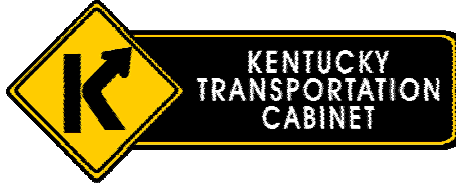


2005



Developed by:
Kentucky Transportation
Cabinet
and the
Kentucky Transportation
Center





**ENVIRONMENTAL HANDBOOK
FOR MANAGEMENT OF HIGHWAYS AND TRANSPORTATION
FACILITIES**

**Developed by:
Kentucky Transportation Cabinet
and the
Kentucky Transportation Center**

2005



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Key Contacts

Transportation Cabinet employees are to use the supervisory chain to request assistance with environmental problems. In the districts, the **Environmental Coordinator** is a resource to provide guidance. Matters that cannot be resolved within the district are to be referred to the Division of Environmental Analysis.

Division of Environmental Analysis..... 502-564-7250

Kentucky Environmental Response Team

Call the Kentucky Environmental Response Team when there is a release or threatened release of a hazardous substance, pollutant or contaminant, petroleum or petroleum product. **This is a regulatory requirement.**

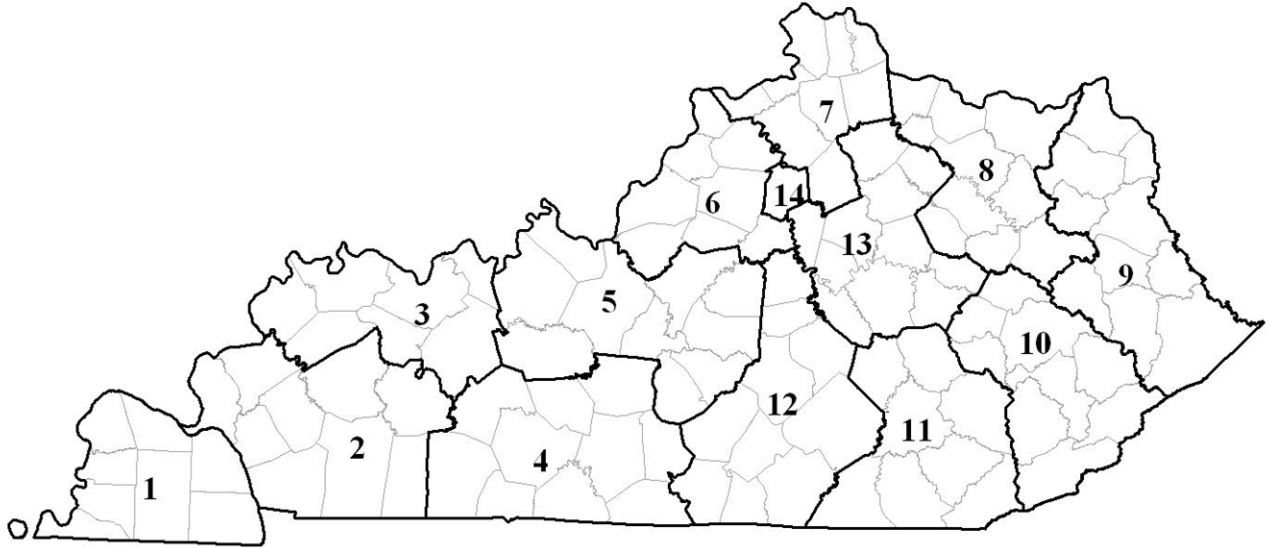
Kentucky Environmental Response Team (24-hours).....1-800-928-2380 or 502-564-2380

National Response Center

The National Response Center (NRC) is the federal government's national communications center, which is staffed 24 hours a day by U.S. Coast Guard officers and marine science technicians. The NRC receives all reports of releases involving hazardous substances and oil that trigger the federal notification requirements under several laws. Reports to the NRC activate the National Contingency Plan and the federal government's response capabilities. It is the responsibility of the NRC staff to notify the pre-designated on-scene coordinator (OSC) assigned to the area of the incident and to collect available information on the size and nature of the release, the facility or vessel involved, and the party(ies) responsible for the release. The NRC maintains reports of all releases and spills in a national database called the Emergency Response Notification System.

National Response Center.....1-800-424-8802

Division of Emergency Management Offices



Area	Contact	Telephone
Director	Malcolm Franklin	502-607-1682
Area 1	Bob Carrico	502-607-1601
Area 2	Jere McCuiston	502-607-1602
Area 3	Rick Cox	502-607-1603
Area 4	Tony Keithley	502-607-1604
Area 5	Gene Logue	502-607-1605
Area 6	John Bastin	502-607-1666
Area 7	Rick Watkins	502-607-1607
Area 8	Larry Dixon	502-607-1608
Area 9	Mrcia Salyer	502-607-1609
Area 10	Roy Benge	502-607-1654
Area 11	Jerry Rains	502-607-1655
Area 12	Don Franklin	502-607-1656
Area 13	Dan Hayden	502-607-1657
Area 14	Steve Oglesby	502-607-1658

Division of Water

The Division of Water is responsible for matters that impact water quality, flood plain management, ground water protection and drinking water programs.

Kentucky Division of Water (main).....502-564-3410

The branches and central office contacts for matters affecting highway maintenance are:

Director	David Morgan
Kentucky Pollutant Discharge Elimination System (permits for discharges to surface or ground water)	Jory Becker
Ground Water Branch (ground water protection plans and wellhead protection)	Peter Goodman
Water Quality Branch (monitoring, water quality certifications)	Tom VanArsdall
401 Water quality certifications (work in and near streams)	Jenny Garland
Water Resource Branch (flood plain permits)	Art Clay, P. E.

Division of Water Field Offices Tom Gabbard, Field Operations Branch Manager Phone: (502) 564-3410, FAX: (502) 564-4245 E-Mail: Tom.Gabbard@ky.gov	
Bowling Green Regional Office William Baker, Supervisor 1508 Westen Avenue Bowling Green, KY 42104-3356 Telephone: 270-746-7475 FAX: 270-746-7865 Email: William.Baker@ky.gov	Columbia Regional Office Sara Gold Sproles, Supervisor 102 Burkesville Street Columbia, KY 42728-1408 Telephone: 270-384-4734 FAX: 270-384-5199 Email: Sara.Sproles@ky.gov
Florence Regional Office Todd Giles, Supervisor 8020 Veterans Memorial Drive, Suite 110 Florence, KY 41042 Telephone: 859-525-4923 FAX: 859-525-4157 Email: Todd.Giles@ky.gov	Frankfort Regional Office Massoud Shoa, Supervisor 643 Teton Trail, Suite B Frankfort, KY 40601-1758 Telephone: 502-564-3358 FAX: 502-564-5043 Email: Massoud.Shoa@ky.gov

<p>Hazard Regional Office Ferris Sexton, Supervisor 233 Birch Street Hazard, KY 41701-2179 Telephone: 606-435-6022 FAX: 606-435-6025 Email: Ferris.Sexton@ky.gov</p>	<p>London Regional Office Keith Blair, Supervisor 875 South Main Street London, KY 40741-9008 Telephone: 606-878-0157 FAX: 606-877-9091 Email: Keith.Blair@ky.gov</p>
<p>Louisville Regional Office Mike Mudd, Supervisor 9116 Leesgate Road Louisville, KY 40222-5084 Telephone: 502-425-4543 FAX: 502-425-4471 Email: Mike.Mudd@ky.gov</p>	<p>Madisonville Regional Office Ed Carroll, Supervisor State Office Building, 4th Floor 625 Hospital Drive Madisonville, KY 42431-1683 Telephone: 270-824-7529 FAX: 270-824-7070 Email: Ed.Carroll@ky.gov</p>
<p>Morehead Regional Office Robert Wells, Supervisor 200 Christy Creek Road, Suite 2 Morehead, KY 40351 Telephone: 606-784-6635 FAX: 606-784-4544 Email: Robert.Wells@ky.gov</p>	<p>Paducah Regional Office Vince Priddle, Supervisor 4500 Clarks River Road, Paducah, KY 42003-0823 Telephone: 270-898-8468 FAX: 270-898-8640 Email: Vince.Priddle@ky.gov</p>



Division of Enforcement

The Enforcement Branches have been abolished and staff transferred to the new Division of Enforcement in the Department of Environmental Protection. The division brings together activities previously performed by enforcement branches of Waste Management, Water and Air Quality. A primary goal of the Division of Enforcement is to resolve enforcement cases in a professional, consistent and timely manner.

Director

Susan Green

SOLID WASTE ENFORCEMENT: Manages Division of Waste Management enforcement cases related to solid waste, special waste and underground storage tanks.

Jeff Cummins.....Jeff.Cummins@ky.gov.....(502) 564-2150, extension 290

HAZARDOUS WASTE ENFORCEMENT: Manages Division of Waste Management enforcement cases related to hazardous waste and Superfund sites.

Barbara Cornett.....Barbara.Cornett@ky.gov.....(502) 564-2150, extension 608

Division of Waste Management

The Division of Waste Management administers the programs that regulate all wastes. This includes solid wastes, hazardous wastes, sludges and the Division works with local government to assure that waste collection and disposal is being managed.

Division of Waste Management (main).....502-564-6716

The branches and central office contacts for matters affecting highway maintenance are:

Director

R. Bruce Scott, P.E.

Solid Waste

(solid waste disposal and facility permitting)

Ron Gruzesky

Hazardous Waste

(hazardous waste generators and TSD facility permitting)

Mike Welch

Resource Conservation and Local Assistance

(recycling programs and assistance to local government)

Sara Evans

Illegal Dumping Hotline (24-hour, toll free).....888-NO-DUMPS

Division of Waste Management Field Offices Bill Burger, Manager Phone: (502) 564-6716, FAX: (502) 564-4049 E-Mail: Bill.Burger@ky.gov	
Bowling Green Regional Office Robbie McGuffey, Supervisor 1508 Westen Avenue Bowling Green, KY 42104-3356 Telephone: 270-746-7475 FAX: 270-746-7865 Email: Robbie.McGuffey@ky.gov	Columbia Regional Office Kerry McDaniel, Supervisor 102 Burkesville Street Columbia, KY 42728-1408 Telephone: 270-384-4735 FAX: 270-384-5199 Email: Kerry.McDaniel@ky.gov
Florence Regional Office Kuljinder Sandhu 8020 Veterans Memorial Drive, Suite 110 Florence, KY 41042 Telephone: 859-525-4923 FAX: 859-525-4157 Email: Kuljinder.Sandhu@ky.gov	Frankfort Regional Office Sam Lofton, Supervisor 643 Teton Trail, Suite B Frankfort, KY 40601-1758 Telephone: 502-564-3358 FAX: 502-564-5043 Email: Sam.Lofton@ky.gov
Hazard Regional Office Larry Short, Acting Supervisor 233 Birch Street, Suite 2 Hazard, KY 41701-2179 Telephone: 606-435-6022 FAX: 606-435-6025 Email: Larry.Short@ky.gov	London Regional Office Bill Belcher, Supervisor 875 South Main Street London, KY 40741-9008 Telephone: 606-878-0157 FAX: 606-877-9091 Email: Bill.Belcher@ky.gov
Louisville Regional Office Keith Sims, Supervisor 9116 Leesgate Road Louisville, KY 40222-5084 Telephone: 502-425-4543 FAX: 502-425-4471 Email: Keith.Sims@ky.gov	Madisonville Regional Office Bill Bowen, Supervisor State Office Building, 4th Floor 625 Hospital Drive Madisonville, KY 42431-1683 Telephone: 270-824-7532 FAX: 270-824-7070 Email: Bill.Bowen@ky.gov
Morehead Regional Office Karen Glancy, Supervisor 200 Christy Creek Road, Suite 2 Morehead, KY 40351 Telephone: 606-784-6635 FAX: 606-784-4544 Email: Karen.Glancy@ky.gov	Paducah Regional Office Marjorie Williams, Supervisor 4500 Clarks River Road, Paducah, KY 42003-0823 Telephone: 270-898-8495 FAX: 270-898-8640 Email: Margie.Williams@ky.gov

