Stormwater Pollution Prevention Plan (SWPPP)
For

Rolling Hills Road Improvements
Phase 1B – Sta 56+10 to Rte WW
and
Phase 2 – New Haven Rd. to Sta 56+10

Work under this contract (please check all that apply):

☐ Phase 1b
☐ Phase 2

Poepping, Stone, Bach & Associates, Inc.

Michael J. Purol, P.E.
July 13, 2011
STORMWATER POLLUTION PREVENTION PLAN FOR

Project Name: Rolling Hills Road Improvements, Phase 1B and Phase 2 Road Improvements
Project Location/Address: Along the East and West side of Rolling Hills Road between New Haven Road and State Route WW
City/State/Zip: Columbia, Missouri 65201
Project Site Telephone Number: N/A
Parcel Number: N/A

PREPARED FOR

Project Property Owner’s Name: Boone County, Missouri (c/o Resource Management Department)
Address: 801 East Walnut, Room 315
City: Columbia State: Missouri Zip: 65201
Phone: 573-886-4480 Fax: 573-886-4340
Email:

PREPARED BY

Consulting Company: Poepping, Stone, Bach & Associates, Inc. (PSBA)
Consultant’s Name: Michael J. Purol, P.E.
Address: 801 Broadway, Suite 224
City: Hannibal State: Missouri Zip: 63401
Phone: 573-406-0541 Fax: 217-223-1546
Email: michaelp@psba.com
SWPPP Preparation Date: July 13, 2011
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**1.1 Project/Site Information**

**Project Name:** Rolling Hills Road Improvements, Phase 1B and Phase 2 – Roadway Improvements

**Project Location/Address:** Along the East and West side of Rolling Hills Road between New Haven Road and State Route WW

**City/State/Zip:** Columbia, Missouri 65201

**County or Similar Subdivision:** Boone County

**Latitude:** 00

**Longitude:** 00

Is this project considered a federal facility? [ ] Yes [ ] No

State Operating Permit needed? [X] Yes [ ] No

NPDES project or permit tracking number: MO-R100049

**1.2 Contact Information/Responsible Parties**

**General Contractor:** 

**General Contractor Contact:** 

**Address:** 

**City:** 

**State:** 

**Zip:** 

**Phone:** 

**Fax:** 

**E-mail:**

**Erosion Control Inspector:** 

**Company:** 

**Address:** 

**City:** 

**State:** 

**Zip:** 

**Phone:**

**Fax:**

**E-mail:**

**24-Hour Contact:**

**Contact Name:**

**Phone:**
1.3 Construction Site Estimates

**Phase 1B**
Total Site Area: **5.25** acres
Estimated Area to be disturbed by all activities: **5.25** acres
Percentage impervious surface prior to development: **15 %**
Runoff Coefficient prior to development: **0.48**
Percentage impervious surface after development: **36 %**
Runoff Coefficient after development: **0.60**

**Phase 2**
Total Site Area: **12.25** acres
Estimated Area to be disturbed by all activities: **12.25** acres
Percentage impervious surface prior to development: **20 %**
Runoff Coefficient prior to development: **0.49**
Percentage impervious surface after development: **26 %**
Runoff Coefficient after development: **0.54**
1.4 Nature and Sequence of Construction Activities

General Description of Project:

Phase 1B involves the reconstruction of Rolling Hills Road from Sta 56+10 (few hundred feet south of Columbia Gorge Parkway) to State Rte WW and fence construction from New Haven Road to State Rte WW. See attached maps in Appendices A & B. The Contractor shall follow the Project Plans & Specifications concerning waste and barrow material as well as equipment storage and erosion control measures. The Contractor shall furnish additional details regarding storage areas at the Pre-Construction Meeting.

Phase 2 involves the reconstruction of Rolling Hills Road from New Haven Road to Sta 56+10 (few hundred feet south of Columbia Gorge Parkway). See attached maps in Appendices A & B. The Contractor shall follow the Project Plans & Specifications concerning waste and barrow material as well as equipment storage and erosion control measures. The Contractor shall furnish additional details regarding storage areas at the Pre-Construction Meeting.

What is the function of the construction activity?

☐ Residential/ Subdivision
☐ Commercial/ Industrial
☒ Road Construction
☐ Linear/ Utility
1.5 Soils, Slopes, Vegetation and Current Drainage Patterns

Soil Type(s): 50001-Armstrong Loam; 50059-Mexico Silt Loam (See attached soils map in Appendix B)

Slopes: 1-9% slopes, grading will utilize maximum side slopes of 3:1 with maximum grade of 9%

Drainage Patterns: Phase 1B drains north to the South Fork of Grindstone Creek.

Phase 2: Approximately \( \frac{1}{2} \) of the drainage area drains North to the South Fork of the Grindstone Creek. The remainder of the site flows South to Gans Creek. See the map in Appendix B.

Vegetation: Existing land is woodland and pasture. Disturbed areas shall be seeded, fertilized and mulched in accordance with the Project Specifications.

1.6 Receiving Waters

Outfall #1:

Name of Watershed: Un-named Tributary

Receiving Waterbody: South Fork of the Grindstone Creek Class: Not C or P

Distance from project outfall to receiving water: 350+ feet Type of outfall: Channelized Surface

How will velocity be reduced at the outfall? Rock Ditch Checks

Description of storm sewer/drainage system: This project will construct a closed pipe storm water system and will discharge onto a rock blanket adjacent to the ordinary high water mark of the un-named tributary.

Outfall #2:

Name of Watershed: Un-named Tributary

Receiving Waterbody: Gans Creek Class: Not C or P

Distance from project outfall to receiving water: 1500+ feet Type of outfall: Channelized Surface

How will velocity be reduced at the outfall? Rock Ditch Checks

Description of storm sewer/drainage system: This project will construct a closed pipe storm water system and will discharge into an existing road ditch approximately 1,500 ft. from the Un-named tributary.

Will work be done in a Jurisdictional stream or creek?

☑ Yes □ No

If so, what steps will be taken to address the impact of construction? All restrictions associated with
the 404 and 401 permits have been made a part of the contract documents.

Are there any impaired waters on the site?  □ Yes  ☑ No

If so, what is the name of the waterbody, and list the impairment: ________________________________

If the above answer is yes, has a Total Maximum Daily Load (TMDL) been developed?  □ Yes  □ No

If a TMDL has been developed, list any specific requirements that are applicable to the construction site.

### 1.7 SITE FEATURES AND SENSITIVE AREAS TO BE PROTECTED

Environmentally sensitive areas on or near the project?  ☑ Yes  □ No

If yes, describe of environmentally sensitive area: **Type 2 Stream Buffer per Boone County Regulations**

Steps taken to address the impact of construction: **Minimize disturbance in approved work areas within the buffer. Control erosion and re-establish vegetation where disturbance has occurred.**

**STREAM BUFFER MEASUREMENTS** - if there will be construction taking place along a stream and this project has been platted after June 1, 2009, please fill this section out:

Will there be any stream buffer delineations on site?  ☑ Yes  □ No

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<thead>
<tr>
<th>Width</th>
<th>Slope Modifications (% slope)</th>
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<tr>
<td>□ Type 1 (not to disturb within 100 ft.)</td>
<td>☑ 0-14% (no change in outer zone width)</td>
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<td>☑ Type 2 (not to disturb within 50 ft.)</td>
<td>□ 15-25% (add 25 ft. to outer zone width)</td>
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<td>□ Type 3 (not to disturb within 30 ft.)</td>
<td>□ &gt;25% (add 50 ft. to outer zone width)</td>
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Will there be any stream buffer averaging taking place on this property?  □ Yes  ☑ No
Potential sources of sediment to stormwater runoff: *Areas where tree removal, topsoil stripping, excavation embankment and soil stockpiling have occurred.*

Potential pollutants and sources, other than sediment, to stormwater runoff:

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<tr>
<th>Trade Name/Material</th>
<th>Stormwater Pollutants</th>
<th>Location(s)</th>
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<tr>
<td>Gasoline, diesel fuel, motor oil</td>
<td>Petroleum</td>
<td>Vehicle/equipment leakage or material storage areas</td>
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<td>Antifreeze</td>
<td>Glycol, heavy metals</td>
<td>Vehicle/equipment leakage or material storage areas</td>
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<td>Hydraulic fluid</td>
<td>Mineral oil</td>
<td>Vehicle/equipment leakage or material storage areas</td>
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<td>Fertilizer</td>
<td>Nitrogen, phosphorous</td>
<td>Material storage areas</td>
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<tr>
<td>Waste Dumpster</td>
<td>Trash and floatables</td>
<td>Covered/ enclosed storage</td>
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**1.9 ENDANGERED SPECIES CERTIFICATION**

Endangered or threatened species/critical habitats on or near the project? □ Yes ☒ No

Description of species and/or critical habitat: *See Appendix G*
1.10 Historic Preservation

Historic Sites on or near the project?  □ Yes  □ No
Description of species and/or critical habitat: See Appendix G

1.11 Applicable Federal, State, Tribal, or Local Programs

Boone County Storm water Ordinance

1.12 Maps

The site map for this Project includes the Construction Plans referenced in Appendix B.

