sections of the stream or river. Each team would complete the forms and record ALL the data for their section.
  - ii. Or teams may be organized according to the "Areas" found on the data sheet. For instance one team completes Areas 1 & 2 , another team completes 3 & 4 and a third team completes Areas 5-8.

## 3. Resources

- a. Appendix C: Instructions for Visual Stream Assessment
- b. Appendix D: Visual Stream Assessment Data Sheets

# Prayers, Meditations, and Scripture for Living Waters Restoration Events

## **Scripture: John 7:38**

"He who believes in Me, as the Scripture said, 'From his innermost being will flow rivers of living water.'" John 7:38

Source: <https://bible.knowing-jesus.com/topics/Living-Water>

## **Prayer for Volunteers**

Loving Creator,

We give thanks for all those that have gathered here to work on this project today.

We ask that you guide our work so that we may benefit all your creation.

Give us the energy, strength, and resources we need to do the work we are called to do.

May we work today with a cooperative spirit and joyful hearts.

May our work be a blessing for all who live in this area including the wildlife.

Thank you for your many gifts to us including this beautiful day and beautiful surroundings.

Amen.

## **Nature Prayer**

Lord, help us to maintain a reverent attitude towards nature, threatened from all sides today, in such a way that we may restore it completely to the condition of brother/sister and to its role of usefulness to all humankind for the glory of God the Creator.

Source: [https://www.huffingtonpost.com.au/entry/nature-prayers-earth-day\\_n\\_7112274](https://www.huffingtonpost.com.au/entry/nature-prayers-earth-day_n_7112274)

## **Franciscan prayer**

Gracious God, your amazing love extends through all time and space, to all parts of your creation, which you created and called good. You made a covenant with Noah and his family, putting a rainbow in the sky to symbolize your promise of love and blessing to every living creature, and to all successive generations. You made a covenant with Abraham and Sarah, blessing them and their descendants throughout the generations. You made a covenant with Moses and the Israelite people to all generations, giving them the 10 commandments and challenging them to choose life. In Jesus, you invite us to enter into a new covenant, in communion with all who seek to be faithful to you.

As people of faith, we are called into covenant. Your covenant of faithfulness and love extends to the whole creation. We pray for the healing of the earth, that present and future generations may enjoy the fruits of creation, and continue to glorify and praise you.

### **Prayer from National Council of Churches**

May the waters flow peacefully; may the herbs and plants grow peacefully; may all the divine powers bring unto us peace. May the rain come down in the proper time, may the earth yield plenty of corn, may the country be free from war. The supreme Lord is peace.

### **Hindu prayer**

Gracious God,

We praise you for the marvels of your creation,  
for plants growing in earth and water,  
the life inhabiting lakes and seas,  
for all that creeps through the soils and land,  
for all creatures in the wetlands and waterways,  
for life flying above earth and sea  
for the diversity and beauty of your creation  
we stand in awe and wonder.

### **Prayer From Uniting Church in Australia**

Oh God, we long to be restoration people, to be agents of redemption and healing. Turn our focus off of our own brokenness and need and show us where we can restore one another.

### **Contemplative Prayer**

Contemplative prayer along a stream or river bank may follow a scripture reading, prayer, or meditation. This is a prayer practice described by Amanda Roberts on Grotto as a “resting in the presence of God — and this resting allows us to soak in God’s love.”

### **Imagination Prayer: Healing Waters**

[Luther College](#) describes imaginative prayer as follows “Ignatian Contemplation is prayer with Scripture. It is meeting God through story. The prayer develops as you “live into” a Scripture story with all your senses and imagination. ... You let the Spirit guide the prayer - you don't force anything to happen - you let it happen to you, within you, around you.” You may use this with the Living Waters Scripture above or another Scripture reading.