Division of Waste Management Regional Offices



Division for Air Quality

Robbin Edwards, Complaints Coordinator
E-Mail: robbin.edwards@ky.gov

Environmental Emergency (24-Hour).....(502) 564-2380 or (800) 928-2380

<p>Division for Air Quality Field Offices Kevin Flowers, Manager Phone: (502) 573-3382, FAX: (502) 573-3787 E-Mail: Kevin.Flowers@ky.gov</p>	
<p>Ashland Regional Office George Hockley, Supervisor 1550 Wolohan Drive, Suite 1 Ashland, KY 41102-8942 Telephone: 606-929-5285 FAX: 606-928-1267 E-Mail: George.Hockley@ky.gov</p>	<p>Bowling Green Regional Office Bill Blacketer, Supervisor 1508 Westen Avenue Bowling Green, KY 42104-3356 Telephone: 270-746-7475 FAX: 270-746-7865 Email: Bill.Blacketer@ky.gov</p>
<p>Florence Regional Office Clay Redmond, Supervisor 8020 Veterans Memorial Drive, Suite 110 Florence, KY 41042 Telephone: 859-525-4923 FAX: 859-525-4157 Email: Clay.Redmond@ky.gov</p>	<p>Frankfort Regional Office Mark Ritter, Supervisor 643 Teton Trail, Suite B Frankfort, KY 40601-1758 Telephone: 502-564-3358 FAX: 502-564-5043 Email: Mark.Ritter@ky.gov</p>

<p>Hazard Regional Office Jack Hurt, Supervisor 233 Birch Street, Suite 2 Hazard, KY 41701-2179 Telephone: 606-435-6022 FAX: 606-435-6025 Email: Jack.Hurt@ky.gov</p>	<p>London Regional Office Mike Hannon, Supervisor 875 South Main Street London, KY 40741-9008 Telephone: 606-878-0157 FAX: 606-877-9091 Email: Mike.Hannon@ky.gov</p>
<p>Owensboro Regional Office Pat Barker, Supervisor 3032 Alvey Park Drive West, Suite 700 Owensboro, KY 42303-2191 Telephone: 270-687-7304 FAX: 270-687-7204 E-Mail: Pat.Barker@ky.gov</p>	<p>Paducah Regional Office Bill Clark, Supervisor 4500 Clarks River Road, Paducah, KY 42003-0823 Telephone: 270-898-8468 FAX: 270-898-8640 Email: BillJ.Clark@ky.gov</p>

The air quality program for Jefferson County is administered by:
 Jefferson County Air Pollution Control District
 850 Barret Ave., Suite 200
 Louisville, KY 40204-1745
 Telephone: (502) 574-6000
 Fax: (502) 574-5306



Foreword

The concept of going about our daily tasks in a manner that is environmentally acceptable is a matter of importance to the Transportation Cabinet and to Local Government. Failure to know about and follow the environmental rules can lead to unwanted situations, which could have been avoided through a process to develop awareness and following up with specific plans, permits and programs.

This handbook is a work in progress. It will quite likely never be finished as the environmental programs evolve with learning and adopting new concepts. But, we can't wait. We take what we know and share it with you. Also, the concepts and practices represented in this handbook do not include all points of view. There may well be better ways of protecting the environment while accomplishing our work tasks.

This handbook is a compilation of knowledge from experiences gained and specific responses to environmental program requirements. It originated as a compilation of regulations, permits and plans in 1995 to guide us in our work with highway maintenance operations. This 2005 edition of the handbook has added the concept of fact sheets to bring the requirements from the various programs together by topic. The idea is that as we supervise crews, we want to be able to advise them of all things of environmental importance from one source document. The intent is to simplify and be more responsive to the various programs that must be followed.

As this handbook is a new concept for our environmental guidance material, we are treating it as our best first draft of the second edition. As such, it represents current thinking with room for improvement. Feedback is encouraged, especially where there is a better way of doing it. If you find the way you do your job is not consistent with the information in this handbook, you need to ask, "Will I be out of compliance with environmental laws?" Or, "Is the way I do this acceptable, but it has not been checked?" If you don't ask, and are out of compliance with the rules, you can be at risk for being cited with non-compliance. Worse, you may be causing conditions in the environment that are not acceptable. On the other hand, if your way is better and is acceptable, others may benefit from your ideas.

A feedback form is provided on the next page. Please fill out this form to share your ideas and questions with the KyTC's Division of Environmental Analysis. Local transportation agencies should provide their feedback to the University of Kentucky's Transportation Center. As suggestions are received, or environmental programs change, revised factsheets will be issued. The binder format will allow the document to be easily updated.

Staff from the Divisions of Maintenance, Materials, Equipment, Environmental Analysis, Property and Supply, District 7 and The Kentucky Transportation Center were involved in the re-development of this handbook. You, however, are the most important advocate for the protection of our environment.

**Environmental Awareness Handbook
Feedback Form**

Contact Information (optional)	
Name _____	
Facility Address _____	
Telephone _____	Email _____

Section or Factsheet _____

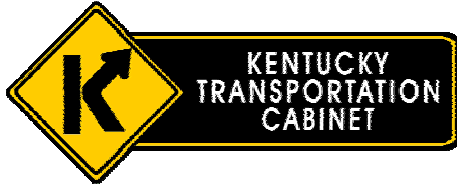
Comment/ Concern/ Suggestion _____

KyTC Employees

Send this form to: **Shelby Jett, Division of Environmental Analysis**
200 Mero Street
Frankfort, KY 40622
Fax: 502-564-5655 Email: Shelby.jett@ky.gov

Local Transportation Employees

Send this form to: **Patsy Anderson, Technology Transfer Program**
University of Kentucky, Kentucky Transportation Center
140 Raymond Bldg.
Lexington, KY 40506-0281
FAX: 859-257-1061 Email: panderso@engr.uky.edu



Acknowledgements

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The significant efforts of the following individuals are gratefully acknowledged.

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Gene D. Bowling, Jr., PLS, Kentucky Transportation Cabinet District 7
Bob Belew, Kentucky Transportation Cabinet District 7
Darrell L. Burks, Kentucky Transportation Cabinet
Anthony Courtwright, Kentucky Transportation Cabinet District 7
Bernie Engleman, Kentucky Transportation Cabinet, Division of Property & Supply
Jerry D. Gritton, Kentucky Transportation Cabinet District 7
Steve Hall, P. E., FMSM Engineers
James A. Harp, Kentucky Transportation Cabinet District 7
Chuck Knowles, P. E., Kentucky Transportation Cabinet Traffic Operations
Chad McCormick, P. E., FMSM Engineers
Bobby Meade, Kentucky Transportation Cabinet
Sherman Peel, Kentucky Transportation Cabinet District 7
William Rucker, Kentucky Transportation Cabinet, Equipment Division
Karen Schaffer, FMSM Engineers
Tom Schomaker, P. E., Kentucky Transportation Cabinet
Todd Schradir, Kentucky Transportation Cabinet, Division of Materials
Becky Sea, Kentucky Transportation Cabinet, Equipment Division
Mike Smith, Kentucky Transportation Cabinet
Ray Werkmeister, University of Kentucky - Kentucky Transportation Center
Michael Williams, LEPA, Kentucky Transportation Cabinet, District 7

This Environmental Handbook is dedicated to all employees of Kentucky's Transportation Agencies who strive to provide an environmentally sound, fiscally responsible, safe and efficient transportation system.

Acronyms and Abbreviations

As	Arsenic
BMP	Best Management Practice
CAH	Cold Water Aquatic Habitat
C&D	Construction and Demolition (Landfill)
CFR	Code of Federal Regulations
Cr	Chromium
CSO	Combined Sewer Overflow
DEA	(KyTC) Division of Environmental Analysis
DEP	(Kentucky) Department for Environmental Protection
EXC	Exceptional (Waterbody)
FOG	Field Operations Guide
FP	Flash Point
GWPP	Ground Water Protection Plan
HID	High Intensity Discharge (lamp)
KAR	Kentucky Administrative Regulation
KDOW	Kentucky Division of Water
KPDES	Kentucky Pollutant Discharge Elimination System
KRS	Kentucky Revised Statute
KyTC	Kentucky Transportation Cabinet
Mg/l	Milligram per liter (same as ppm)
MSDS	Material Safety Data Sheet
NOI	Notice of Intent
NOT	Notice of Termination
NWP	Nationwide Permit
NWSR	National Wild and Scenic River
ONRW	Outstanding National Resource Water
OSHA	Occupational Safety and Health Act
OSRW	Outstanding State Resource Water
Pb	Lead
PCN	Pre-Construction Notification
pH	Measure of acidity of water
PPM	Parts Per Million (same as mg/l)
RCRA	Resource Conservation and Recovery Act
ROW	Right of Way
SARA	Superfund Amendment and Reauthorization Act
sMS4	Small Municipal Separate Storm Sewer System
SPCC	Spill Prevention Control and Countermeasures (Plan)
TCLP	Toxicity Characteristics Leaching Procedure
TDS	Total Dissolved Solids
TOX	Toxicity
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WQC	Water Quality Certificate
WR	Wild River
<	Less Than
>	Greater Than

1.0 Introduction

This section of the Environmental Handbook introduces the Cabinet's Environmental Mission and the purpose of this document in the context of implementing that mission. Uses of this manual by KYTC, local agencies and contractors are described. The environmental permits and plans, which provide a framework for all of the Cabinet's numerous environmental protection activities, are summarized.

1.1 Environmental Mission

The Kentucky Transportation Cabinet will use practical means and measures to provide an environmentally sound, fiscally responsible, safe and efficient transportation system which promotes conditions under which people and nature can exist in productive harmony while providing for economic growth and enhancing the quality of life for present and future generations of Kentuckians.

This policy encourages environmental stewardship for current and future generations. Successfully implementing this policy is important because we all want a clean, healthy environment for our families and grandchildren. Each of us can contribute to this goal through our daily work.

As we study and manage our environment, we focus on segments that are natural divisions. These segments form the technological and regulatory basis for how we understand and react with the environment and manage our lives to keep from causing unacceptable damage or consequences. These segments are air quality, water quantity and quality, land and then a perspective of managing the material things we use and the waste we generate.