The site map should show changes that have been made to the construction site, BMPs and stabilization methods as the site progresses. The Missouri State Operating Permit requires that the SWPPP and site map be kept up to date. The Contractor shall mark up the site map with the locations and dates of any changes being made. Also include the current locations of the following:

- Portable toilets
- Material storage, vehicle and equipment fueling and maintenance areas
- Concrete, paint and stucco washouts
- Dumpster containers
- Spill kits
- Soil stockpiles
- Any other non-structural non-stormwater BMPs, temporarily removed structural BMPs or changes to the structural BMPs
The Contractor shall minimize the disturbed area by working within the construction limits and easements shown on the Construction Plans and as staked in the field. Existing structures shall be utilized to the fullest extent possible to reduce erosion and trap suspended solids from leaving the project site. The contractor shall make all possible attempts to minimize the disturbed area, stabilizing an area before moving to another phase of the project.
GENERAL SEQUENCE OF CONSTRUCTION (attach additional sheets if necessary):

- Pre-Construction Meeting for SWPPP training prior to any construction
- Install temporary BMP’s for perimeter control
- Clearing and grubbing
- Tree and brush disposal
- Excavation and embankment grading (remove excess soil from site as needed)
- Install silt fence and ditch checks (as excavation and embankment progresses)
- Temporary seed and mulch (as needed or required)
- Prepare all disturbed areas for seeding
- Permanent seed, fertilize and mulch

SEQUENCE OF CONSTRUCTION: The General Contractor **must** complete the following sequence of construction for land disturbance before approval will be given. Under Item, please list the land disturbance items for which contractors are to be used (i.e. grading, storm sewer, paving, sanitary sewer, curb & gutter, erosion and sediment controls, water, etc.)

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<th>ITEM</th>
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### 2.3 Permanent Structural BMPs

**BMP: Rock Liner**
Description: See Construction Plans, Specifications and Appendix F – BMP Detail Sheets. Install per typical detail shown on the Construction Plans.
Maintenance and Inspection Procedures: See the Specifications and Appendix F – BMP Detail Sheets

**BMP: Rock Blanket**
Description: See Construction Plans, Specifications and Appendix F – BMP Detail Sheets. Install per typical detail shown on the Construction Plans.
Maintenance and Inspection Procedures: See the Specifications and Appendix F – BMP Detail Sheets

**BMP: Silt Fence**
Description: See Construction Plans, Specifications and Appendix F – BMP Detail Sheets
Maintenance and Inspection Procedures: See the Specifications and Appendix F – BMP Detail Sheets

**BMP: Temporary Construction Entrance**
Description: See Construction Plans, Specifications and Appendix F – BMP Detail Sheets
Maintenance and Inspection Procedures: See the Specifications and Appendix F – BMP Detail Sheets

**BMP: Sediment Trap**
Description: See Construction Plans, Specifications and Appendix F – BMP Detail Sheets
Maintenance and Inspection Procedures: See the Plans and Specifications

**BMP: Rolled Erosion Control Products**
Description: See Construction Plans, Specifications and Appendix F - BMP Detail Sheets
Maintenance and Inspection Procedures: See the specification and Appendix F - BMP Detail Sheets

**BMP: Rock Ditch Checks**
Description: See Construction Plans, Specifications and Appendix F – BMP Detail Sheets. Install per typical detail shown on the Construction Plans.
Maintenance and Inspection Procedures: See the Specifications and Appendix F – BMP Detail Sheets
2.5 Permanent Non-Structural BMPs

BMP: Permanent Seeding and Mulching
Description: See Construction Plans, Specifications and Appendix F - BMP Detail Sheets. Permanent seeding and mulching must be initiated immediately and completed within 7 calendar days whenever any clearing, grading, excavation or other earth disturbing activities have permanently ceased on any portion of the site.
Maintenance and Inspection Procedures: See the Specifications and Appendix F – BMP Detail Sheets

2.6 Temporary Non-Structural BMPs

BMP: Temporary Seeding and Mulching
Description: See Construction Plans, Specifications and Appendix F – BMP Detail Sheets. Seeding and mulching shall be applied when soil disturbing activities cease in an area for 14 days or more.
Maintenance and Inspection Procedures: See the Specifications and Appendix F – BMP Detail Sheets
3.1 MATERIAL HANDLING AND WASTE MANAGEMENT

Burning: Any burning on the site requires a permit from the Missouri Department of Natural Resources. Call the Northeast Regional office at 660-385-8000.

Dust Control: The contractor is required by Missouri State law to control dust from the site. Watering must be provided in unstabilized areas and mulch applied as soon as possible.

Mud Tracking: The permittee is responsible for keeping sediment and debris off streets and roads.

Petroleum Products: All petroleum products and petroleum waste products (except fuels) and storage containers shall be stored such that these materials are not exposed to stormwater. Sufficient practices of spill prevention, control and/or management shall be provided to prevent any spills of these pollutants from entering a water of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall also prevent the contamination of groundwater.

Construction Waste: All construction waste material shall be collected, deposited, and stored in a manner to prevent contact with storm waters discharging from the site and shall be disposed of by a licensed solid waste management contractor. No waste shall be buried on site.

Sanitary Waste: A licensed sanitary waste management contractor shall collect all sanitary waste from portable units that will be maintained on a regular basis from any site that cannot provide other means of sanitary waste disposal.

3.2 ESTABLISH PROPER BUILDING MATERIAL STAGING AREAS

Contractor to describe construction materials expected to be stored on site:

Contractor to describe storage procedures to minimize exposure of materials to stormwater:
Concrete wash water shall not be allowed to flow directly to storm sewers, streams, ditches, lakes, etc. without being treated. A sump, pit or manufactured containment system shall be constructed to contain concrete wash water.

The Contractor shall designate the location of concrete washout areas on the site map/construction plans.

Containment Method Chosen by Contractor:

---

3.4 Establish proper equipment/vehicle washing, fueling and maintenance practices

Equipment/vehicle washing, fueling and maintenance, oil changing, etc., shall be performed only in an area designated for that purpose. The designated area shall be equipped for recycling oil and catching spills.

The Contractor shall designate these areas on the site map/construction plans.

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3.5 Temporary spill prevention and control plan

Spill Prevention

A. Petroleum Products

- Construction equipment and vehicles shall be monitored for leaks and receive regular preventative maintenance to ensure proper operation and reduce the risk for leaks or spills.
- Petroleum products shall be stored in clearly labeled and tightly sealed containers or tanks.
- Any soil contaminated by fuel or oil spills shall be removed and disposed of properly.
- Above-or-below ground petroleum storage facilities must be set back 300 feet from any stream.
- Up to 500 gallons of heating oil and up to 1000 gallons of propane are allowed, but must remain outside of the stream buffer.
- Storage for oils, greases, fuels, and chemicals shall be provided with secondary containment.
B. Fueling and Servicing

- Above-or-below ground fueling storage facilities must be set back 300 feet from any stream.
- Secondary containment for fuel shall be provided.
- Spill kits will be included with all fueling sources and maintenance activities.

C. Hazardous Materials

- All hazardous materials shall be disposed of according to state regulation or the manufacturer’s recommendations.

D. Fertilizers

- Fertilizers shall be applied following manufacture’s recommendations.
- Fertilizers shall be stored in a covered area or in watertight containers.
- Partially used products shall be properly sealed and stored to avoid spills or leaks.
- Up to 20 gallons of liquid fertilizer or pesticide and up to 100 pounds of granular fertilizer or pesticide storage is allowed if set back from stream 300 feet.

Spill Controls

- Manufacturer’s recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- If the permittee or an authorized representative has knowledge of any know or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into stormwater, the storm drain system, or water of the U.S., said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release.
- In the event soil contamination or hazardous substances are discovered at the site during land disturbance activities, the permittee shall notify the MDNR regional office by telephone as soon as practicable and no later than 24 hours after discovery. The permittee must also notify the MDNR regional office in writing no later than 14 calendar days after discovery.
- The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if there is another one.
- State law requires the party responsible for a petroleum product spill in excess of 50 gallons to report the spill to MoDNR (573-751-1300) as soon as practical after discovery.
- Spills large enough to reach the storm system or creek will be reported to the National Response Center at 1-800-424-8802 and MoDNR (573-751-1300).
- See Appendix D for the Reportable Quantity Release Form
3.6 Allowable Non-Stormwater Discharge Management

- Waters used to wash vehicles where detergents are not used
- Water used to control dust
- Potable water including uncontaminated water line and fire hydrant flushing
- Routine external building wash down that does not use detergents
- Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used
- Uncontaminated air conditioning or compressor condensate
- Uncontaminated ground water or spring water
- Foundation or footing drains where flows are not contaminated with process materials such as solvents
- Uncontaminated excavation dewatering
- Landscape irrigation

Identify measures used to eliminate or reduce these discharges and the BMPs used to prevent them from becoming contaminated.