## Basic Nature Meditation From Meditation Oasis

Find a comfortable position sitting or lying down. Begin with a few deep breaths, breathing deep into the belly, to help you relax and to bring you to the sensations of the present moment. Now close your eyes and be present to what is being experienced with your eyes closed. Notice how your body feels, as well as the activity of your mind and emotions. Experience whatever is present without resisting anything or trying to change it. Do this for about a minute.

Now bring your awareness to everything that you can experience in your surroundings. Feel the temperature of the air on your skin, the feeling of the breeze and the sun. Notice the sounds around you -- birds, bees, crickets, flowing water. Listen to the symphony of nature. For the rest of the meditation, continue to experience these feelings and sounds. Whenever your mind wanders, gently bring it back to the experience of nature.

As you meditate, you can see where your attention is naturally drawn, or purposefully scan for different experiences. You can also focus on one experience and notice the experience in greater detail. If it is a bird's song -- notice the quality of the sound -- as if you are going more deeply into the sound. (It may seem to have a shape or texture.) Don't analyze the sound and label it with your mind -- simply notice the quality of it.

Once again, whenever you notice that the mind has become absorbed in thoughts, easily bring it back to the sounds and sensations of being in nature. At times both awareness of the sensations from the environment and thoughts will be present. That's fine. Just easily favor the experiences of nature.

Source:

<https://www.meditationoasis.com/how-to-meditate/simple-meditations/nature-meditations>

## Audio Meditations

You may wish to play an audio meditation on your phone or through speakers (possibly using a car stereo). Here is one possible source for meditations. <https://www.exploringpeace.com/podcast.html>



# Appendix A: Tree Planting Guidelines

## Tennessee Department of Agriculture, Forestry Division

NOTE: TREES PLANTED USING A GRANT FROM THE DEPARTMENT OF AGRICULTURE FORESTRY DIVISION MUST FOLLOW THESE GUIDELINES.

In order to have a healthy tree in the future; the tree must be planted properly. The following are guidelines to assist you in planting your tree properly. Prior to planting, remember to move the tree by the root ball or the container. Never grab it by the trunk.

1. **Digging the Hole:** The planting hole should be at least twice the width of the root ball or container to encourage the roots to grow into the surrounding soil. The sides of the planting hole should be sloped. The hole should be no deeper than the root ball or container to prevent the tree from settling or being planted too deeply.
2. **Tree Preparations:** For a container tree; remove the container. For a balled and burlapped (B&B) tree, remove the rope around the trunk and loosen the burlap. If the root flare is not visible, gently remove soil from the top of the ball until the tree is again at proper soil level. On both types of trees, check for large circling roots. If present, use pruning shears to make a clean cut. (Girdling roots will continue to grow in a circle, resulting in the death of the tree.). If the circling roots are fibrous, make 3 or 4 vertical slits into the sides of the rootball about 1 inch deep. On B&B trees, remove as much wire, rope, burlap and other materials as possible once the tree is in the hole. On both types of trees, remove all labels, tags, wire, and rope from trunk & branches to prevent the girdling as it grows.
3. **Backfill:** Use the same soil that was taken out of the hole. If the soil is very poor and appears to need topsoil, increase the hole size and sparingly mix in some local topsoil (avoid using potting soil, peat moss, and soil amendments). Remove stones and other debris. Fill the hole halfway with backfill then water. Finish filling the hole with the backfill and water again. Make sure to work the soil around the ball firmly to eliminate any air pockets. Also, make sure the tree is vertical and properly supported, but do not pack the soil around the trunk.
4. **Mulch:** The area around the tree should be mulched with wood chips, bark chips, or pine mulch. The mulch should be 3 to 4 inches thick and cover the entire planting area and beyond. The mulch needs to be placed in a donut or tire shape around the trunk of the tree. The mulch must be kept away from the trunk of the tree to keep insects away and prevent the trunk from being excessively wet. Mulch helps conserve soil moisture, reduces the competition from unwanted weeds, keeps lawn mowers and string trimmers from damaging the trunk, and moderates soil temperature extremes. Do not use sawdust, black plastic, or grass clippings as mulch. Do not make mulch volcanoes.