Kentucky has many beautiful places from fishing holes, to large lakes and rivers, rolling valleys and Appalachian mountains. In Kentucky, streams are impaired by erosion, sedimentation and other pollutants that harm our fish populations and reduce recreational enjoyment. Wetlands, which serve as a breeding place for fish and other wildlife and also slow down and store floodwaters, can be lost or degraded by construction and repair activities and runoff. Inappropriate burning practices contribute to unhealthy air quality both locally and regionally. Soils and groundwater can be contaminated by releases of oils, pesticides and other environmentally harmful materials. Inappropriate waste disposal may adversely affect our environment. The Kentucky Transportation Cabinet (KyTC), through your work, must do its part to avoid causing or contributing to these problems.

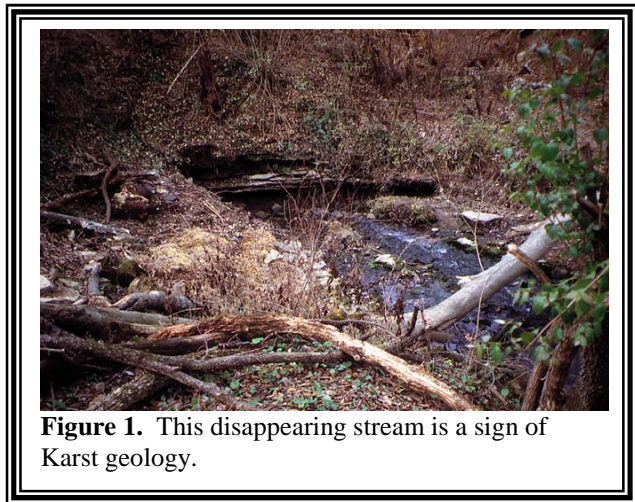


Figure 1. This disappearing stream is a sign of Karst geology.

In addition, karst (limestone) geology occurs over 55% of Kentucky. Karst geology consists of sinkholes, sinking streams, caves and springs. In these systems, surface water rapidly becomes groundwater, and vice-versa, without the benefit of filtering through soils. Caves and underground rivers are frequently home to unique animals that are especially adapted to these environments. Therefore, karst areas can become polluted easily and they are especially in need of protection.

Some of the key pollutants of concern at transportation facilities are chlorides, sediment (solids), oil and grease, pesticides, fertilizers, and materials that influence the acidity of run off. These pollutants may be harmful to people, plants and animals that breathe in or touch the chemical or contaminated water or soil. In addition, pollutants may be transported by water from KyTC facilities and roadways to streams, wetlands or groundwater. *Chlorides* from de-icing operations dissolve easily in water and can harm fish and other aquatic life. *Sediments* (solids) from erosion, borrow pits or poorly stored soil stockpiles can reduce the amount of light in streams and lakes and can smother young fish when they settle to the bottom. Sediment fills voids in stream beds which are the habitat for aquatic insects and biota that are food for fish. Like pesticides, *oil and grease* can be toxic to fish and other aquatic life. *Pesticides* can sicken people, kill fish and other aquatic life and pollute surface water, ground water and soil when a spill occurs, especially of concentrated material. Runoff from too much *fertilizer* can cause algae blooms that use up oxygen in the water. In severe cases, fish kills can occur. The acid or alkaline quality of water is measured using *pH*. Fish and other aquatic life need water that is not too acidic or alkaline (pH between 6 and 9 pH units).

Table 1.1 Summary of Pollutants of Concern at KyTC Facilities

Pollutant	Environmental Concern	Sources	Management
Chlorides	Stress aquatic life, cause soil to not support plant growth, pollute ground water.	De-icing materials	Apply minimum amount needed. Don't dump left over salts. Clean up after operations and spills.
Sediment	Reduces light in water bodies, can smother young fish.	Erosion, runoff from bare dirt & soil stockpiles	Repair eroding embankments promptly. Divert runoff away from stockpiles.
Oil and Grease	Harmful to plants and animals and ground water.	All fuels, all oils	Don't expose to weather. Use drip pans. Clean up spills promptly. Manage containers properly.
Pesticides	Harmful to people, plants and animals if not applied properly or spilled.	Roadside agronomy	Handle with caution. Don't apply if rain is forecasted. Apply minimum amounts needed. Clean up spills promptly.
Volatile Organic Compounds	Green house gases.	Fuels, paints	Use products as directed.
Fertilizer	Can lead to algae blooms in rivers and lakes that use up oxygen, stressing or even killing fish.	Roadside agronomy	Store indoors. Don't apply if rain is forecasted. Apply minimum amounts needed. Clean up spills promptly.
Toxic metals	Bio-accumulative toxicity, slows learning in young children.	Paints pre-1970's	Control and collect waste from paint preparation.
pH	Harmful to fish outside the range of 6 to 9 pH units.	Roof runoff, contact with stockpiles	Divert runoff away from stockpiles.

It is always cheaper and easier to prevent pollution than it is to clean it up later. This handbook describes how to prevent pollution while conducting your every day tasks. Through this approach, you will contribute to the safety of KyTC employees and Kentucky's citizens, as well as protecting Kentucky's natural resources for future generations.



1.2 Document Purpose

The purpose of this document is to provide a source of environmental information related to work in the right of way, highway maintenance and operations, facility based operations, waste management, spills and emergencies. This Environmental Handbook is a companion for Environmental Awareness training and serves as the basis for the ground water protection plans for KyTC facilities.

1.3 What Is Covered

This handbook describes many of the environmental requirements and practices that apply to highway maintenance and equipment repair facilities, traffic and materials laboratories. These functions are carried out within the KyTC Districts. This handbook is not a substitute for the actual regulations, permits or plans and cannot cover every possible situation. Therefore, contacts and sources for additional information are provided to help you find answers to questions not covered in this handbook.

1.4 What Is Not Covered

This handbook does not address new road or bridge construction, although some information may be relevant to these activities. This handbook does not address bridge painting, pesticide and fertilizer applications. The guidance has been modified to conform to OSHA guidance where appropriate. But, this handbook does not include information required to comply with all OSHA regulations.

1.5 Use of this Manual by the Kentucky Transportation Cabinet

This manual provides practical information that you can use to protect Kentucky's natural environment and comply with federal and state environmental regulations. This handbook describes environmental practices required by statutes and regulations and other acceptable environmental practices. Issues that may require special attention are identified.

1.6 Use of this Manual by Local Agencies and Contractors

This handbook is based on typical activities, experiences and procedures at the KyTC. Most of these practices are similar to those conducted by local transportation agencies. However, local review is encouraged because this document does not comprehensively address local environmental considerations. Further, the manner in which KyTC addresses environmental practices may not be applicable to local agencies. Permits and agreements that have been negotiated between KyTC and other agencies only apply between those agencies.

Stormwater management requirements are significantly different at KyTC and local transportation facilities. Specific stormwater management activities and practices required at KyTC's Highway Maintenance Facilities are contained in the General Permit for Stormwater Management, issued by the Division of Water. Local facilities are expected by the Division of Water to manage their stormwater in conformance with the state water quality standards. Local agencies may follow the practices outlined in this handbook and the permit documents to facilitate compliance with the water quality standards.

The KYTC is responsible for ensuring that all work done through state-issued contracts meets environmental requirements that apply to KyTC. Therefore, this handbook provides a reference and learning tool for contractors.



1.7 Periodic Updates

The Environmental Handbook binder is designed to be easily updated to ensure that correct and current information is available and used. Updated sections will be issued as needed. This binder can also be tailored by local transportation agencies to meet their specific needs.

1.8 Environmental Programs and Permits

Environmental programs and permits have been designed to implement and ensure compliance with Federal and State statutes and regulations. This Environmental Handbook provides guidelines that, if followed carefully, will result in compliance with the regulatory requirements under most circumstances.

If an unusual situation arises or a regulatory requirement is revised, a review of the actual statute or regulation may be needed. For example, Surface Water Standards, which include effluent limits and special use waters, are revised as needed every three years. **Appendix 1** provides an overview of the regulatory requirements that apply to KyTC facilities and operations. A web address is also provided to facilitate finding the necessary documents.

Note: Local transportation agencies should also follow local ordinances.

1.8.1 KPDES Stormwater Permits

Kentucky's surface water resources range from small streams and ponds to large rivers and lakes. These waters are home to numerous fish, turtles and also rare, threatened and endangered mussels and other species that require special protection. Many Kentuckians enjoy outdoor water recreation and also use surface waters for drinking water supplies.

Water quality has improved significantly after controls on sewage and industrial wastewater treatment plants were put into effect in the 1970's and 1980's. Many remaining water quality problems are being attributed to stormwater runoff from land and impervious areas such as paved streets, parking lots, and building rooftops. Runoff from rain and snow often contains pollutants in quantities that could harm water quality. When it rains or snow melts, dirt, oils, grease, fuels and salts are carried to nearby streams and caves. These pollutants can stress and smother aquatic life, and in extreme cases, cause fish kills. In addition, they can pollute water supplies and reduce recreational enjoyment. Cleaning up contaminated surface water is very difficult and expensive. Therefore, preventing pollution in the first place is an important way to keep our waters clean.

Stormwater permits are the next step in a national effort to preserve, protect, and improve water resources from the effects polluted stormwater runoff. Stormwater programs and permits are designed to prevent harmful pollutants from being washed by stormwater runoff into local waterbodies. KyTC manages stormwater under one of three general KPDES permits issued by the Division of Water. These permits are KYG500000 for highway maintenance facilities, KYG200000 for small municipal separate storm sewer systems (sMS4) and KYR100000 for construction affecting one acre or more of land.

KyTC maintenance facilities have general permits (KYG500000) for the non-point source storm water runoff issued by the Division of Water. Local agencies that manage highway maintenance headquarters may elect to use this permit as a basis for managing storm water. The general permit is effective from April 1, 2003 through March 31, 2008.



There are some circumstances where an individual permit, specific to the facility, is required. Facilities that discharge stormwater to an outstanding resource or high quality water are required to have an individual permit.

The Stormwater General Permit for Highway Maintenance and Equipment Facilities:

- Regulates the quality of stormwater that leaves the site by including effluent limitations for chloride (for facilities that store road salt); oil and grease and pH.
- Requires monthly monitoring for flow, total suspended solids, chlorides, oil and grease, pH and visible sheen or foam, and daily monitoring for precipitation (rain and snow). Monthly monitoring reports are sent to the Division of Water.
- Requires a Best Management Practices (BMP) plan for each facility. The BMP plan identifies source of pollutants on the facility and describes how they will be controlled to prevent stormwater pollution. Stormwater passing through a grassy swale on its way to the creek is an example of a BMP.
- Requires improvements to the BMP Plan if pollutant levels are greater than the effluent limit on a regular basis.
- Prohibits direct discharges from floor drains to surface water. Floor drains must discharge to city sewers, to a holding tank or pond, passed through a retention basin or sprayed on the land.
- Integrates requirements of the Groundwater Protection Plan and Spill Prevention Control and Countermeasures Plan. Where these overlap, the most stringent requirements apply.