BMP: ____________________________

Description: ____________________________

______________________________

______________________________

Maintenance and Inspection Procedures: ____________________________

______________________________

______________________________

BMP: ____________________________

Description: ____________________________

______________________________

______________________________

Maintenance and Inspection Procedures: ____________________________

______________________________

______________________________
SECTION 4. INSPECTIONS

Instructions:
- Identify the individual(s) responsible for conducting inspections and describe their qualifications.
- You should also document the repairs and maintenance that you undertake as a result of your inspections.

Duly Authorized Representative(s) or Position(s):

Company or Organization Name: ____________________________

Name: ____________________________

Position: ____________________________

Address: ____________________________

City: ____________________________ State: __________ Zip: __________

Phone: ____________________________ Fax: ____________________________

Email: ____________________________

Qualifications: ____________________________

The Erosion Control Inspector shall be responsible for conducting site inspections, filling out inspection and maintenance reports, and for selecting and training the individuals who shall be responsible for maintenance and repair activities. A blank Construction Site Inspection Report is included in Appendix E.

Minimum Inspection Requirements and Frequency:

- All control measures shall be inspected at least once every seven (7) calendar days and within 48 hours of a rainfall event resulting in stormwater runoff on site.
- All perimeter controls shall be inspected weekly for proper anchorage, leakage, or tears on the control material.
- Parts that have been finally stabilized shall be inspected once per month.

Correction Procedures:

- All measures shall be maintained in good working order; if repairs or other measures are found to be necessary, they shall be initiated within 48 hours of report.
- Any problems in the inspection reports shall be corrected within seven (7) calendar days. If weather conditions make it impossible to correct the problem within seven (7) days, a detailed report of the problem (including pictures) must be filed with the regular inspection reports.
Important Recorded Dates:

Date(s) when structural controls are installed:

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

Date(s) when major grading activities occur:

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

Date(s) when construction activities temporarily or permanently cease on a portion of the site:

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

Date(s) when an area is either temporarily or permanently stabilized:

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

Rainfall:

The Contractor shall keep a log of rainfall amounts and dates during the project. Rainfall data can be obtained from the University of Missouri Sanborn Field (http://agebb.missouri.edu/weather/realtime/mizzou2.asp).

SWPPP Documents:

Inspection and maintenance report forms shall become an integral part of the SWPPP. The Contractor shall be responsible for keeping the SWPPP on-site in a secure location that can be easily accessed, with Contractor assistance, by Boone County or any other regulatory agency inspector. Copies of reports shall be provided to any of these persons, upon request, via mail or facsimile transmission.

The finalized SWPPP including all inspection and maintenance report forms are to be maintained by Boone County for three (3) years following the final stabilization of the site.
5.2 LOG OF CHANGES TO THE SWPPP

Instructions:
- Create a log here, or as an attachment, of changes and updates to the SWPPP. You should include additions of new BMPs, replacement of failed BMPs, significant changes in the activities or their timing on the project, changes in personnel, changes in inspection and maintenance procedures, updates to site maps, and so on.

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5.3 Training Log

Instructions:
- Training your staff and subcontractors is an effective BMP. As with the other steps you take to prevent stormwater problems at your site, you should document the training that you conduct for your staff, for those with specific stormwater responsibilities (e.g. installing, inspecting, and maintaining BMPs), and for subcontractors.
- Include dates, number of attendees, subjects covered, and length of training.

Stormwater Pollution Prevention Plan Topic (check all that apply):

- [ ] Temporary Soil Stabilization
- [ ] Non-stormwater Management
  - Control
- [ ] Wind Erosion Control
- [ ] Waste Management & Materials Pollution
- [ ] Erosion and Sediment Control Plan
- [ ] Temporary Sediment Control
- [ ] Tracking Control
- [ ] Other (specify) ____________________

Specific Training Objective: ____________________________________________

Date: ____________________________________________

Instructor: ____________________________________________

Location: ____________________________________________

Telephone: ____________________________________________

**Attendance Roster**

<table>
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<tr>
<th>Name</th>
<th>Company</th>
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SECTION 6. CERTIFICATION AND NOTIFICATION

OWNER’S CERTIFICATION

I hereby certify that I am the owner of the property described in this plan, or their legally authorized agent, and that I assume full responsibility for the performance of the operation stated in this plan.

Owner: ________________________________

By: ________________________________ Date: ________________________________

Title: ________________________________

Owner’s Signature: ________________________________

CONSULTANT’S DECLARATION

I hereby declare that the site plan, location map, and information contained in Sections 1 and 2 of this SWPPP have been prepared under my direction or supervision in accordance with Boone County’s Regulations, and applicable State and Federal Regulations and that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.


By: Michael J. Purol, P.E.

Title: Vice President-Hannibal Regional Office

Date: May 12, 2011

Consultant’s Signature: ________________________________

GENERAL CONTRACTOR’S CERTIFICATION

I hereby certify that I understand the requirements stated in this plan, that I am responsible for completing the requirements set forth in this SWPPP and shown on the site plan, and that I am responsible for the performance of the subcontractors listed in the plan.

General Contractor: ________________________________

By: ________________________________ Date: ________________________________

Title: ________________________________

Contractor’s Signature: ________________________________
I hereby certify that I understand the requirements stated in this SWPPP, that I am responsible for completing the requirements which have been listed in the plan as being a part of my scope of work.

Subcontractor: ________________________________________
Title: ___________________________ Date: ________________
Responsible for: __________________________________________
Subcontractor’s Signature: _________________________________

Subcontractor: ________________________________________
Title: ___________________________ Date: ________________
Responsible for: __________________________________________
Subcontractor’s Signature: _________________________________

Subcontractor: ________________________________________
Title: ___________________________ Date: ________________
Responsible for: __________________________________________
Subcontractor’s Signature: _________________________________

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Subcontractor: ________________________________________
Title: ___________________________ Date: ________________
Responsible for: __________________________________________
Subcontractor’s Signature: _________________________________

Subcontractor: ________________________________________
Title: ___________________________ Date: ________________
Responsible for: __________________________________________
Subcontractor’s Signature: _________________________________
APPENDIX A

General Location Map
Rolling Hills Road Improvements

Section 22 and 27, T48N, R12W
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APPENDIX B

Site Maps

(The Construction Plans for this Project shall be considered an attachment to this Appendix)
Boone County, Missouri
Utility Corridor Grading
Section 22 and 27
T48N, R12W
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.
APPENDIX C

Permits
Boone County, Missouri
Attn: Jeff McCann
801 East Walnut Street, Room 315
Columbia, Missouri 65201

Dear Mr. McCann:

This is in response to your request, on behalf of Boone County, Missouri, for a Department of the Army (DA) permit to replace an existing bridge with an approximate 153-foot-long by 12-foot-wide by 6-foot-tall concrete box culvert in an unnamed tributary of South Fork Grindstone Creek and to deposit 95 cubic yards of MoDOT Type II Rock to blanket a 40-foot-long by 32-foot-wide area at the outlet of the box culvert. The proposed work activities are located just south of the intersection of Rolling Hills Road and Route WW, in Section 22, Township 48 north, Range 12 west, in Boone County, Missouri and are associated with improving Rolling Hills Road to a four-lane-boulevard between Route WW and New Haven Road.

The Corps of Engineers has jurisdiction over all waters of the United States. Discharges of dredged or fill material in waters of the United States, including wetlands, require prior authorization from the Corps under Section 404 of the Clean Water Act (33 U.S.C. 1344). The implementing regulation for this Act is found at 33 C.F.R. 320-332.

This letter contains a preliminary jurisdictional determination (PJD) of the waters of the United States on the project site completed in accordance with Corps regulations at 33 CFR Part 331. If you concur with the PJD, we request that you sign the enclosed form in the signature block on page 3, and return the original copy to our office. In addition, a Notification of Administrative Appeal Options and Process Request for Appeal form (FORM) describes your options in Section E of the FORM. This PJD cannot be appealed. If you object to this PJD, you may request an approved JD by contacting our office at the following address:

District Commander
ATTN: Mark D. Frazier
Chief, Regulatory Branch
U.S. Army Engineer District, Kansas City
635 Federal Building, Suite 402
Kansas City, MO 64106-2896
Based upon a review of the information furnished, we have made a preliminary jurisdictional determination that the unnamed tributary of South Fork Grindstone Creek possesses an ordinary high water mark at this location and is a jurisdictional water of the United States. Therefore, the placement of dredged or fill material below the ordinary high water elevation as proposed by your project requires permit authorization from this office.

We have reviewed the information furnished and have determined that your project is authorized by nationwide permit (NWP) 14 provided you ensure that the conditions listed in the enclosed copy of excerpts from the March 12, 2007 Federal Register, Issuance of Nationwide Permits, as corrected, are met. You must also comply with the Kansas City District Regional NWP Conditions posted at: http://www.nwk.usace.army.mil/regulatory/regulatory.htm.