5. **Trunk Wraps:** Research indicates there are no benefits from using trunk wraps and it may encourage damaging insects or diseases.
6. **Staking:** Staking is not necessary if the tree has a proper size rootball and has not been pruned too high. Stakes may help prevent lawnmowers and string trimmers from damaging the tree. If staking is needed for support, attach them so the tree has some sway. NEVER leave wires or straps on the tree for more than one growing season.
7. **Fertilizing:** Generally new trees do not need fertilizers. Using the wrong product could damage the already reduced root system. Fertilize the first year only if a specific problem develops.
8. **Pruning:** Prune only the branches that are dead, broken or severely deformed during the first growing season. Buds produce hormones that stimulate root growth, so keep the removal of buds to a minimum.
9. **Timing for Planting:** The best time of year to plant your tree is November through March.
10. **Tree Size:** Trees 2-inch caliper or less are recommended unless a larger size is justified. Smaller trees recover from transplant shock and commence with normal growth more quickly.
11. **Watering:** Trees must be watered every 7 days during dry periods throughout the grant term.



## Appendix B: TEN ACTIONS RIVER CITIZENS CAN TAKE TO CREATE A HEALTHIER RIVER

### Take Action and Create a Healthier River.

The combined efforts of individuals and organizations are needed to make lasting progress. The Mississippi River Network, established in 2005, creates a unified voice for the land, water and people of the Mississippi River. As of 2013, 50 local and national organizations now participate in the Network and support *1 Mississippi* with their unique resources and expertise.

*River Citizens + Mississippi River Network = 1 Mississippi.*

**1 Spread the word about 1 Mississippi.** Forward our newsletter, join the conversation on Facebook and Twitter and encourage others to participate in the movement by signing up at [www.1mississippi.org](http://www.1mississippi.org).

**2 Connect with the River.**

Take a canoe trip, visit a nature center or attend a riverside festival.

Since we protect what we know, get out and experience the Mighty Mississippi for yourself.

Find year round River events near you at [www.1mississippi.org/events](http://www.1mississippi.org/events).



**3 Volunteer for the River.** Many hands make light work and volunteers often turn ideas into reality. River cleanups, tree plantings and restoration work days directly affect your community and create free memories with family and friends. Opportunities can be found at [www.1mississippi.org/volunteer](http://www.1mississippi.org/volunteer).

**4 Pick up garbage and pet waste to reduce pollution and harmful runoff into the River.**

Heavy rains flush pollution into storm drains, much of which flows directly into rivers. We can beautify our communities and prevent River pollution at the same time by simply bringing a bag and picking up trash on neighborhood walks.



**5 Choose native plants for yards.** Native plants are accustomed to the conditions where you live, can prevent invasive species from spreading, preserve community heritage and support local pollinators, butterflies and birds.

**6 Contact Congress through the 1 Mississippi Action Center.** Remind them the health of the River is inseparable from the strength of our economy and communities. Remember, these elected officials answer to you. Never underestimate the power of your voice.

**7 Reduce the use of lawn and garden fertilizers containing phosphorous and nitrogen.** When these excess nutrients enter rivers and streams, they promote algae growth, depleting oxygen in the water and endangering aquatic life. The result is a Dead Zone in the Gulf of Mexico that wreaks havoc on the ecosystem and threatens the fishing industry.

**8 Support sustainable agriculture practices, policies and people who promote healthy soil.**

Sustainable farming prevents soil erosion taking care of the land for future generations. Use your dollars to encourage local farmers who integrate responsible farming techniques.



**9 Protect valuable local wetlands from harmful development.** Speak up at public forums and describe the essential role wetlands play in ecosystems and our communities. They provide critical habitat, filter pollutants and protect our homes and businesses by acting as a giant sponge, absorbing excess rainwater and reducing flooding.