Although there are no effluent limits for total suspended solids, KyTC is required to develop and implement Best Management Practices (BMP's) for erosion and sediment control, and monitor and report results. If BMP's are not implemented, the previous permit limits will be used for compliance.

A review of effluent quality data collected between 1999 and 2004 has shown that all facilities had violations of effluent limits for chlorides, oil and grease and pH. In addition, pH meters were frequently not calibrated. These results indicate that more diligent implementation of environmental practices included in this manual is required.

In April 2003, the KPDES permit for facilities was re-issued with a requirement for Best Management Practices plans. With the development and implementation of these plans, we have seen gradual improvement in the quality of storm water that leaves our facilities. The level and number of non-compliances has decreased. The data also show that continuing diligence of personnel at the facilities is needed to reach and sustain acceptable performance with the storm water program.

KyTC is a "co-permittee" under the general KPDES permit KYG200000 with counties and municipalities that were included in Kentucky's Stormwater Program. Some urbanized areas were included in the Stormwater Program based on national definitions for urban areas. Kentucky selected additional counties and municipalities on a case-by-case basis due to the potential to cause adverse impacts to water quality. Selection criteria included population and population density, adjacent impaired streams, karst area concerns and the presence of combined sewer overflows (CSO's). KyTC is co-permitting with 47 of the 49 communities that are under permit for this program.

Construction activities are regulated by the general stormwater permit for construction (KYR100000). This permit is universal in that it applies to any construction activity of one acre or more and applies to everyone (not just government entities). KyTC has incorporated compliance with this permit into the highway design and construction programs. Elements of compliance are included in the official specifications and contract documents. Compliance with this permit is a sub set of the sMS4 program for KyTC.



Appendix 2 includes the Facility Stormwater Best Management Practices Plan and **Appendix 3** contains the Facility Guide for Stormwater Sampling and Reporting. The other two permits are available on-line through the Division of Environmental Analysis webpage at <http://www.kytc.state.ky.us/EnvAnalysis/default.asp> or from the Division of Water.

1.8.2 Ground Water Protection Plan

Once groundwater becomes contaminated, it is very difficult and expensive to restore. In addition, since many Kentuckians use well water, groundwater contamination has a significant potential to negatively affect the health of citizens. Therefore, preventing groundwater pollution is an important part of our environmental program.

In 1995, the Division of Water began requiring owners of facilities to prepare Groundwater Protection Plans (GWPP). Many of the fact sheets included in this Handbook include practices to protect ground water. The KDOW has agreed that this Environmental Handbook, supplemented by facility-specific information, can serve as the GWPP for each facility.

The **Facility Ground Water Protection Plan** must be completed by each facility using the KDOW guidance entitled “Preparing a Ground Water Protection Plan”. These documents are included in **Appendix 4**. This form must be recertified every three (3) years or more often when activities change.

Ground water protection practices must be implemented as a part of any new activity that may cause ground water pollution. For example, secondary containment structures that protect ground water were installed when brine generators and storage tanks were brought to maintenance facilities. The GWPP’s were amended then also. The GWPP does not address activities that are exempt or excluded.

Training and Inspections: GWPP requires that training be provided and inspections be performed to ensure that ground water protection practices are being implemented and that each employee understands their responsibility to prevent releases of ground water pollutants.

Each employee will receive training about ground water protection each year. The training will be given by the facility superintendent using the fact sheets that include ground water protection practices. Training has been scheduled quarterly so that it covers activities for the upcoming season. Schedules and forms are provided in **Appendices 7 and 8**.

Plan Review and Recertification: The GWPP will be completely reviewed every three (3) years by the District or Division with direct responsibility for the facility covered by the plan. The plan will be updated, if necessary, and recertified. The Division of Environmental Analysis (DEA) will coordinate a review by the Central Office Divisions of the design and operation procedures for the pollution prevention practices previously selected for the plan to ensure that they are effective.

Records Retention: The GWPP and all associated documentation (e.g., training records, inspection reports, etc.) will be retained by the District Office or the Division Office for each facility under its responsible supervision. All records must be maintained for **six (6) years**. A copy of all GWPP documentation will also be kept at the facility office.

Requests for Review: Upon written request from the Environmental and Public Protection Cabinet, a copy of the GWPP must be submitted to the cabinet within **thirty (30) days**. All requests for review of the GWPP or excluded activities will be forwarded to the DEA. The DEA will coordinate the release of the plans to the requesting person(s).

Property Transfer: If ownership of a property for which a GWPP has been prepared is transferred, the seller will provide the purchaser with a copy of the most recent GWPP. For KyTC, the Division of Property and Supply Services will be considered the "seller" for the purpose of this requirement. The District or Division with direct responsibility for the affected facility will provide a copy of the most recent GWPP to the Division of Property and Supply Services.

Pesticides are...any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest.

Categories of pesticides include: insecticides (for bugs), herbicides (for weeds), fungicides (for fungus).

Plan Oversight: Supervisors of facility superintendents will perform necessary oversight to ensure that facility personnel are carrying out their duties in compliance with the plan.

Additional Requirements: The facility superintendent or division director will notify DEA within **two (2)** working days of an initial request related to plan changes, recertification, outside requests for plan review by the public or EPPC, request for plan information, or other outside involvement in the plan.

1.8.3 Facilities Pride

The Facilities Pride program encourages extra good housekeeping practices at facilities. Although not directly an environmental program, Facilities Pride encourages proper materials and waste management and other good housekeeping that result in environmental protection. A fact sheet on Facilities Pride is included in **Chapter 4**.

1.8.4 Pesticides Policies, Procedures and Methods

The use of pesticides by the KyTC has become an integral part of the statewide roadway maintenance program. Pesticides are used to control and eliminate grasses, weeds and brush that are creating safety hazards and that are detrimental to the aesthetics of highway roadsides.

The pesticides used by KyTC are classified as moderate to slightly toxic. Highly toxic pesticides have not been, and will not be, approved for use.

The Roadside State Administrator in the Central Office Division of Operations is responsible for establishing guidelines and procedures for storing, handling and using pesticides. New pesticide products are also screened and tested to select materials that are used in the Vegetation Management Program.

All pesticides must be used at the rates recommended and in accordance with the Department of Highway's Pesticide Program Chart. This chart has been provided to the Roadside Environment District Administrator in each District.

The Roadside Environment District Administrator in each district is responsible for the proper use, storage and handling of pesticides within the District. District Administrators, as well as all KyTC employees involved in handling, storage and application of pesticides must be certified as non-commercial applicators in Category 6. This certification is administered through testing by the Kentucky Department of Agriculture, Division of Pesticides. Once certification is obtained, employees are required to maintain certification through 12 hours of approved training during a three-year period.

This Environmental Awareness Handbook contains only very basic information regarding pesticide storage and handling at facilities and guidance in the event of a spill. This is not a substitute for the required certification training.

1.8.5 Waste Management

The KyTC encourages facilities to **reduce, reuse, recycle** and **exchange** materials. **Reduce** means to use less or substitute with a non-toxic or more environmentally friendly product. **Reuse** means that the item or material is used more than once. Sometimes a material is used for a different purpose than originally intended. For example, broken concrete can be used to fill gabion baskets for a streambank stabilization project. **Recycle** means that the item is sent directly to a recycling center or is handled by a recycling vendor. Some vehicle parts can be **exchanged** with vendors when a new part is purchased. Some tires can be removed from the waste stream through salvage sales.

These approaches to waste management can save money, promote a healthier workplace and protect valuable environmental resources. The KyTC has made a significant commitment to the **reduce, reuse and recycle** approach to materials management. Non-toxic products are now commonly used. Many items that were previously sent to landfills are now recycled. Opportunities to reduce, reuse and recycle are discussed throughout this document. There is always room for improvement and you are encouraged to make suggestions to the Superintendent to improve the materials management practices at your facility.

Items that cannot be removed from the waste stream through the **reduce, reuse and recycle** approach are managed as solid waste or hazardous waste (liquid or solid). Non-hazardous, man-made, solid waste materials should be disposed in a permitted Construction and Demolition Landfill (C&D) or a Municipal Solid Waste Landfill. (**Appendix 10**). If there is a question about the best way to manage a particular waste, contact the Solid Waste Coordinator (**Appendix 11**). An application for a Registered Permit by Rule for Construction / Demolition Landfill of One Acre or Less is provided in **Appendix 12**.

C&D landfills have less stringent design and operating requirements than landfills that dispose of municipal solid waste. C&D landfills are suitable to dispose of waste from construction activities and from the demolition of structures including asbestos with special arrangement. C&D landfills cannot accept tires, trash (garbage), containers (buckets), barrels (empty or not) and hazardous wastes. These wastes must be segregated and removed for disposal at appropriate disposal facilities.

Municipal solid waste landfills are designed and operated for the disposal of household garbage, commercial wastes and industrial waste that is not hazardous. These landfills dispose of most of the waste materials managed in the commonwealth. They are not permitted for the disposal of non-household hazardous wastes, universal wastes or wastes that are not compatible with their operation.

Hazardous wastes are defined as follows:

- a. **Corrosive** - An aqueous product that has a pH of less than 2 or greater than 12.5 or corrodes steel at a rate greater than 0.250 inches per year at 130 degrees Fahrenheit.
- b. **Reactive** - A product that is normally unstable and readily undergoes violent change without detonating, reacts violently to water, forms explosive mixtures, generates toxic gases, vapors, or fumes, is readily explosive, or is a forbidden explosive.
- c. **Ignitable** - A product that is capable of causing fire through friction, absorption of moisture, or spontaneous chemical change.
- d. **Toxic** - A product that displays characteristic of toxicity. Review 401 KAR 31:030 section 5 (3) for concentration of contaminants for toxicity which includes arsenic, barium, benzene, chloride, chloroform, etc.
- e. **Listed** - A product that is listed as a hazardous waste in 401 KAR 31:040 section 2 or 3.

KyTC facilities store *liquid calcium chloride* which has been defined by the manufacturer, to be a hazardous chemical. KyTC is required to report under Tier II because more than 10,000 pounds (3,200 gallons) are stored. The deadline is February 28 of each year and the report reflects materials managed in the previous year.

The Title III reporting requirements are included in **Appendix 9**.

1.8.7 Spill Prevention, Control and Countermeasures Plan

The Exxon Valdez oil spill triggered a rule and regulations that require plans for preventing spills of petroleum and petroleum products. These materials include used oil, petroleum products stored in 55 gallon or larger containers. This includes 55 gallon drums, fuel in vehicle tanks, liquid asphalt, hydraulic fluid, etc. Any facility that has the capacity to store 1,320 gallons or more of petroleum or petroleum products in stationary or mobile containers must develop and implement a Spill Prevention Control and Countermeasures (SPCC) Plan. An outline for a SPCC plan is provided in **Appendix 6**.

SPCC Plans require:

- Facility description;
- Description of above ground storage tanks, tank capacity and contents;
- Spill controls and secondary containment;
- Spill countermeasures (i.e., measures to find, respond to and clean up spills);
- Inspections, tests and records;
- Procedures for bulk storage containers; and
- Periodic plan review and amendment.