The Missouri Department of Natural Resources has certified that this NWP will not violate existing state water quality standards provided you comply with the conditions included in their attached certification document. All conditions included in the water quality certification become conditions of the NWP authorization. Please review all conditions associated with this NWP. If you have any questions concerning state water quality standards or compliance issues with the associated certification conditions, please contact the Chief of the Planning Section, Water Pollution Control Program, MDNR, P.O. Box 176, Jefferson City, Missouri 65102-0176. You may call 573-751-1404 for information.

General condition 26 requires you to sign and submit the enclosed "Compliance Certification" upon completion of the authorized work and any required mitigation.

This NWP verification is valid until the NWP is modified, reissued, or revoked. All of the existing NWPs are scheduled to be modified, reissued, or revoked prior to March 18, 2012. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant NWP is modified or revoked, you will have twelve (12) months from the date of the modifications or revocation of the NWP to complete the activity under the present terms and conditions of this NWP.

Although an individual DA permit is not required, other Federal, state and/or local permits may be required. You should verify this yourself.

We are interested in your thoughts and opinions concerning your experience with the Kansas City District, Corps of Engineers Regulatory Program. We have placed an automated version of our Customer Service Survey form on our website at: http://per2.nwp.usace.army.mil/survey.html. At your request, we will mail you a paper copy that you may complete and return to us by mail or fax.

Mr. Kenny Pointer, Regulatory Project Manager, reviewed the information furnished and made this determination. If you have any questions concerning this matter, please feel free to contact Mr. Pointer at 816-389-3833 (FAX 573-634-7960). Please reference file No. 2011-00545 in all comments and/or inquiries relating to this project.

Enclosures
Copies Furnished (wo/enclosures):

Environmental Protection Agency,
   Watershed Planning and Implementation Branch
U.S. Fish and Wildlife Service,
   Columbia, Missouri
Missouri Department of Natural Resources,
   Water Protection Program
Missouri Department of Conservation
Missouri Department of Natural Resources,
   State Historic Preservation Office

/ Poepping, Stone, Bach & Associates, Inc.
   Attn: Michael Purol
   801 Broadway, Suite 224
   Hannibal, MO 63401
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1. **Navigation.** (a) No activity may cause more than a minimal adverse effect on navigation.
   (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee’s expense on authorized facilities in navigable waters of the United States.
   (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. **Aquatic Life Movements.** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity’s primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

3. **Spawning Areas.** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. **Migratory Bird Breeding Areas.** Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. **Shellfish Beds.** No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs-4 and 48.

6. **Suitable Material.** No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. **Water Supply Intakes.** No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. **Adverse Effects From Impoundments.** If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. **Management of Water Flows.** To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. **Fills Within 100-Year Floodplains.** The activity must comply with applicable FEMA-approved state or local floodplain management requirements.
11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety.

15. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

16. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

17. Endangered Species. (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-Federal permittees shall notify the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on
18. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed, determined to be eligible for listing, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

19. Designated Critical Resource Waters. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the district engineer after notice and opportunity for public comment. The district engineer may also designate additional critical resource waters after notice and opportunity for comment.
(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWP 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, and 50 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWP 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 27, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

20. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10 acre and require pre-construction notification, unless the district engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. For wetland losses of 1/10 acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream restoration, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2 acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2 acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.
21. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, Individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

22. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

23. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

24. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

25. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

(Transferee)

(Date)

26. Compliance Certification. Each permittee who received an NWP verification from the Corps must submit a signed certification regarding the completed work and any required mitigation. The certification form must be forwarded by the Corps with the NWP verification letter and will include:
(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general or specific conditions;
(b) A statement that any required mitigation was completed in accordance with the permit conditions; and
(c) The signature of the permittee certifying the completion of the work and mitigation.

27. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, as a general rule, will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested
information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) Forty-five calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 17 that listed species or critical habitat might affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 18 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) is completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee cannot begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project, the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided result in a quicker decision.);

(4) The PCN must include a delineation of special aquatic sites and other waters of the United States on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters of the United States, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, where appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10 acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.
(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP 48 activities requiring pre-construction notification and for other NWP activities requiring pre-construction notification to the district engineer that result in the loss of greater than 1/2-acre of waters of the United States, the district engineer will immediately provide (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy of the PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies’ concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps multiple copies of pre-construction notifications to expedite agency coordination.

(5) For NWP 48 activities that require reporting, the district engineer will provide a copy of each report within 10 calendar days of receipt to the appropriate regional office of the NMFS.

(e) District Engineer's Decision: In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If the proposed activity requires a PCN and will result in a loss of greater than 1/10 acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any conditions the district engineer deems necessary. The district engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the plan within 43 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.

If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (3) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects.
occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan.

28. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.
STATE OF MISSOURI GENERAL CONDITIONS
FOR NATIONWIDE PERMITS

These conditions ensure that activities carried out under Nationwide Permits (NWPs) do not violate the Water Quality Standards of the State of Missouri resulting in permanent damage to habitat, increased turbidity, reduced bank and channel stability, and/or impacts to the biological and chemical integrity of the waterbody. These general conditions and the specific conditions are in addition to, not a replacement for, those conditions included by the federal authorities. To further reduce the potential for water quality impacts, parties are encouraged to conduct the permitted activity(s) during periods of low moisture and/or low flow to the extent possible. These general conditions apply to NWPs 3, 4, 5, 6, 7, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 25, 27, 30, 31, 33, 36, 40, 41, 42, 43, 45, 46 and 47.

The remaining NWPs, which will require individual certifications by the Missouri Department of Natural Resources, are: 17, 29, 32, 34, 37, 38, 39, 44, 48, 49 and 50.

MISSOURI GENERAL CONDITIONS are as follows:

1. NWPs shall not allow the filling of jurisdictional springs.

2. Acquisition of a NWP(s) and attendant water quality certification(s) shall not be construed or interpreted to imply the requirements for other permits are replaced or superceded. Any national pollutant discharge elimination system (NPDES) permits, general permits for land disturbance, or other requirements shall be complied with. Applicants with questions are encouraged to call the Water Protection Program, NPDES Permits and Engineering Section, at (573) 526-3589.

3. Care shall be taken to keep machinery out of the waterway as much as possible. Fuel, oil and other petroleum products, equipment and any solid waste shall not be stored below the ordinary high water mark at any time or in the adjacent floodway beyond normal working hours. All precautions shall be taken to avoid the release of wastes or fuel to streams and other adjacent waterbodies as a result of this operation.

4. Petroleum products spilled into any waterbody or on the banks where the material may enter waters of the state shall be immediately cleaned up and disposed of properly. Any such spills of petroleum shall be reported as soon as possible to the Missouri Department of Natural Resources' 24-hour Environmental Emergency Response number at (573) 634-2436.

5. Only clean, nonpolluting fill shall be used. The following materials are not suitable for bank stabilization and shall not be used due to their potential to cause violations of the general criteria of the Water Quality Standards, 10 CSR 20-7.031 (A) – (H):
   a. Earthen fill, gravel, broken concrete where the material does not meet the specifications outlined below, and fragmented asphalt, since these materials are usually not substantial enough to withstand erosive flows;
   b. Concrete with exposed rebar;
   c. Tires, vehicles or vehicle bodies, construction or demolition debris are solid waste and are excluded from placement in the waters of the state;
d. Liquid concrete, including grouted riprap, if not placed as part of an engineered structure; and

e. Any material containing chemical pollutants (for example: creosote or pentachlorophenol).

Recycled or broken concrete may be used provided that it is reasonably well graded, consisting of pieces varying in size from 20 pounds up to and including at least 150 pound pieces. Applicants must break all large slabs to conform to the well-graded requirement. Generally, the maximum weight of any piece shall not be more than 500 pounds. Gravel and dirt shall not exceed 15% of the total fill volume. All protruding reinforcement rods, trash, asphalt and other extraneous materials must be removed from the broken concrete prior to placement.

Recycled or broken concrete being used simply as fill need not conform to the well-graded requirement. It shall, however, be free of extraneous materials and shall be placed to eliminate voids within the fill.

6. Clearing of vegetation/trees shall be the minimum necessary to accomplish the activity. A vegetated corridor shall be maintained from the high bank on either side of the jurisdictional channel to protect water quality and to provide for long-term stability of the stream channel, unless physical barriers prevent such a corridor. For purposes of this NWP, lack of ownership or control of any portion of this corridor may be considered a legitimate and discretionary cause to waive this requirement on that portion.

7. This water quality certification is not valid for any Section 404 permit issued on a waterbody that:
   a. Is listed as impaired pursuant to Section 303(d) of the Clean Water Act;
   b. If the activities are located in or occur within two miles upstream of a designated outstanding state or national resource area (10 CSR 20-7.031); or
   c. If the activities are located in a designated metropolitan no-discharge stream.