**10 VOTE! Be heard.** Elected officials make important decisions that affect our River. Learn about your local and national leaders' voting records and hold them accountable for making our River their priority. Everyone should be held responsible for their actions.

## Appendix C: Instructions for Visual Stream Assessment

Here are instructions for completing the Visual Stream Assessment Forms Found in Appendix D.

### **PART I – General information**

1. Fill in the requested information. If it is in bold type please circle your answer.
2. Sub-watershed: This refers to the specific stream you are on (e.g., West Harpeth is the larger watershed and Polk Creek)
3. Map #/name: This refers to the 7.5 minute series USGS topographical map. One could also use the Tennessee Gazetteer, giving page number and quad of location (i.e. B1).
4. Point #: This refers to the point you make on the USGS topographical or other map to identify the site.
5. Lat./Long.: If you have a GPS unit, record this in the field. Or, retrieve the information from Google Earth.
6. Flow: This information will be acquired from the nearest USGS gauge (on the internet) or estimate as low, medium or high based on channel fullness. There are more accurate field methods referenced in the data sheet.

### **PART II – Weather data**

1. Acquire from the internet, local weather station or personal observation.

### **PART III – Land use information**

1. Check each land use that applies to the specific-site along the stream.
2. Specify the exact nature of each type of land use (e.g., residential, single family homes).

### **PART IV - Other**

1. This section contains information about the stream and its surrounding characteristics. Many of these are indicators of stream health or problems. The section requests data on litter, algae (indicator of nutrient pollution), stream side vegetation, stream bank erosion, water color and odors, streambed characteristics, discharge pipes, and fish indicators. Circle the condition or conditions (e.g., no litter) that best apply to your stream.

### **PART V - Pictures**

1. Identify the picture numbers, the direction in which the picture was taken, and description of picture. Photograph any unusual condition(s) observed.

### **PART VI – Comments**

1. Add any comments you believe may help target this site for more detailed field review or to guide improvement efforts.

### **PART VII – Diagram of the site**

1. Draw a simple diagram of the site. Show the stream meanders, roads and the locations of land uses identified in PART III. Indicate picture locations on a diagram.

### **PART VIII – Stream Visual Assessment Score**

1. Riparian zone is the land area next to the stream. This category asks one to measure (estimate by stepping it off) the width of the riparian zone, rating both the right and left bank. In addition, investigators should add in the comments section information about the type of vegetation in the riparian zone. A healthy riparian area has trees, shrubs and herbaceous vegetation. For example, one might see large trees, some privet (shrub), but no herbaceous vegetation.



2. Bank stability is important as a measure of erosion or erosion potential. It should be assessed for both the right and left banks. Some bank instability is normal in streams. However, excess bank instability leads to sedimentation and additional erosion. In addition, this category may reflect some streamside land uses.
3. Canopy cover is the shade provided to the water by the overstory or trees. It is important to streams as it helps to keep the water cooler and generally indicates that the stream will receive a leaf load during fall. Canopy cover is estimated in percent by the investigator. The larger streams (e.g., main stem of the Stones River) do not have the potential for the optimal rating in this category. And, depending on the time of year and time of day this characteristic could change (e.g., no leaves on the trees = less shade)
4. Aquatic insect / invertebrate habitat is important when stream biologists assess the health of an aquatic system. Pollutants (e.g., sediment) can reduce the number of habitats and/or degrade their quality. The five habitat types are riffles, submerged woody materials, undercut banks, vegetated banks and leaf packs. Following is a brief description of each.
- **Riffles:** areas where fast moving water "bubbles" over rocks (AKA whitewater), which may include narrow, deeper channels that have swift moving water.
  - **Submerged woody materials:** logs, sticks and twigs that may be overhanging into the water or completely underwater and woody material that has been in the water for some time, but not recent deadfall or woody material that has collected in pools.
  - **Undercut banks:** banks where overhangs exist, often associated with tree or vegetation root systems.
  - **Vegetated banks:** areas where vegetation overhangs into the water and many times associated with undercut banks.
  - **Leaf packs:** areas where leaves have built up in the stream, typically in riffles, runs or along the stream margins or anywhere leaves are carried by the flow and trapped by sticks, rocks, etc.
5. Riffle and pool sedimentation describes the amount of silt that has settled out into the different habitats. This characteristic is important, as it indicates the potential quality of habitat for the aquatic insects.
6. Water appearance and characteristics includes color of the water, as well as the presence or absence of surface film, scum, oil, etc. Any condition (e.g., oil on the surface) that applies should be circled or included in the comments section if not identified in the rating.
7. Nutrient enrichment is an important characteristic, as many streams are impaired by an overabundance of nitrates and phosphates. The main indicator of nutrient enrichment is excessive green filamentous algae. However, other aquatic plants may be present and other types of algae (e.g., brown bottom dwelling) may exist in the stream. Investigators should know how to tell the difference between filamentous or hair-like algae and mosses.
8. Channel condition is important as it represents activities (e.g., gravel dredging) that may be occurring or have occurred in the stream. Circle the condition that best applies to the site.
9. Total stream visual assessment score represents the overall quantitative rating for the site. Category 1 through 8 are added together to get the score.