1.8.8 Historical Sites

Maintenance activities, such as those listed below, could disturb or affect National Register of Historic Places eligible or listed historic buildings, districts, objects, and structures including bridges or their settings. Any structure (building, bridge, etc.) that is more than fifty years old could potentially be considered part of an historic property. It should also be remembered that it is common for the property that surrounds a structure to also be considered a part of the historic designation. Protected areas may extend to fence lines, roads, or land features (ridge, stream, etc). It should also be considered that the historic significance of a property or the potential for an activity to be considered as adversely impacting a potentially historic resource should be directed to the Division of Environmental Analysis (DEA).

Excavation and related work: Excavation and related work that could potentially impact historic sites include:

- ◆ Replacing or extending culverts;
- ◆ Re-establishing drainage channels or ditches;
- ◆ Stabilizing slopes;
- ◆ Widening shoulders;
- ◆ Wasting materials.

If you will be excavating in a new location (beyond the area that was previously disturbed by the road construction), you must consider if there is a possibility that:

- ◆ The work may be an impact within the historic boundary of a site that is eligible for or listed on National Register of Historic Places.
- ◆ Though a 50+ year old structure may not be right next to the road, it should be remembered that property that lies between the road and a structure set back from the roadway may also be considered part of the historic designation.

Inspect the work area and contact DEA if:

- ◆ You believe the area was the location of an early building; or
- ◆ You see outbuildings (barns, sheds, springhouses, etc.) that may be connected to a farmstead.

Work in front of buildings 50 years old and greater: Work that could potentially affect the setting of a historic resource includes:

- ◆ Removing trees;
- ◆ Removing or installing sidewalks, lights, guard rails, signs, fence or walls;
- ◆ Widening pavement, changing shoulders and ditches, or substantial cutting and filling.

Please contact DEA before you remove any mature trees, stone sidewalks, curbs, fence or walls, lights or other landscape features near a building that appear to be 50 years old or older. Such buildings, structures, districts or objects may be eligible for or listed on the National Register of Historic Places and the above mentioned features may contribute to the importance or historic value of the building, structures, district or objects. Alteration of these features may be considered detrimental to the historic value of the property.

Bridges and Culverts:

Many bridges that are 50 years old or older may be eligible for or listed on the National Register of Historic Places. Before replacing any features, contact DEA to determine which bridges are eligible for or listed on the National Register of Historic Places. Features include but may not be limited to:

- ◆ Decorative railings;
- ◆ Lights;
- ◆ Decking;
- ◆ Stone foundations and walls.

1.8.9 Archaeological Sites

The identification, evaluation, and avoidance or minimization of impacts to archaeological sites is one of the missions of KyTC. Some road projects have been previously examined and cleared. Other types of projects have not. In some cases, special protection has been granted to archaeological sites located within KyTC's right-of-way.

It has been determined that some maintenance activities could disturb or affect archaeological sites listed on the National Register of Historic Places.

The following are examples of excavation and related work that could potentially impact Archaeological sites:

- ◆ Replacing or extending culverts;
- ◆ Re-establishing drainage channels or ditches;
- ◆ Stabilizing slopes;
- ◆ Widening shoulders;
- ◆ Borrow areas for fill;
- ◆ Wasting materials.

The chance of disturbing an archaeological site is very low if the ground:

- ◆ Has been previously disturbed by grading or excavation;
- ◆ Is on a slope of 20% or greater;
- ◆ Is naturally wet.



Inspect the work area and contact the Division of Environmental Analysis (DEA) when/if:

- ◆ The ground looks as if it has never been disturbed;
- ◆ If a rock shelter or cave is present;
- ◆ You believe the area was the location of an early building or archaeology site; or
- ◆ You see building or foundation remains or if you find arrowheads, flint chips, ceramics, bottles or other unusual whole or broken historic artifacts, including bones.

Please direct all questions and inquiries to Archaeologists in KyTC's Division of Environmental Analysis (DEA) at (502) 564-7250. If an archaeologist is not available, please contact the Director of DEA and the Environmental Coordinator in your District. Every effort will be made to provide a timely response.

1.9 Regulations

Numerous federal and state statutes, rules and regulations provide the regulatory framework for the environmental aspects of KyTC highway maintenance and facility operations. Regulations may require plans, such as the Ground Water Protection Plan, while others require permits that must be implemented (KPDES). Some regulations address how materials and waste are stored, handled, used and disposed of. Another major group of regulations addresses emergency responses to spills, accidents and leaks.

This manual is intended to help KyTC comply with the requirements of this complex regulatory framework by conveying environmentally acceptable ways to conduct everyday operations. The fact sheets in this handbook provide guidance for interpreting the regulations; they are not a substitute for the actual regulations. **Appendix 1** summarizes the major environmental regulations affecting KyTC facilities and should serve as a reference to address questions and provide an easy way to check for regulatory revisions.

A "Relevant Environmental Programs" section is included in the lower left side of each fact sheet to guide you to the regulatory requirements for the tasks discussed on the fact sheet.

1.10 Oversight and Management

Successful implementation of our environmental practices requires contributions from each KyTC employee.

The staff should:

- ✓ Work to implement the guidelines in this handbook;
- ✓ Notify their supervisor of environmental concerns and repair needs;
- ✓ Participate in environmental training related to job duties.

The Facility Supervisor should:

- ✓ Understand and implement the requirements associated with environmental regulations;
- ✓ Bring concerns and issues to the Chief District Engineer;
- ✓ Regularly walk through the facility to identify and correct environmental concerns;
- ✓ Ensure that all facility employees have been trained for the duties they perform.

The Chief District Engineer should:

- ✓ Work with the Facility Supervisors to ensure that regulatory requirements are clearly understood and implemented.
- ✓ Facilitate resolution of environmental issues at the facilities.

Note that violations of these regulatory requirements can lead to enforcement actions against the KyTC, contribute to pollution and create unsafe working conditions for staff. The Facility Supervisor is responsible for implementing regulations at the facility. The Chief District Engineer is responsible for assisting facilities to achieve compliance. In some cases, facilities need to work toward compliance. This is especially true at older facilities that were constructed prior to today's environmental regulations. **Table 1.2** at the end of this section provides an overview of the responsibilities within KyTC for the regulatory programs.

Training

Training is an important component of successful implementation of environmental practices. It is important to understand the environmental implications of everyday job duties and why certain requirements are included.

Each fact sheet contains a section on the lower right that describes the training requirements for the tasks on the fact sheet. In some cases, environmental training may be included with a larger training effort, such as Snow and Ice. Active participation in training courses is essential to maintaining current knowledge regarding the complex environmental regulations that apply to KyTC facilities. Training requirements and forms are provided in **Appendix 8**.

Table 1.2. Responsibilities for 404/401 and KPDES Programs.

Position	USACOE 401 / 404 program	KPDES - Facility
Chief District Engineer	<ul style="list-style-type: none"> ➤ Signs permit applications. ➤ Responsible for compliance. ➤ Delegates signature of DMRs. 	<ul style="list-style-type: none"> ➤ Sets tone. ➤ Responsible for compliance.
Assistant CDE for Project Delivery and Preservation	<ul style="list-style-type: none"> ➤ Approves applications to USACE and KDOW for permits. ➤ Ensures District Area Engineers follow USACE and KDOW permit requirements. 	<ul style="list-style-type: none"> ➤ Signs quarterly DMRs. ➤ Manages funds for BMP plan implementation and correction.
District Area Engineer	<ul style="list-style-type: none"> ➤ Reviews proposed work. ➤ Checks for encroachment on Special Use waters, wetlands and drinking water sources. ➤ Determines if notifications to USACE and KDOW are needed. ➤ Prepares notifications or Permit applications. ➤ Submits signed permit application to USACE and KDOW. 	<ul style="list-style-type: none"> ➤ Supervises Maintenance and Equipment Garage Supervisors ➤ Inspects lots for implementation of the KPDES permit requirements, including BMPs. ➤ Revises BMP Plan to address non-compliance. ➤ Provides remarks for DMRs.
Maintenance Supervisor and Equipment Garage Supervisor	<ul style="list-style-type: none"> ➤ Requests approval from the District Area Engineer for work in or near streams, when needed. ➤ Plans work to ensure compliance with USACE and KDOW permits. ➤ Supervises Maintenance Crews to ensure compliance with USACE and KDOW permits. 	<ul style="list-style-type: none"> ➤ Supervises sampling. ➤ Reviews and signs field report. ➤ Manages lot. ➤ Trains Crews. ➤ Implements BMP Plan. ➤ Checks work activities on the lot to ensure compliance with KPDES permit requirements.
Maintenance Crews	<ul style="list-style-type: none"> ➤ Have a working knowledge of allowable job-site procedures. ➤ Work within limitations of permits. ➤ Ask questions when job-specific compliance questions arise. 	<ul style="list-style-type: none"> ➤ Have a working knowledge of allowable procedures. ➤ Works consistent with KPDES BMP Plans for facilities.
District Environmental Coordinator for Preservation	<ul style="list-style-type: none"> ➤ Understands permits and water quality standards requirements. ➤ Assists district personnel with compliance questions. ➤ Requests assistance from DEA and/ or KDOW. 	<ul style="list-style-type: none"> ➤ Prepares DMRs. ➤ Prepares NOIs and NOTs. ➤ Coordinates DMR remarks with District Area Engineer. ➤ Maintains sampling supplies ➤ Trains personnel at lots on sampling and reporting.
Division of Maintenance	<ul style="list-style-type: none"> ➤ Conducts training. 	
Division of Property and Supply Services		<ul style="list-style-type: none"> ➤ Coordinates development of new lots with DEA. ➤ Keeps DEA informed of facility upgrades and modifications.
Division of Environmental Analysis	<ul style="list-style-type: none"> ➤ Answers questions about permit issues and applications. 	<ul style="list-style-type: none"> ➤ Manages General Permit. ➤ Maintains DMR system. ➤ Provides guidance for and reviews NOI and NOT actions.

2.1.1. CLEANING ASPHALT TOOLS AND EQUIPMENT



Do

- ✓ At the job site, scrape asphalt from tools and put back into the mix for reuse.
- ✓ Clean remaining asphalt from tools using a minimal amount of approved cleaner.
- ✓ At the facility, outside work is to be in an area designated in the KPDES permit that leads to a stormwater monitoring point.
- ✓ Clean asphalt from the truck bed with shovels and other hand tools to decrease the amount of solvent needed for cleaning.
- ✓ Use approved cleaners to remove remaining asphalt
- ✓ Collect cleaning materials that have solvents, cleaners and contaminated asphalt in drip pans, buckets or other storage container.
- ✓ Follow all safety procedures and MSDS sheets when using solvents.



Follow all environmental and safety procedures when using solvents to clean asphalt tools and equipment.

Don't

- ✗ Don't do this job until you have had training.
- ✗ Don't allow asphalt scrapings, Diesel fuel or tool cleaners to contaminate soil, streams, ponds, storm drains or floor drains.
- ✗ Don't clean concrete tools and equipment near streams, ditches with running water, ponds, storm drains or floor drains.
- ✗ Don't pour cleaning wastes on the ground.
- ✗ Don't place asphalt wastes in used oil to be burned in used oil furnaces.