Waters on the 303(d) list can be found at http://www.dnr.mo.gov/env/wpp/waterquality/2002_303d_list.pdf. Outstanding National/State Resource Waters and Metropolitan No-Discharge Streams can be found in 10 CSR 20-7.031, Tables D, E and F or at http://www.sos.mo.gov/adrules/csr/current/10csr/10c20-7b.pdf. If more detail than what is provided at these web sites is needed to precisely pinpoint your location, please call (573) 522-2552.

8. Streambed gradient shall not be permanently altered during project construction.

9. NWPs involving a loss of more than 1/10 acre of wetlands with a predominance of bottomland hardwoods that are comprised mainly of different species of gum, oak and bald cypress shall require individual water quality certification by the state.

10. NWPs issued by the Army Corps of Engineers (Corps) for which the 300 linear feet threshold for stream impacts is waived by the district engineer on classified waterbodies as defined by 10 CSR 20-7.031 shall require individual water quality certification by the state.

11. No project under a NWP shall accelerate bed or bank erosion.
12. Planting of any required vegetated buffer shall maximize the use of native, flood tolerant species to provide soil stabilization and wildlife benefits. Invasive, non-native species are prohibited.

13. Pursuant to Chapter 644.038, RSMo, the department certifies all NWPs for impacts in all waters of the state without the above-stated or any other conditions for the construction of highways and bridges approved by the Missouri Highway and Transportation Commission.

STATE OF MISSOURI SPECIFIC CONDITIONS:

Note: There are no specific conditions for NWPs 5, 15, 18, 21, 23, 25, 27, 30, 31, 45 and 46. For these NWPs only general conditions apply.

NATIONWIDE PERMIT 3

Maintenance

1. Silt, sediment and debris removal shall be limited to a maximum of 50 linear feet upstream and downstream of structures.

3. During dewatering, water shall not be returned directly to the waterway but shall be pumped upland and filtered through an appropriate treatment device as prescribed in any existing separate permit authorizing the discharge of return water. If, however, instream flow is 1 cubic foot per second (cfs) or greater and the return rate is set at 1 csf or less, return may be made directly to the stream.

3. This condition applies to any regulated activity, which involves the construction of a new or replacement culvert on a Class P or C stream in Missouri. All culverts must be designed to allow the natural passage of aquatic organisms. The culvert design must mimic the natural shape and flow of the channel. For all triple cell culverts on Class P and C streams, the opening of the center culvert must be slightly lower than the adjacent culverts to concentrate low flows for the passage of aquatic organisms. Class P and C streams in Missouri can be found at http://www.sos.mo.gov/adrules/csr/current/10csr/10c20-7c.pdf.

NATIONWIDE PERMIT 4

Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities

1. Any inorganic or extraneous debris such as may be found on Christmas trees shall be removed to qualify as clean, nonpolluting fill.
NATIONWIDE PERMIT 6
_Survey Activities_

1. Water, fines and excavated materials displaced by activities such as borings, shall not be returned directly to the waterway, but shall be pumped upland and filtered through an appropriate treatment device as prescribed in any existing separate permit authorizing the discharge of return water.

NATIONWIDE PERMIT 7
_Outfall Structures and Associated Intake Structures_

1. Water quality certification does not replace or negate the need to obtain any or other required state permits under the Missouri Clean Water Law (Chapter 644, RSMo) for construction of wastewater treatment facility components, including outfall structures, or permits to release wastewater effluents or for the construction of components related to public water supplies, including intake structures, as may be required by the Missouri Safe Drinking Water Law (Chapter 640, RSMo).

NATIONWIDE PERMIT 12
_Utility Line Activities_

1. Material resulting from activity may not be temporarily sidecast into waters of the state for more than one month.

2. Directional boring under the streambed to avoid impacts to waters of the state is recommended. For utility crossings that must disturb the streambed, work shall be conducted in such a manner as to seal off the work area from flow.

3. Utility line crossings shall be placed as close to perpendicular as possible, and be limited to a maximum crossing length of no more than one and one-half times the width of the stream.

4. For any wetland impacts permitted under this nationwide permit, the applicant shall segregate and store separately the top 12 inches of soil to be replaced as top fill in the final trench closure. This condition will be waived if, due to special circumstances, the district engineers of the Army Corps of Engineers specifically require a different methodology in their permit.

NATIONWIDE PERMIT 13
_Bank Stabilization_

1. Channelization of streams is not allowed under this nationwide permit (NWP). Bank stabilization activities along one bank of a stream are permitted, including bank sloping and/or riprapping.

2. The redirection of flow by excavation of the opposite bank of a stabilization project or a stream channel bed is considered a channel modification and is prohibited by this NWP.
NATIONWIDE PERMIT 14

Linear Transportation Projects

1. Culverts authorized as part of the project by this permit shall not exceed the base width of the stable roadbed to include width allowed for special pedestrian crossings.

2. No culvert or stream crossing shall create an impediment to the passage of fish or other aquatic life.

3. When repairing, rehabilitating or replacing low water crossings in a situation where discharges of fill or dredged material would raise or lower elevation of the crossing by a total of 12 inches or more, or when removing the structure, the permittee must propose and employ measures to mitigate the potential impact of impounding gravel above the low water crossing or of releasing impounded gravel downstream of the structure. Such mitigation might include removing impounded gravel in the unstable area upstream of the low water crossing to prevent it from being transported downstream and/or constructing a notched weir to slow the release of impounded gravel from upstream of the low water crossing.

4. Where this nationwide permit is used to authorize bridge and culvert structures, stream channel work is limited to a maximum of 50 feet upstream and a maximum of 50 feet downstream of the bridge or culvert. For purposes of this condition, channel modifications are any activity that alters the width, depth, length and/or sinuosity of a waterway.

5. This condition applies to any regulated activity which involves the construction of a new or replacement culvert on a Class P or C stream in Missouri. All culverts must be designed to allow the natural passage of aquatic organisms. The culvert design must mimic the natural shape and flow of the channel. For all triple cell culverts on Class P and C streams, the opening of the center culvert must be slightly lower than the adjacent culverts to concentrate low flows for the passage of aquatic organisms. Class P and C streams in Missouri can be found at http://www.sos.mo.gov/adrules/csr/current/10csr/10c20-7c.pdf.

NATIONWIDE PERMIT 16

Return Water From Upland Contained Disposal Areas

1. Prior to commencing any dredging activity, the applicant shall acquire a Missouri General Permit 69 for Dredging Lakes/River Harbors if the activity is described as the same. All terms for compliance with the Missouri General Permit 69 are incorporated into the water quality certification. Applications for Missouri General Permit 69 may be obtained by contacting the Missouri Department of Natural Resources at (573) 751-1300.

NATIONWIDE PERMIT 19

Minor Dredging

1. Prior to commencing any dredging activity, the applicant shall acquire a Missouri General Permit 69 for Dredging Lakes/River Harbors, if the activity is described as the same. All terms for compliance with the Missouri General Permit 69 are incorporated into the water quality certification. Applications for Missouri General Permit 69 may be obtained by contacting the Missouri Department of Natural Resources at (573) 751-1300.
NATIONWIDE PERMIT 20
*Oil Spill Cleanup*

1. Since oil spill cleanup can have many specific tasks or processes involved which may require the acquisition of separate general or site specific permits, all applicants shall contact the Water Protection Program, NPDES Permits and Engineering Section, at (573) 751-6825 to determine any specific requirements. Compliance with requirements, if any, of those permits shall also be part of the water quality certification conditions.

NATIONWIDE PERMIT 22
*Removal of Vessels*

1. Use of this nationwide permit in Missouri is limited to removal actions only and shall not be used for any disposal of vessels.

NATIONWIDE PERMIT 33
*Temporary Construction, Access and Dewatering*

1. The use of this nationwide permit shall be limited to impacts of 6 months or less in duration.

2. Any removal of accumulated gravel upstream of a bridge or crossing shall be limited to the quantity necessary to relieve any obstruction or to protect downstream habitat.

NATIONWIDE PERMIT 36
*Boat Ramps*

1. No project shall be constructed in, or immediately upstream of, any known mussel beds. The Missouri Department of Conservation shall be consulted at (573) 882-9880 to determine if any known beds are present.

2. Any waste concrete or concrete rinsate shall be disposed of in a manner that does not result in any discharge to the jurisdictional waterways.

NATIONWIDE PERMIT 40
*Agricultural Activities*

1. No farm ponds may be constructed under this nationwide permit within those waters designated as Class P or Class C in the state's Water Quality Standards Regulations (10 CRS 20-7.031, Table H at www.sos.mo.gov/adrules/csr/current/10csr/10c20-7c.pdf).
NATIONWIDE PERMIT 41  
*Reshaping Existing Drainage Ditches*

1. Material from the reshaping activities shall not be sidecast into any jurisdictional waters for more than one month.

NATIONWIDE PERMIT 42  
*Recreational Facilities*

1. The vegetated corridor to be maintained from the high bank on either side of the jurisdictional channel may be used in part for the construction of public recreational trails, including those constructed to standards set by the Americans with Disabilities Act (ADA).

NATIONWIDE PERMIT 43  
*Stormwater Management Facilities*

1. No new or expanded stormwater management facilities may be constructed under this nationwide permit unless the storage facilities are located off-channel.