## Appendix D: Visual Stream Assessment Data Sheets

### Part I - General Information

Investigator(s)	
Contact information	
Date/Time	
Stream Name	
Sub-Watershed	
County	
Location (give roads, directions to the site)	
Map # / name	
Point # (on map)	
Lat./long.	
Flow @ nearest USGS gauge or estimate	low - medium - high

### Part II - Weather Data

Weather in past 24 hours		Current weather	
Storm (heavy rain)		Storm (heavy rain)	
Steady Rain		Steady Rain	
Intermittent Rain		Intermittent Rain	
Overcast		Overcast	
Clear/Sunny		Clear/Sunny	

### Part III - Specific Land Uses Identified (check as many as apply).

	Streamside (< 200')	< ¼ mile from stream bank	> ¼ mile from stream bank
Residential			
Agricultural			
Forestry			
Commercial (shopping centers, etc.)			
Industrial			
Development/ construction			
Mining			
Parkland			
Other (please specify)			

Please specify the exact nature of the land uses identified above (e.g., agricultural: livestock are in the creek or row crops are next to stream) and any comments.



**Part IV - Other (circle all that apply to the site)**

<i>Litter</i>		
No litter visible - Small litter <b>Occasional</b> (cans, etc.) - Small litter <b>Common</b>		
Large litter <b>Occasional</b> (tires, shopping carts, etc.) - Large litter <b>Common</b>		
<i>Algae Present</i> <b>Yes</b> <b>No</b>		
Green algae present in <b>no/few/several / many</b> spots		
Brown algae covers <b>no/few/several / many</b> rocks		
<i>Riparian Zone Vegetation</i>		
Right bank - Estimated width = _____ feet <b>Trees/Shrubs/grasses or herbaceous</b>		
Left Bank - Estimated width = _____ feet <b>Trees/Shrubs/grasses or herbaceous</b>		
<i>Erosion</i>		
Right Bank - Stream bank erosion in <b>no/few/several/many</b> spots - Estimated length = _____ feet		
Left Bank - Stream bank erosion in <b>no/few/several /many</b> spots - Estimated length = _____ feet		
Artificial areas of stream bank stabilization present (e.g., rip rap) - <b>Yes or No</b>		
Is sediment present in the middle of the stream? <b>Yes or No</b> On the margins of the stream? <b>Yes or No</b>		
<i>Water Color/odor - Please describe-</i> _____		
<i>Special Problems</i>		
Chemical spills, fish kills, wildlife/waterfowl kills *		
Flooding, Periods of no flow		
<i>Streambed (circle all that apply)</i>		
Bottom deposits?	Stability – stream bed sinks beneath your feet in?	What does the streambed consist of?
<b>Grey</b>	<b>No spots</b>	___ % silt (mud)
<b>Orange/red</b>	<b>A few spots</b>	___ % sand (gritty)
<b>Yellow</b>	<b>Many spots</b>	___ % gravel (1/4" to 2" stones)
<b>Brown</b>		___ % cobbles (2" – 10" stones)
		___ % boulders (> 10" stones)
* If observed contact -- as soon as possible -- your local Stormwater Coordinator or the Blessed Earth Southeast Staff		
<b>Part IV continues on next page</b>		