If...Then

- ▶ If Diesel or cleaners containing asphalt wastes are spilled, see **Section 5**.
- ▶ If a Diesel fuel cleaning tank is available, use Diesel for cleaning tools and equipment.
- ▶ If a Diesel fuel cleaning tank is not available to keep it off the ground, use approved cleaners.
- ▶ If drip pans are not used, clean up work area to avoid exposure to drainage and rain.

Materials & Waste Management

- ▲ Store waste cleaners, Diesel and asphalt in 55 gallon drums labeled "Asphalt Waste".
- ▲ Conduct hazardous waste determination prior to disposal.

Factsheet Checklist

- Check the job site and facility-based cleanups **MONTHLY** during periods of active cleanup.
- Check the vehicle wash area **MONTHLY** to make sure it is clear of residual asphalt, concrete and cleanup wastes.
- Check **MONTHLY** to ensure that cleaning wastes and contaminated asphalt are properly stored in drums labeled "Asphalt Waste"

Tips & Tricks

- ! Asphalt wastes can clog oil furnaces.
- ! Work residual materials that are not contaminated with Diesel into the asphalt stockpile.

Relevant Environmental Programs

- Air Quality
- 401/404/WQC
- KPDES
- Facilities Pride
- GWPP
- Pesticides
- SPCC
- Waste Mgt

Training: 1 per Year

Season: Spring

KYTC FOG Reference: A010, A020, A030, A040, A150, B010, B020, B030, B110, B120, B540

INFORMATION SOURCES

401 KAR 31:010. General provisions for hazardous wastes.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Sections: GWPP, page 5-8, 5-24; KPDES—District 5 Permit; KPDES—Good Housekeeping/ Containment BMP; KYTC Hazardous Waste Disposal Plan)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002. (Section 3.1)

Ohio Department of Transportation. *Section 800 Hazardous Waste Management Manual*. Office of Environmental Services. Columbus, Ohio. April, 2004. (Sections 814.15.38, 814.15.39 and 814.15.7)

NOTES

Other states prohibit use of Diesel, gasoline, kerosene for cleaning asphalt equipment and trucks due to high flash point and high inhalation hazard.

2.1.2. ROADSIDE LITTER AND STREET SWEEPING



Do

- ✓ Separate unknown wastes and wastes requiring special management from roadside litter during pickup operations.
- ✓ To the extent possible, contain roadside litter in bags to reduce weather exposure.
- ✓ Clean debris and litter from roadside stormwater structures to improve drainage and reduce stormwater pollution.
- ✓ At the lot, roadside litter and street sweepings should be placed in solid waste dumpsters.
- ✓ If dumpsters are not available, cover street sweepings with tarpaulins weighted with cinder blocks or sand bags.



*This litter may be placed in a solid waste dumpster.
Don't mix unknown wastes with roadside litter.*

Don't

- ✘ Don't mix unknown wastes or wastes requiring special management with roadside litter.
- ✘ Don't perform roadway cleaning or sweeping in areas where spills have not yet been completely cleaned up.
- ✘ Don't dispose of street sweepings at KyTC facilities or at any location that is not permitted by Division of Waste Management.

Facility Checklist

- Ensure that wastes requiring special management are handled properly. See **Chapter 4**.
- Ensure that street sweepings remain on the lot for less than 2 weeks.
- Ensure that roadside litter remains on the lot for less than 30 days.

If...Then

- If dumpsters are not available, divert runoff away from bagged litter and street sweeping storage areas.
- Contact Superintendent for assistance with potentially dangerous waste.
- The Superintendent may contact Division of Environmental Analysis or Division of Waste Management.
- If an illegal dump is found, call the Illegal Dumping Hotline toll-free (888 NO DUMPS)

Tips & Tricks

- ! Since routine street sweepings are considered non-hazardous, they can be disposed of in the dumpster.

Materials & Waste Management

- ▲ Street sweepings may remain on the lot for 2 weeks prior to disposal at a permitted landfill.
- ▲ Roadside litter may remain on the lot for 30 days prior to disposal at a permitted landfill.
- ▲ See **Chapter 4** for other waste management.

Relevant Environmental Programs	<input type="radio"/> Air Quality	<input checked="" type="radio"/> GWPP
	<input type="radio"/> 401/404/WQC	<input type="radio"/> Pesticides
	<input type="radio"/> KPDES	<input type="radio"/> SPCC
	<input type="radio"/> Facilities Pride	<input checked="" type="radio"/> Waste Mgt

Training: 1 per Year **Season:** Summer

KYTC FOG Reference: C100, C110, C140

INFORMATION SOURCES

County of Henrico. *Henrico County Environmental Program Manual*. Department of Public Works Environmental Division. Richmond, Virginia. Undated.

Kentucky Division of Waste Management website:
<http://www.waste.ky.gov/programs/rcla/Illegal+Dumps.htm>.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Section 3)

Kentucky Transportation Cabinet. *Field Operations Guide*. Undated. (Section C)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002. (Chapter 5)

Ohio Department of Transportation. *Section 800 Hazardous Waste Management Manual*. Office of Environmental Services. Columbus, Ohio. April, 2004. (Section 814.15.31 STREET SWEEPINGS)

NOTES

2.1.3. DEAD ANIMAL PICKUP



Do

- ✓ Promptly remove animal carcasses that are causing a traffic hazard.
- ✓ Respond promptly to complaints.
- ✓ Bury animal carcasses along the right of way.
- ✓ Avoid areas where there are utilities when burying on the right of way.
- ✓ Bury animal carcasses at least 1 foot deep and cover with 1 foot of earth at least 100 feet from any waterway.
- ✓ Use lime to reduce odors and quicken decomposition.
- ✓ Animal carcasses may be taken to a nearby licensed animal renderer, approved solid waste landfill or Humane Society incinerator.



Improper disposal of animal carcasses can contaminate waterways, wells and spread disease.

Don't

- ✗ Don't bury animal carcasses within 100 feet of any water, including wells, sinkholes, streams, ponds, springs.
- ✗ Don't bury animal carcasses in groundwater.
- ✗ Don't dispose of animal carcasses next to a pasture or field containing livestock.
- ✗ Don't dispose of animal carcasses near any home or subdivision.
- ✗ Don't bury animal carcasses on private property without a consent release.

Factsheet Checklist

- Check to ensure that proper disposal methods are followed.
- Be sure utilities are not damaged when burying dead animals.
- Ensure complaints are addressed promptly.

If...Then

- If the carcass cannot be buried because of a "Don't", it may be taken to a nearby licensed animal renderer, approved solid waste landfill or Humane Society incinerator.

Tips & Tricks

- ! Maintain a list of licensed animal renderers and approved solid waste landfills that will accept animal carcasses.
- ! Solid waste landfills may accept large carcasses if notified at least 1 day ahead.
- ! Composting may be a way to handle Dead Animals.

Materials & Waste Management

- ▲ Burial on the right of way is the preferred method.
- ▲ Use of a licensed animal renderer, approved solid waste landfill or Humane Society incinerator are acceptable alternative disposal methods.

Relevant Environmental Programs

- | | |
|--|--|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

Training: 1 per Year **Season:** Fall

KYTC FOG Reference: C130

INFORMATION SOURCES

301 KAR 3:120. Commercial Nuisance Wildlife Control.

Kentucky Department of Agriculture. *2002 Kentucky Agricultural Emergency Plan*. 2002. Frankfort, Kentucky. (Animal Emergencies)

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Chapter 5)

Kentucky Transportation Cabinet. *Field Operations Guide*. Undated. (Section C)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002. (Section 5.2)

Ohio Department of Transportation. *Section 800 Hazardous Waste Management Manual*. Office of Environmental Services. Columbus, Ohio. April, 2004. (814.15.5 ANIMAL CARCASSES)

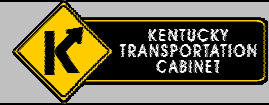
NOTES

From: 301 KAR 3:120. Commercial Nuisance Wildlife Control

c) Dispose of all wildlife carcasses within forty-eight (48) hours by:

1. Complete incineration of the entire carcass and all of its parts and products;
2. Disposition of the carcass in a contained landfill approved pursuant to KRS Chapter 224;
3. Burying the carcass and all its parts and products in the earth at a point which is never covered with the overflow of ponds or streams and which is not less than 100 feet distant from any watercourse, sinkhole, well, spring, public highway, residence, or stable. The carcass shall be placed in an opening in the earth at least one (1) foot deep and covered with one (1) foot of earth.
4. Removal of the carcass by a duly-licensed rendering establishment; or
5. Any other proven method of disposal with the prior approval of the department.

2.1.4. OPERATIONS THAT GENERATE DUST



Do

- ✓ Cover dump trucks when moving soil, debris or other “dusty” materials.
- ✓ Assess jobs that generate dust and make changes as needed.
- ✓ When used, spray water or other dust control measures evenly.
- ✓ Use water or pressure washers to remove soil from trucks and equipment as needed. (See **Section 3**)
- ✓ Street sweeping equipment should be in good working order and contain filters and/or other controls as feasible.
- ✓ Use water or other appropriate materials to control dust from unpaved roads and work sites where dust control is needed.
- ✓ Promptly clean up loose soil from road maintenance activities and after floods.



This dump truck will be covered to transport soil removed during this ditching operation.

Don't

- ✗ Don't spray used oil to control dust.
- ✗ Don't spray wastewater or other contaminated water to control dust.
- ✗ Don't apply excess water; avoid non-storm discharges.

Factsheet Checklist

- Are operations creating dust? Is it a nuisance?

If...Then

➤ .

Materials & Waste Management

▲ .

Tips & Tricks

- ! Calcium chloride can be used to control dust. This should be done only with approval of the Area Engineer.

Relevant Environmental Programs

- Air Quality
- 401/404/WQC
- KPDES
- Facilities Pride
- GWPP
- Pesticides
- SPCC
- Waste Mgt

Training: 1 per Year **Season:** Summer

KYTC FOG Reference: C100, C110, C140, J230, J310, J320

INFORMATION SOURCES

401 KAR 63:010 Fugitive Emissions

California Department of Transportation. *Statewide Storm Water Quality Practice Guidelines*. CalTrans, Division of Environmental Analysis, Sacramento, California. 2003. CTSW-RT-02-009 (2.11 WIND EROSION CONTROL)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002.

NOTES

2.2.1. VEGETATION MANAGEMENT



Do

- ✓ Check mowing and chipping equipment for maintenance and leaking fluids prior to leaving the facility.
- ✓ Carefully observe “Do Not Mow” signs during operations.
- ✓ Spread wood chips at the chipping operations site unless sufficient area is not available or the area is along a stream.
- ✓ Use wood chips for soil stabilization projects.
- ✓ Store wood chips in an approved location, consistent with the KPDES permit.
- ✓ Divert runoff away from wood chip storage area.

Don't

- ✗ Don't mow in designated “Do Not Mow” areas.
- ✗ Don't mow up to stream banks.
- ✗ Don't spread wood chips along a stream bank.
- ✗ Don't dispose of wood chips in a wetland.