NATIONWIDE PERMIT 47  
*Pipeline Safety Program Designated Time Sensitive Inspections and Repairs*

1. Material resulting from activity may not be temporarily sidecast into waters of the state for more than one month.
APPENDIX D

Reportable Quantity Release Form
The discharges of hazardous substances or oil in stormwater discharges from construction sites shall be prevented or minimized in accordance with the SWPPP. When a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under 40CFR110, 40CFR117, and 40CFR302 occurs, the following steps shall be taken:

1. All measures shall be taken to contain and abate the spill and to prevent the discharge of the pollutant(s) to stormwater or off-site.

2. Notice must be provided to MDNR at (573) 751-1300 and the National Response Center (NRC) at 1-800-424-8802 in accordance with regulations referenced above as soon as site staff has knowledge of the discharge.

3. Contact the Boone County Resource Management Project Manager or Inspector (573-886-4480) immediately following notifications of MDNR and NRC.

4. The SWPPP shall be modified within seven (7) calendar days of knowledge of the discharge to provide a description of the release, the circumstances leading to the release, and the date of the release. The plans shall identify measures to prevent the recurrence of such releases and to respond to such releases.

<table>
<thead>
<tr>
<th>Date of Spill</th>
<th>Material Spilled</th>
<th>Approximate Quantity of Spill (in gallons)</th>
<th>Agency(s) Notified</th>
<th>Date of Notification</th>
<th>SWPPP Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
APPENDIX E

Inspection Report
# Stormwater Construction Site Inspection Report

## General Information

<table>
<thead>
<tr>
<th>Project Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
</tr>
<tr>
<td>Date of Inspection:</td>
</tr>
<tr>
<td>Inspector’s Name:</td>
</tr>
<tr>
<td>Inspector’s Title:</td>
</tr>
<tr>
<td>Inspector’s Contact Information:</td>
</tr>
</tbody>
</table>

- Completed Boone County’s Inspector Training course for Construction Sites?  □ Yes  □ No
- Describe present phase of construction:

## Weather Information

- Has there been a storm event since the last inspection?  □ Yes  □ No

  - If yes, provide:
    - Storm Start Date & Time: 
    - Storm Duration (hrs): 
    - Approximate Amount of Precipitation (in):

- Weather at time of this inspection?
  - □ Clear  □ Cloudy  □ Rain  □ Sleet  □ Fog  □ Snowing  □ High Winds
  - □ Other:
  - Temperature:

- Have any discharges occurred since the last inspection?  □ Yes  □ No
  - If yes, describe:

- Are there any discharges at the time of inspection?  □ Yes  □ No
  - If yes, describe:

## Certification Statement

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

<table>
<thead>
<tr>
<th>Signature of Inspector</th>
<th>Printed Name and Title</th>
<th>Date</th>
</tr>
</thead>
</table>
### OVERALL SITE ISSUES

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

<table>
<thead>
<tr>
<th>BMP/activity</th>
<th>Implemented?</th>
<th>Maintenance Required?</th>
<th>Corrective Action Needed and Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All inactive slopes and disturbed areas have been stabilized.</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
</tr>
<tr>
<td>2. Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
</tr>
<tr>
<td>3. Are all sanitary waste receptacles placed in secondary containment and free of leaks?</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
</tr>
<tr>
<td>4. Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
</tr>
<tr>
<td>5. Are discharge points and receiving waters free of any sediment deposits?</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
</tr>
<tr>
<td>6. Are storm drain inlets properly protected?</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
</tr>
<tr>
<td>7. Is the construction exit preventing sediment from being tracked into the street?</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
</tr>
<tr>
<td>8. Is trash/litter from work areas collected and placed in covered dumpsters?</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
</tr>
<tr>
<td>9. Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
</tr>
<tr>
<td>10. Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
</tr>
<tr>
<td>11. Are materials that are potential stormwater contaminants stored inside or under cover?</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
</tr>
<tr>
<td>12. Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
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<tr>
<td>13. (Other)</td>
<td>☐ Yes ☑ No</td>
<td>☐ Yes ☑ No</td>
<td></td>
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</tbody>
</table>
APPENDIX F

BMP Detail Sheets
TEMPORARY AND PERMANENT SEEDING AND MULCHING

Establishment of vegetation by spreading grass seed designed to protect exposed soil from erosion by eliminating direct impact of precipitation and slowing overland flow rates. Once established, the vegetative cover will also filter pollutants from the runoff.

APPROPRIATE APPLICATIONS:
Exposed soil after a phase of rough or finish grading has been completed, or areas where no activity will occur for 14 days.

CONDITIONS FOR EFFECTIVE USE:
Type of Flow: Sheet flow and concentrated flow (additional stabilization is necessary).
Minimum Rates: See Project Specification Section 01590.
Acceptable Dates: See Project Specification Section 01590.

WHEN BMP IS TO BE INSTALLED:
Seed and mulch should be applied immediately after rough or finished grading is completed.

STANDARDS AND SPECIFICATIONS:
See Project Specification Section 01590

OPERATION AND MAINTENANCE PROCEDURES:
See Project Specifications Section 01590
CONSTRUCTION ENTRANCE/EXIT

A stabilized entrance to a construction site which is designed to minimize the amount of sediment tracked from the site on vehicles and equipment. Mud and sediment fall off of tires as they travel along the stabilized entrance.

APPROPRIATE APPLICATIONS:

At locations where it is safe for construction vehicles and equipment to access existing streets, preferably at the location of future streets or drives.

CONDITIONS FOR EFFECTIVE USE:

Site conditions will dictate design and need. Ditches or pipes, if needed, sized for 15 year, 20 minute storm; HGL 6” below surface of entrance.

WHEN BMP IS TO BE INSTALLED:

Install stabilized construction entrance/exit prior to vehicles or equipment accessing unpaved areas. This will most likely be the first BMP to be installed on the site.

STANDARDS AND SPECIFICATIONS:

Limit the points of entrance/exit to the construction site. Properly grade and compact each construction entrance/exit to prevent runoff from leaving the site. Install culvert under entrance if needed to maintain positive drainage. Place fabric and cover with aggregate, forming a diversion across the entrance, if needed, to direct runoff away from the roadway. Require all employees, subcontractors, and suppliers to utilize the stabilized construction access.

OPERATION AND MAINTENANCE PROCEDURES:

Inspect routinely for damage and assess effectiveness of the BMP. Remove sediment and clods of dirt from construction entrance continuously. Replace rock, as necessary, to maintain a clean surface for traffic. Repair any areas that have settled. Keep all temporary roadway ditches clear. Immediately remove any mud or debris tracked onto paved surfaces.

SITE CONDITIONS FOR REMOVAL:

Remove when vehicles and equipment will no longer require access to unpaved areas.

STANDARD DRAWING: TC-1
CONSTRUCTION

ENTRY/EXIT

6. The drainage ditches shall be maintained at all times to prevent flooding of the construction area.

5. All surface water and rainwater shall be diverted to the drainage ditches.

4. The stone size shall be not less than 6 inches.

3. The distance from the edge of the roadway shall be not less than 15 feet.

2. The footing shall be not less than 6 inches.

1. The stone size shall be not less than 2 stones.

CONSTRUCTION SPECIFICATIONS

PROFILE

PLAN VIEW
SILT FENCE

A silt fence is a length of filter fabric stretched between anchoring posts spaced at regular intervals along the site at low/downslope areas. The filter fabric should be entrenched in the ground at least 6". When installed correctly and inspected frequently, silt fences encourage the ponding of runoff and can be an effective barrier to sediment leaving the site.

APPROPRIATE APPLICATIONS:

Installed along slopes, at base of slopes, and around the perimeter of a site as a final barrier to sediment being carried off site. Silt fence should not be used in areas of concentrated flow or as check dams.

CONDITIONS FOR EFFECTIVE USE:

Type of Flow: Sheet flow only
Contributing Area: Drainage area should not exceed 0.25 acres per 100-foot fence length.
Slope Length: The slope length above the fence should not exceed 100 feet.

WHEN BMP IS TO BE INSTALLED:

Silt fence should be installed prior to disturbance of natural vegetation and at intervals during construction of fill slopes.

STANDARDS AND SPECIFICATIONS:

If a standard-strength fabric is used, it can be reinforced with wire mesh behind the filter fabric. This increases the effective life of the fence. The maximum life expectancy for synthetic fabric silt fences is about 6 months, depending on the amount of rainfall and runoff. The fence should be designed to withstand the runoff from a 10-year peak storm event. Generally, drive posts for fence line, dig trench to required dimensions in front of posts for fabric burial, attach wire mesh to posts (if necessary), attach fabric to posts-allowing required length below ground level to run fabric along bottom of trench, and backfill and compact soil in trench to protect and anchor fabric. Alternate (and actually preferred) construction procedures include installing the fence by slicing it into the ground with specialized equipment.