**Part IV Continued**

<i>Discharge Pipes</i>
Are there any discharge pipes located in the area that you sampled? <b>Y</b> or <b>N</b>
What type of pipes?
____ Sewage treatment plant
____ Storm water runoff
____ Other
<i>Fish Indicators</i>
____ scattered individuals
____ scattered schools

**Part V - Pictures & comments**

Picture #	Direction (upstream or downstream)	Description

**PART VI - Comments:** Add any information that may help target areas for more detailed review or to guide improvement efforts.

**Part VII - Sketch of Site:** Draw a general diagram of the site showing stream meanders, roads, fields, etc. below or on the back of this sheet.

## Appendix E: Sample Liability Form VOLUNTEER WAIVER

### Volunteer Waiver Form For [Event name and date]

#### VOLUNTEER INFORMATION (PLEASE PRINT CLEARLY)

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone or email: \_\_\_\_\_

(Optional if you would like us to contact you for future volunteer event)

#### EMERGENCY CONTACT INFORMATION

Name: \_\_\_\_\_ Relationship  
to Volunteer: \_\_\_\_\_ Phone: \_\_\_\_\_

**VOLUNTEER AGREEMENT:** As a volunteer, I release and hold harmless [insert all partners] and their successors from any and all claims, costs, suits, actions, judgments or expenses upon any damage, loss or injury to me or to my property which may arise from this volunteer event.

I acknowledge that I am fully aware of any and all risks posed by these volunteer activities and that I have no medical condition that prevents me from engaging in them.

I also give permission to be photographed by project partners or the media for use in printed materials, through the internet or through other media outlets.

In signing below, I acknowledge that I have read and understand this volunteer agreement.

Signature: \_\_\_\_\_

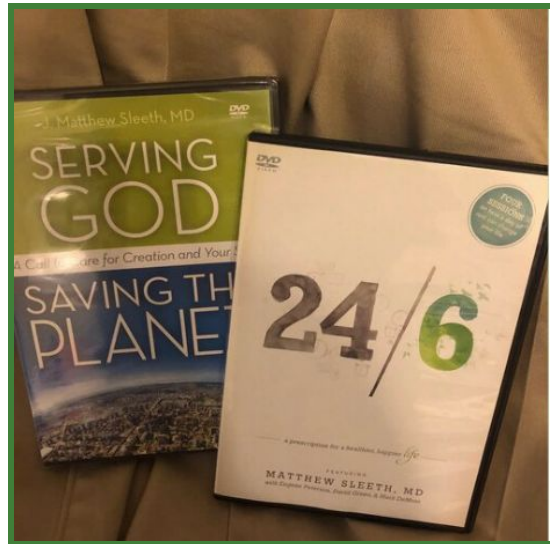
**NOTE:** If the volunteer is under the age of 18, a parent or legal guardian must sign.

Parent Signature: \_\_\_\_\_

*Form adapted from City of Nashville:*

<https://www.nashville.gov/Portals/0/SiteContent/pw/docs/beautification/Trees/WaiverUrbanRiparianBufferHandbook.pdf>

## Appendix F: Promotional Items



When you register your event with us at <https://blessedearthtn.com/livingwaters-signup> , we'll ask if you'd like promotional materials for event participants. These may include keychains, stickers, water bottles, brochures and other items from *1 Mississippi* or Bible Study DVDs from Blessed Earth Southeast. These can be used to help attract and thank volunteers for their participation, as well as provide more education.

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Photographs:

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