If...Then

- If sufficient disposal area is not available at the worksite, store wood chips on the facility lot.
- Use of chemicals to control is addressed by Fact Sheet 2.2.2.

Materials & Waste Management

- ▲ Store wood chips on the facility lot for less than 1 year.
- ▲ Preferred disposal methods for wood chips include spreading on acceptable road sites or areas needing stabilization to protect from soil erosion.
- ▲ Disposal at a Construction and Demolition landfill is an acceptable but not preferred option.
- ▲ If other options are not available, wood chips may be burned. (See **Section 2**).



Proper application of wood chips protects ground water, wells and streams from nutrient pollution.

Factsheet Checklist

- Check equipment **DAILY** during active operations for maintenance and fluid leaks.
- Check the storage areas on the maintenance lot **MONTHLY** to ensure runoff is diverted and the location is consistent with the KPDES permit.

Tips & Tricks

- ! Long term storage of wood chips can cause nutrient pollution from nitrates that can contaminate ground water, wells and streams.
- ! Wood chips are a beneficial soil conditioner when properly applied.
- ! Vegetation along stream banks slows water down and protects the bank from erosion.

Training: 1 per Year

Season: Spring

Relevant Environmental Programs

- | | |
|---|--|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

KYTC FOG Reference: E010, E020, E110, F090

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Chapter 5, page 18)

NOTES

Do

- ✓ KyTC staff must go through a training course before working with pesticides.
- ✓ Place drums on pallets to move with a forklift.
- ✓ Store pesticides in the original container in a clean, dry location.
- ✓ Check sprayer equipment for leaks before use.
- ✓ Pump or pour pesticides directly into the spray tank of the sprayer unit.
- ✓ Use a water supply that has a backflow preventor to dilute pesticides to the needed concentration.
- ✓ Carefully watch the fill sight tube to avoid overfilling the spray tank.
- ✓ Rinse empty containers three (3) times and pour rinse water into the spray tank.
- ✓ Apply all pesticides as per label directions.
- ✓ Have a spill kit and an empty container available when pesticides are delivered or moved.
- ✓ Replace used spill kit materials within **ONE MONTH**.

Don't

- ✗ Don't accept leaking containers from delivery trucks.
- ✗ Don't overfill the spray tank.
- ✗ Don't reuse or burn empty pesticide containers.

If...Then

- Quickly contain and clean up spills or leaks using absorptive devices from Spill Kits or Attack Packs.
- Return spilled pesticide to the spray tank.
- Contain absorbed material from spills or leaks and distribute it at a target pesticide application site.
- If absorbed pesticide material cannot be used, conduct a waste determination. Clean-up from spilled materials that are found to be non-hazardous can be disposed in a solid waste landfill.
- Contact the Division of Environmental Analysis for guidance regarding spills.
- See **Section 5** for large spills.

Tips and Tricks

- ! Park delivery vehicle on the uphill side of the tank to drain delivery hose easily.
- ! The Ky Department of Agriculture collects obsolete pesticides from farmers only.

Relevant Environmental Programs	○ Air Quality	● GWPP
	○ 401/404/WQC	● Pesticides
	○ KPDES	○ SPCC
	● Facilities Pride	● Waste Mgt



Carefully pour pesticide directly into the sprayer tank and use a water supply with a backflow preventor to dilute to the needed concentration.

Materials & Waste Management

- ▲ Return refillable pesticide containers to the vendor if agreed in the purchase contract.
- ▲ Store containers in a designated location to protect from damage, destruction or theft.
- ▲ Containers that cannot be returned or recycled will be punctured and send to a solid waste landfill that has agreed to accept the containers.
- ▲ See **Section 4.2** for handling absorbed materials and soils that contain pesticides and are hazardous.

Factsheet Checklist

- Check **EACH** delivery shipment and do not accept leaking containers.
- Check pesticide mixing and spraying operations **WEEKLY**.
- Check equipment including sprayers and pumps **WEEKLY** during application season.
- Check pesticide spill kits in accordance with section 5.
- Check pesticide storage location **ANNUALLY**.
- Review pesticide handling procedures **ANNUALLY**, improve as needed.
- Ensure MSDS sheets are current and available **ANNUALLY**.
- Ensure personnel handling and applying pesticides are trained and certified.

Training: 1 per Year **Season:** Spring

KYTC FOG Reference: E280, E290, E300, E310

INFORMATION SOURCES

Kentucky Department of Agriculture, Pesticides Program. Ernest Collins, *personal communication*.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 5 Groundwater p 12-13; Unit 3 Waste Management p 2; Ground Water Protection Plan p 16-17)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002.

NOTES

2.2.3. FERTILIZER STORAGE AND APPLICATION



Do

- ✓ Store bags of fertilizer indoors, on pallets, in clean, dry, weather-tight facilities.
- ✓ Use a storage area with a concrete or paved floor.
- ✓ Spread bulk fertilizer immediately.
- ✓ Apply fertilizer when dry weather is predicted for the next several days.
- ✓ Use a distribution buggy (spreader), tractor mounted Lely spreader or similar equipment to spread fertilizer evenly.
- ✓ Keep brooms, shovels, bags or other containers, in the work area to clean up spills.



Don't

- ✗ Don't store any fertilizer outside.
- ✗ Don't store bulk fertilizer.
- ✗ Don't store fertilizer in wet locations or where rainwater runs toward the storage location.
- ✗ Don't store bags of fertilizer on dirt floors.
- ✗ Don't dispose of remaining fertilizer in streams, stormdrains or sinkholes.

Proper storage and use of fertilizer protects ground water, wells and streams from nutrient pollution.

If...Then

- Spilled fertilizer must be swept up for reuse.

Factsheet Checklist

- Check the storage area **MONTHLY** . Clean up any spilled materials.
- Inspect storage buildings **ANNUALLY** for weather tightness.

Materials & Waste Management

- ▲ Excess fertilizer should be properly stored or transferred to another highway garage for use.

Tips & Tricks

Training: 1 per Year

Season: Spring

Relevant Environmental Programs

- Air Quality
- 401/404/WQC
- KPDES
- Facilities Pride
- GWPP
- Pesticides
- SPCC
- Waste Mgt

KYTC FOG Reference: E210, E330

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 5 Groundwater p 11, p 32)

NOTES

2.3 WORK IN OR NEAR STREAMS

2.3.1 INTRODUCTION

Public concern about the environment, a commitment to environmental stewardship, environmental laws and regulations, and a desire to increase operational efficiency are prompting state and local governments to mitigate, reduce and eliminate the environmental impacts of highway maintenance. At the same time, these agencies must remain focused on their fundamental mission of providing safe driving conditions, offering the level of service customer's desire, and preserving the highway infrastructure. Public accountability also requires cost-effective use of public funds.

One major area of maintenance involves work in and around streams and rivers. Drainage structures and channels must be kept open and clear of debris to minimize the possibility of wash outs and undermining of adjacent embankments. Additionally, emergency repairs to structures and roadways due to flooding damage have to be accomplished to protect the integrity of the structure and the roadway. If not conducted appropriately, these activities have the potential to damage streams and subsequently degrade the water quality due to erosion and sedimentation.

This chapter was developed to give engineers and maintenance personnel guidelines for performing activities in and around streams. These guidelines are not intended to be the only solutions but have proven to work in the field. Where appropriate, practices intended to be a more permanent fix have been used. Resource agencies look more favorably on stream work that provides a permanent solution rather than a temporary or expedient fix that may create more damage to the stream over the long term.

This chapter provides an overview of regulatory requirements for work in "blue line" and "ephemeral" streams:

- Requirements for USACE Nationwide Permits (NWP) and the Kentucky Division of Water (KDOW) Water Quality Certification (WQC).
- Requirements for debris and waste management.
- Requirements for burning debris.
- Management practices for work associated with normal highway maintenance, repair, and replacement activities within streams and stream banks of the Commonwealth of Kentucky.

Blue line streams are shown as a solid or dashed blue line on a USGS 7.5 minute (i.e., 1:24,000 scale) topographic map.

The USACE defines "**ephemeral**" streams as post precipitation drainage with identifiable bed, bank, and normal high water mark. Runoff from rainfall is the primary source of water, and they flow only during and shortly after precipitation events in a typical year. *An ephemeral stream is shown below.*



2.3.2 In-Stream Permits and Coordination

This section describes requirements for USACE Nationwide Permits (NWP) and the Kentucky Division of Water (KDOW) Water Quality Certification (WQC) associated with the in-stream management practices in this chapter. Of the 44 USACE NWP, the following are relevant to KyTC activities described in this chapter:

- NWP # 3(i): Maintenance – Repair, rehabilitation or replacement of existing structures.
- NWP # 3(ii): Maintenance – Discharge of dredge material.
- NWP # 13: Bank Stabilization.
- NWP # 18: Minor Discharges.
- NWP # 19: Minor Dredging.
- NWP # 33: Temporary Construction, Access and Dewatering.

Depending on the activity, project size and location, the USACE and KDOW may or may not require notification. If notification is required and the NWP is granted, it authorizes activities that have minimal adverse effects on the aquatic environment and generally comply with the related laws. In most cases, individual review of each activity authorized by an NWP will not be performed. **Table 1** summarizes the regulatory notification requirements for the in-stream practices described in this chapter.

NWPs are supplemented by **General Conditions**. Notification to the regulatory agencies is required if one or more of the General Conditions cannot be met during the project. Two NWP General Conditions require case-by-case review of all activities that may adversely affect Federally-listed endangered or threatened species or historic properties. In some situations, the regulating agencies may require an individual permit.

The NWPs and General Conditions are described briefly below; additional information is provided in **Appendix 15**.

Table 2. Notification Requirements for USACE and KDOW

Activity	USACE Permit #	Notification to USACE is required if the following conditions occur:	Application for a KDOW WQC is required if the following conditions occur:
Drift Removal	3(ii)	<ul style="list-style-type: none"> ▪ Notification is required if the “One Step” method of drift removal cannot be used. 	<ul style="list-style-type: none"> ▪ Same as USACE
Beaver Dam Removal	None	<ul style="list-style-type: none"> ▪ Notification is not required for this activity 	<ul style="list-style-type: none"> ▪ Notification is not required for this activity
Sediment Removal from Structures	3 (ii)	<ul style="list-style-type: none"> ▪ Work area extends further than 200 feet in any direction from the structure. 	<ul style="list-style-type: none"> ▪ More than 200 feet of stream length will be affected
	19	<ul style="list-style-type: none"> ▪ More than 25 cubic yards of material are removed. 	<ul style="list-style-type: none"> ▪ Same as USACE
Embankment Repair and/or Protection	13	<ul style="list-style-type: none"> ▪ Length of bank stabilization activity is more than 500 feet ▪ On average, more than one (1) cubic yard per foot of fill is placed below the ordinary high water mark. 	<ul style="list-style-type: none"> ▪ Length of bank stabilization activity affects more than 200 feet of stream
Scour/ Erosion Repair to Bridge Elements	3 (ii)	<ul style="list-style-type: none"> ▪ Work area extends more than 200 feet in any direction from the structure. 	<ul style="list-style-type: none"> ▪ More than 200 feet of stream length will be affected
	18	<ul style="list-style-type: none"> ▪ More than 10 cubic yards of material is placed below or removed from below the ordinary high water mark ▪ More than 1/10 acre of special aquatic site (i.e., wetlands, vegetated shallows, riffle/pool complex), is affected. 	<ul style="list-style-type: none"> ▪ Same as USACE
Bridge and Culvert Replacement	3 (i)	<ul style="list-style-type: none"> ▪ Notification is not required for this activity unless one or more of the General Conditions is not met. 	<ul style="list-style-type: none"> ▪ More than 200 feet of stream length will be affected
Temporary Construction, Access and De-watering	33	<ul style="list-style-type: none"> ▪ A Notification is required for each project ▪ A Restoration Plan is required for each project 	<ul style="list-style-type: none"> ▪ Same as USACE
Minor Discharges	18	<ul style="list-style-type: none"> ▪ More than 10 cubic yards of material is placed below or removed from below the ordinary high water mark ▪ More than 1/10 acre of special aquatic site (i.e., wetlands, vegetated shallows, riffle/pool complex), is affected. 	<ul style="list-style-type: none"> ▪ Same as USACE
Minor Dredging	19	<ul style="list-style-type: none"> ▪ More than 25 cubic yards of material are removed. 	<ul style="list-style-type: none"> ▪ Same as USACE

General Conditions

Notification to the regulatory agencies **is required** if one or more of the following conditions cannot be met during the project.