OPERATION AND MAINTENANCE PROCEDURES:

Inspect at least every week and after every storm. Monitor and remove sediment buildup that is deeper than 1/2 the fence height. Replace torn/clogged fabric; repair loose fabric. Repair unstable or broken posts. Stabilize any areas susceptible to undermining. Add additional fencing if necessary to provide adequate protection.

SITE CONDITIONS FOR REMOVAL:

After permanent vegetation of slope is established, remove fence, regrade trench area and vegetate.

STANDARD DRAWING: SC-2a and SC-2b and Construction Plans
1. Excavate a 6"x4" trench

2. Set the stakes along the down slope side of the trench.

3. Staple geotextile material to stakes and extend it into and around the bottom of the trench.

4. Back fill and compact the excavated soil over the geotextile in the trench.

Sheet flow installation (perspective view) not to scale

NOTE: Point A should be higher than point B.

Drainage way installation (front elevation) not to scale

SILT FENCE SC-2A
**SILT FENCE NOTES:**

**A) INSTALLATION**

1. The height of silt fence shall be a minimum of 18 inches above the original ground surface and shall not exceed 34 inches above the ground surface.
2. The fabric shall be purchased in a continuous roll cut to length of the barrier to avoid the use of joints. When joints are unavoidable, filter cloth shall be securely spliced together only at support posts, with a max 6 inch overlap.
3. Dig a trench at least 6 inches deep and 4 inches wide along the trench alignment.
4. Drive posts at least 24 inches into the ground on the downslope side of the trench. Space posts a maximum of 6 feet apart.
5. The sediment fabric shall be fastened securely to the upslope side of the posts using a minimum of one inch long, heavy-duty wire staples or tie-wires, and eight inches of the fabric shall be extended into the trench. The fabric shall not be stapled to existing trees.
6. Place the bottom 1 foot of fabric in the minimum-of-6-inch deep trench, lapping toward the upslope side. Back fill with compacted earth or gravel.
7. If a silt fence is to be constructed across a ditch line or swale, it must be of sufficient length to eliminate endflow, and the plan configuration shall resemble an arc or horseshoe, running on a contour, with the ends oriented upslope. Extra-strength sediment fabric shall be used with a maximum 3-foot spacing of posts.
8. To reduce maintenance, excavate a shallow sediment storage area in the upslope side of the fence. Provide good access in area of heavy sedimentation for cleanout and maintenance.
9. Silt fences shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.
10. Installation with slicing method is preferred.

**B) TROUBLESHOOTING:**

1. Determine the exact location of underground utilities, before fence installation so utilities are not disturbed.
2. Grade alignment of fence needed to provide a broad, nearly level area upstream of fence to allow sediment collection area.

**C) INSPECTION MAINTENANCE:**

1. Inspect silt fences at least once a week and after each 1/2" of rainfall. Make any required repairs immediately.
2. Should the fabric of a sediment fence collapse, tear, decompose, or become ineffective, replace it promptly.
3. Remove sediment deposits as necessary to provide adequate storage volume for the next rain and to reduce pressure on the fence. Avoid damaging or undermining the fence during cleanout. Sediment accumulation should not exceed 1/2 the height of the fence.
4. Remove all fencing materials and unstable sediment deposits, and bring the area to grade and stabilize it after the contributing drainage area has been properly and completely stabilized.
ROCK CHECK DAMS

Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small device constructed of rock, gravel bags, sandbags, fiber rolls, or other proprietary product placed across a natural or man-made channel or drainage ditch.

APPROPRIATE APPLICATIONS:

Check dams can be placed at intervals along drainage swales or channels. The top of the downstream check dam should be level with the base of the upstream check dam. Check dams can also be used during the establishment of grass linings in drainage ditches or channels or in temporary ditches where the short length of service does not warrant establishment of erosion-resistant linings. Not to be used in streams.

CONDITIONS FOR EFFECTIVE USE:

Type of Flow: Moderate concentrated flow.

WHEN BMP IS TO BE INSTALLED:

Check dams can be installed prior to disturbance of natural vegetation in the contributing drainage area or immediately after construction of a drainage way.

STANDARDS AND SPECIFICATIONS:

Check dams should be placed at a distance and height to allow small pools to form behind them. Install the first check dam approximately 16 feet from the outfall device and at regular intervals based on slope gradient and soil type. For multiple check dam installation, backwater from the downstream check dam should reach the toe of the upstream dam. High flows (typically a 2-year storm or larger) should safely flow over the check dam without an increase in upstream flooding.

OPERATION AND MAINTENANCE PROCEDURES:

Inspect at least every week and after every storm. Remove trash and leaf accumulation. Remove sediment when depth reaches one-half of the check dam height. Repair/restore dam structure, if necessary, to original configuration to protect the banks.

SITE CONDITIONS FOR REMOVAL:

Remove after contributing areas have been adequately stabilized and vegetation is adequately established in drainage way. Regrade and vegetate the area.

STANDARD DRAWING: RM-1 and Construction Plans
3 - 6 INCH AGGREGATE

END POINTS "A" MUST BE MINIMUM 0.5 FEET HIGHER THAN FLOW LINE POINT "B"

DEPTH OF ROCK PlACED IN CHANNEL FLOW LINE MINIMUM 1 FOOT MAXIMUM 3 FEET

FRONT VIEW

PLACE DOWNSTREAM STRUCTURE SUCH THAT POINT "B" IS APPROXIMATELY LEVEL WITH THE TOE ELEVATION OF THE UPSTREAM STRUCTURE

SIDE VIEW

ROCK KEYED IN 6 INCH TRENCH

NOTE:
ROCK CHECK DAMS SHALL BE USED ONLY FOR DRAINAGE AREAS LESS THAT 10 ACRES UNLESS APPROVED BY THE ENGINEER.
WHERE THERE IS A BERM AT THE TOP OF THE SLOPE, BRING THE MATERIAL OVER THE BERM AND ANCHOR IT BEHIND THE BERM.

NOTE:
BRING MATERIAL DOWN TO A LEVEL AREA BEFORE TERMINATING THE INSTALLATION.

NOTE:
IN DITCHES, APPLY PROTECTIVE COVERING PARALLEL TO THE DIRECTION OF FLOW. USE CHECK SLOTS AS REQUIRED. AVOID JOINING MATERIAL IN THE CENTER OF THE DITCH IF AT ALL POSSIBLE. FOLLOW BLANKET MANUFACTURER'S RECOMMENDATIONS FOR ALLOWABLE VELOCITY AND SHEAR STRESS.

ROLED EROSION CONTROL PRODUCTS

EC-8A

Chapter 8, Page 12
EROSION CONTROL BLANKET NOTES:

A) SITE PREPARATION:
   After site has been shaped and graded, prepare a friable seedbed relatively free from clods and rocks more than 1 1/2 inches in diameter and any foreign material that will prevent uniform contact of the blanket with the soil surface.

B) PLANTING:
   Lime, fertilize, and seed in accordance with seeding or planting plan. Where ground covers are to be planted, lay the protective covering first and then plant through the material as per planting plan.

C) LAYING AND STAPLING:
   1. Start laying the blanket from the top of the channel or slope and unroll downhill.
   2. Allow to lay loosely on soil; do not stretch.
   3. Upslope ends of the blanket should be buried in an anchor slot no less than 6 inches deep.
   4. Tamp earth firmly over the material.

D) LAYING AND STAPLING:
   1. The adjacent edges shall be overlapped a minimum of 6 inches and stapled together.
   2. Staples shall be placed per manufacturer's recommendations.

E) TROUBLESHOOTING:
   Consult with the engineer, if any of the following occur:
   1. Movement of the blanket or erosion under the blanket is observed.
   2. Variations in topography on site indicate erosion control mat will not function as intended; changes in plan may be needed, or a blanket with a shorter or longer life may be needed.
   3. Design specifications for seed variety, seeding dates, or erosion control materials cannot be met; substitution may be required. Unapproved substitutions could result in failure to establish vegetation.

F) MAINTENANCE & INSPECTION:
   Inspect controls after each rain event of 1/2 inch or greater, and every 7 days until vegetation is established. Look for erosion or undermining beneath the netting, blankets, or mats. If any area shows erosion, pull back that portion of the material, add soil, and reseed; resecure the material in place. If netting, blankets or mats become dislocated or damaged, repair or replace and resecure immediately.

G) JOINING BLANKETS:
   Overlap the end of the previous roll a minimum of 6 inches and staple. Staple across the end of the roll just below the anchor slot and across the material every 6 inches.

H) TERMINAL END:
   At the point at which the material is discontinued, or where the blanket meets a structure of some type, staple a minimum of every 12 inches.

I) FINAL CHECK:
   These installation criteria must be adhered to:
   1. All disturbed areas are seeded.
   2. Protective blanket is in uniform contact with the soil.
   3. All lap joints are secure.
   4. All staples are driven flush with the ground.
Boone County, Missouri
Stormwater Program

Stormwater Design Manual

EC-9 GEOTEXTILES AND PLASTIC COVERS

This Best Management Practice (BMP) involves the placement of geotextiles or plastic covers to stabilize disturbed soil areas and protect soils from erosion by wind or water.

APPROPRIATE APPLICATIONS:

Limited applications include very small graded areas and stockpiles.

CONDITIONS FOR EFFECTIVE USE:

Type of Flow: Sheet and concentrated flows.

Geotextiles and plastic covers have maximum flow rate limitations; consult the manufacturer for proper selection. The use of plastic shall be limited to very short periods of time. The use of plastics and impermeable geotextiles results in 100% runoff, which may cause serious erosion problems in the areas receiving the increased velocities and flow. Use these products with caution. Plastic sheeting is easily vandalized, easily torn, and photodegradable.

WHEN BMP IS TO BE INSTALLED:

Geotextiles and plastic covers should be installed immediately after completion of a phase of grading or while the stockpile is in place.

STANDARDS AND SPECIFICATIONS:

Geotextile blankets shall be secured in place with wire staples or sandbags and by keying into tops of slopes and edges to prevent infiltration of surface water under the geotextile. Plastic sheeting shall be keyed in at the top of the slope and firmly held in place with sandbags or other weights placed no more than 10 feet apart. Seams are typically taped or weighted down their entire length. Anchoring the sheeting is crucial to keeping it in place during windy weather.

OPERATION AND MAINTENANCE PROCEDURES:

All geotextile and plastic sheeting shall be inspected on a weekly basis and after storms to check for erosion, undermining, and anchorage failure. Any failures shall be repaired immediately. If washout or breakages occur, the material shall be re-installed after repairing the damage to the slope.

SITE CONDITIONS FOR REMOVAL:

Upon establishment of other temporary stabilizations or after permanent stabilization has occurred.

EC-10 OUTLETS/VELOCITY DISSIPATION DEVICES

These devices are placed at pipe outlets to prevent scour and reduce the velocity and/or energy of storm water flows. These devices protect the receiving area from erosion.
APPROPRIATE APPLICATIONS:

These devices may be used at the following locations: outlets of pipes, drains, culverts, slope drains, diversion ditches, swales, conduits or channels, outlets located at the bottom of mild to steep slopes, discharge outlets that carry continuous flows of water, outlets subject to short, intense flows of water, such as flash floods, points where lined conveyances to unlined conveyances, and at emergency overflows or outlet pipes of a sediment basin.

CONDITIONS FOR EFFECTIVE USE:

Type of Flow: Concentrated flow

WHEN BMP IS TO BE INSTALLED:

Energy dissipation devices should be installed with the construction of the upstream BMP or pipe that creates a concentrated discharge.

STANDARDS AND SPECIFICATIONS:

Install riprap, concrete apron, etc. at selected outlet. Riprap aprons are best suited for temporary use during construction. Carefully place riprap to avoid damaging the filter fabric. Align the apron with the receiving stream and keep straight throughout its length. If a curve is needed to fit site conditions, place it in the upper section of the apron. If the size of the apron riprap is comprised of large rocks, protect the underlying filter fabric with a gravel blanket. Outlets on slopes steeper than 10% need additional protection.

OPERATION AND MAINTENANCE PROCEDURES:

Inspect at least every week and after every storm during construction. Remove sediment and trash accumulation. Inspect apron for displacement of the riprap and/or damage to the underlying fabric. Repair fabric and replace riprap that has washed away. Inspect for scour beneath the riprap and around the outlet. Repair damage to slopes immediately, extend the pad or place larger rock, as needed.

SITE CONDITIONS FOR REMOVAL:

Temporary devices need to be completely removed as soon as the surrounding drainage area has been stabilized, or at the completion of construction.

STANDARD DRAWING: EC-10
APPENDIX G

Endangered Species and Historic Preservation Documentation
# Missouri Department of Conservation

## Heritage Review Report

**March 31, 2011 – Page 1 of 2**

**Project type:** Road or Highway  
**Location/Scope:** Section 22 and 27, Township 48N, Range 12W  
**County:** Boone  
**Query reference:** Rolling Hills Road  
**Query received:** March 28, 2011

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### Level 3 (federal-listed) and Level 2 (state listed) issues:

**Records of listed species or critical habitats:**

Heritage records identify no wildlife preserves, no designated wilderness areas or critical habitats, no state or federal endangered-list species records within one mile of the site, or in the public land survey section listed above or sections adjacent.

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### General recommendations related to this project or site, or based on information about the historic range of species (unrelated to any specific heritage records):

- **Boone County** has known karst geologic features (e.g. caves, springs, and sinkholes, all characterized by subterranean water movement). Few karst features are recorded in heritage records, and ones not noted here may be encountered at the project site or affected by the project. Cave fauna (many of which are species of conservation concern) are influenced by changes to water quality, so check your project site for any karst features and make every effort to protect groundwater in the project area. See [http://mdc.mo.gov/nathis/caves/manag_construc.htm](http://mdc.mo.gov/nathis/caves/manag_construc.htm) for best management information.

- **The proposed project** occurs in the historic range of greater prairie chickens (*tympanuchus cupido*), a bird on the state's list of endangered species. Populations have been in serious decline for decades, and have reached a point where greater prairie chickens could be gone from Missouri within a few years. The dominant factor in their decline is conversion of native prairie habitats to other uses. Other prairie dependent species are also in serious decline for the same reason. Prairie chickens range over a broad territory perhaps nesting, breeding and foraging in grasslands several miles apart. Even if prairie chickens are not present, it is important to conserve as much as possible any grasslands dominated by native plant cover in the project area. See [http://mdc.mo.gov/130](http://mdc.mo.gov/130) for best management recommendations.
Indiana bats (*Myotis sodalis*, federally and state listed “endangered”) may occur in this area. These mammals hibernate during winter months in caves, in Missouri primarily in the southern half of the state. They are found in summer months, primarily north of the Missouri River, roosting and raising young under the bark of trees in riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. If large trees with nesting cavities or loose bark need to be removed by your project, that should be done between November and March. Additional information to incorporate in planning documents is available at [http://mdc.mo.gov/110](http://mdc.mo.gov/110).

Gray bats (*Myotis grisescens*, federally and state listed “endangered”) are likely to occur in the project area, as they forage over streams, rivers, and reservoirs in this part of Missouri. Avoid entry or disturbance of any cave inhabited by gray bats and when possible retain forest vegetation along the stream and from the gray bat cave opening to the stream. See [http://mdc.mo.gov/104](http://mdc.mo.gov/104) for best management recommendations.

Streams in the area should be protected from soil erosion, water pollution and in-stream activities that modify or diminish aquatic habitats. Best management recommendations relating to streams and rivers may be found at [http://mdc.mo.gov/79](http://mdc.mo.gov/79). The project should be managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any “Clean Water Permit” conditions. Revegetate areas in which the natural cover is disturbed to minimize erosion using native plant species compatible with the local landscape and wildlife needs. Pollutants, including sediment, can have significant impacts far downstream. Use silt fences and/or vegetative filter strips to buffer streams and drainages, and monitor those after rain events and until a well-rooted ground cover is reestablished.

Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment, so inspect and clean equipment thoroughly before moving between project sites.

- Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
- Drain water from boats and machinery that has operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
- When possible, wash and rinse equipment thoroughly with hard spray or HOT water (≥104° F, typically available at do-it-yourself carwash sites), and dry in the hot sun before using again.

These recommendations are ones project managers might prudently consider based on a general understanding of species needs and landscape conditions. Heritage records largely reflect only sites visited by specialists in the last 30 years. This means that many privately owned tracts could host unknown remnants of species once but no longer common.

Pre-screen heritage review requests at [http://tinyurl.com/heritagereview](http://tinyurl.com/heritagereview). A "Level 1 response" will make further submission to MDC or USFWS unnecessary.
The State Historic Preservation Office has reviewed the information submitted on the above referenced project. Based on this review, we have made the following determination:

- [ ] After review of initial submission, the project area has a low potential for the occurrence of cultural resources. A cultural resource survey, therefore, is not warranted.
- [x] Adequate documentation has been provided (36 CFR Section 800.11). There will be "no historic properties affected" by the current project.
- [ ] An adequate cultural resource survey of the project area has been previously conducted. It has been determined that for the proposed undertaking there will be "no historic properties affected".

For the above checked reason, the State Historic Preservation Office has no objection to the initiation of project activities. PLEASE BE ADVISED THAT, IF THE CURRENT PROJECT AREA OR SCOPE OF WORK ARE CHANGED, A BORROW AREA IS INCLUDED IN THE PROJECT, OR CULTURAL MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, APPROPRIATE INFORMATION MUST BE PROVIDED TO THIS OFFICE FOR FURTHER REVIEW AND COMMENT. Please retain this documentation as evidence of compliance with Section 106 of the National Historic Preservation Act, as amended.

By: Mark A. Miles, Deputy State Historic Preservation Officer

April 1, 2011

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
P.O. Box 176, Jefferson City, Missouri 65102

For additional information, please contact Judith Deel, (573) 751-7862. Please be sure to refer to the project number: 032-BO-11