Soil Erosion and Sediment Controls. Effective sediment and erosion controls shall be employed on all projects. Use appropriate Best Management Practices (BMPs) from the “Kentucky Best Management Practices for Construction” manual, developed by the Division of Conservation and Division of Water, Natural Resources and Environmental Protection.

Scheduling. All work within the stream channel should be performed during no-flow or low flow conditions. As necessary, emergency work may be performed within the confines of the stream channel from April 15 through June 15. “Emergency work” should be determined by the Transportation Engineering Branch Manager for Operations or the County Judge Executive, as applicable.

Sediment Disposal. Material removed from the channel or banks will not be stockpiled within the confines of the stream channel. All spoil material will be loaded onto trucks and hauled away to upland sites, not to any wetland areas, for later use, storage, or disposal. Trucks must be covered to control dust. Material removed from bridge openings shall be limited to restoration of the original cross-section. Disturbance to the existing stream bank vegetation shall be minimized. Where practicable, existing access roads into the stream channel shall be utilized to enter and exit the work area.

Equipment. Equipment, type or operation, shall conform to the “one step method”, as described in **Section 2.4.3**. Bulldozers shall not be used to perform any work within the confines of the stream channel.

Materials Placement. Materials used in maintenance work shall be selected and placed so that they will not be washed downstream during normal or high water flows.

Special Use Waters. The work shall not occur in Special Use Waters designated as follows or in wetlands adjacent to those waters: National Wild and Scenic River, critical habitat for federally listed threatened and endangered species, state natural heritage sites, Outstanding National Resource Water. An Individual Water Quality Certificate is required for activities in Outstanding State Resource Waters, Exceptional Waters and Cold Water Aquatic Habitat. Some Special Use Waters are listed in **Appendix 16**. Others, such as state natural heritage sites, must be identified on a case-by-case basis.

Threatened and Endangered Species and Shellfish. No activity shall jeopardize a threatened or endangered species listed under the Federal Endangered Species Act or amendments, or endanger the critical habitat of such species, or occur in areas of concentrated shellfish production. KyTC activities should be coordinated through the District Environmental Coordinator. Local agencies should contact the Nature Preserve Commission.

Historic Properties. Work will not affect Historic Properties without notification to the USACE Engineer. KyTC should address their concern to the District Environmental Coordinator. Local agencies should contact the State Historic Preservation Officer.

Water Supply Protection. If work occurs within 2,000 feet upstream to 300 feet down-stream of a public water supply intake operated by someone other than the permittee, the permittee will provide signed agreements from the intake operator allowing the work to be conducted within the stream reach.

Wetlands. Contact the Division of Environmental Analysis or the Division of Water if you suspect the work may affect wetlands.

Compliance Certification. Upon completion of the project, a Compliance Certification must be filed for all work that requires notification to the USACE.

Notification Contents

When required by the terms of the NWP, including general conditions, provide a completed Pre-Construction Notification (PCN) to the District Engineer as early as possible. The PCN can be completed using the standard Individual Permit application form that has been labeled PCN or a letter that includes the following information may also be provided:

1. Name, address, and telephone number of the applicant;
2. Location of the project;
3. Description and purpose of the project (sketches result in quicker decision);
4. For NWP 18, delineation of affected special aquatic sites (wetlands, vegetated shallows, and riffle/pool complexes);
5. For NWP 33, a restoration plan;
6. If there are Federally-listed threatened or endangered species that may be affected, list them;
7. If there are properties listed or eligible for listing in the National Register of Historic Places, list them.

Work may proceed under the NWP by written notification from the Engineer, upon acquiring a Permit, or if written notice from the Engineer is not received within 45 days after the Engineers' receipt of completed PCN.

Appendix 15 includes USACE and KDOW notification forms.

2.3.3. Other In-Stream Work Considerations

One Step Method

All practices in this chapter should be implemented using the "one step method" as

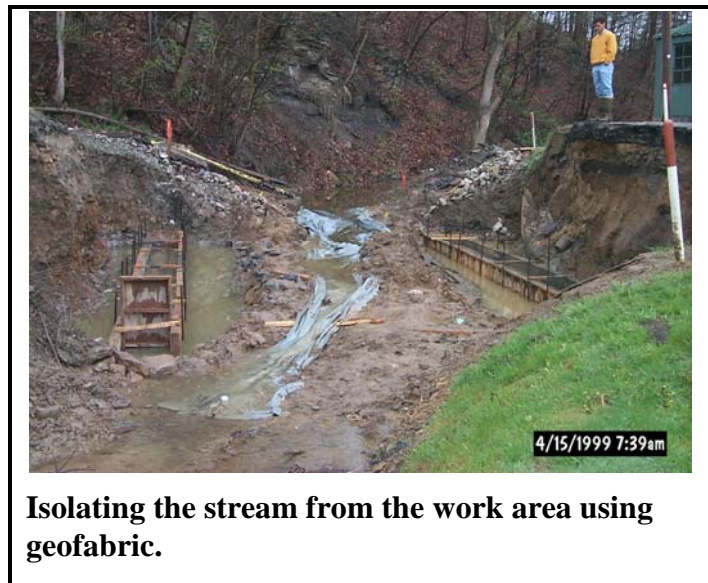


defined by the USACE. The objective of this method is that the removal from or placement of material in a stream will be accomplished with minimal disturbance to the stream. Material should be “lifted” into or from the stream with equipment designed for “lifting” (i.e. cranes or end-loaders). Once “lifted” from the stream, the material will be placed in a vehicle for removal or placed far enough from the stream that no runoff water will re-enter the stream. Bulldozers are not used for “one step method” work. Stockpiling of material within the confines of the stream is not allowed. Use good management and conservation measures.

Isolation of In-Stream Work

Several maintenance activities involve work that would not be considered “one step method”. In many instances, the work area must be isolated from the stream so as to minimize impact to the stream. Temporary structures including coffer dams, temporary stream realignment, temporary dams, pipes, low water crossings and temporary access points require notification to the USACE under NWP 33 and the notification must include a restoration plan.

Regardless of the method of work area isolation, sediment control techniques must be employed for all water removed from the work area. Sediment control techniques are found in the Kentucky Department of Highways Standard Drawings and the Kentucky Erosion Prevention and Sediment Control Field Guide.



2.3.4 Debris and Waste Management

The four general types of materials removed from streams are;

1. **Re-Usable Soil, Silt, Gravel** - Any material that can be reused should be reused rather than disposed.
2. **Organic Matter** - Organic material (i.e., wood and plant materials) can be disposed of in several ways. The disposal methods in order of preference are; on-site burial, off-site burial, burning, or disposal in a landfill.
3. **Solid Waste** - Non-hazardous, man-made, solid waste materials should be disposed in a solid waste landfill. Do not use solid wastes as fill for in-stream projects.
4. **Hazardous Waste** - Contact the Division of Waste Management if hazardous or unknown wastes are found at the work site.

On-Site Burial

Burying near the site involves selecting an area that is in the right of way or on private property that can accept the waste without creating a nuisance. When the site is on private property and in the flood plain, the landowner is required to obtain a Floodplain Construction permit from the

Division of Water. A “consent and release agreement” is required for use of private property. (see **Appendix 17**)

The waste that is buried must be free of tires, trash (garbage), containers (buckets), barrels (empty or not) and hazardous wastes. These wastes must be segregated and removed for disposal at appropriate disposal facilities.

When the site is completed, it should blend-in, the cover dirt should be deep enough, shaped to be revegetated, and stay in place.

Off-Site Burial

Burying away from the site involves transport of the material from the project site. Multiple projects may be involved. When this method of disposal is selected, all of the requirements of burying near the site must be met. The site must be registered with the Division of Waste Management. There is a limit of one acre as the maximum size of the sites to be used in this manner. There is a five-day waiting period from the date of filing a registration to authorized use of the site. There are provisions in the Waste regulations that address emergencies when the project can not wait the five days.

Construction/Demolition Landfill Disposal

Waste can be removed and disposal at a permitted construction/demolition landfill. The Division of Waste Management based on site specific information permits these landfills. The considerations for this method involve handling the debris after it is removed from the site as well as costs for use of the landfill. These landfills have less stringent design and operating requirements than landfills that dispose of municipal solid waste. Construction/Demolition Landfills cannot accept tires, trash (garbage), containers (buckets), barrels (empty or not) and hazardous wastes. These wastes must be segregated and removed for disposal at appropriate disposal facilities.

Municipal Solid Waste Landfill Disposal

Solid waste (i.e., trash) can be removed and disposed at a permitted Municipal Solid Waste Landfill. The decision to bring some or all wastes to a Solid Waste Landfill should consider the composition of the debris, how to handle the debris after it is removed from the site and costs for use of the landfill. Solid Waste Landfills will not accept tires, containers (buckets) that are not empty, barrels that are not empty and hazardous wastes. These wastes must be segregated and removed for disposal at appropriate disposal facilities.

Appendix 10 contains a list of solid waste facilities and construction/demolition debris landfills. The facilities addresses and contact numbers are also included in the list. An application for Registered Permit by Rule for Construction/Demolition Landfills of one acre or less is included.

Burning Woody Debris

Acceptable Wastes: Woody debris that has drifted to the project site may be burned when it is appropriate to do so. The debris to be burned must be free from tires, trash (garbage), containers (buckets), barrels (empty or not) and hazardous wastes. These wastes must be segregated and removed for disposal at the appropriate disposal facilities.

Site Selection: The site selected for burning may be on the right of way or on private property. The site must be far enough away from roadways so that the fire and smoke do not create a hazard or obscure the vision of the traveling public.

Required Notifications and Approvals: Once the site is selected, the Division of Forestry will be contacted to determine burning restrictions. Generally, these are seasonal, but may vary to prevent wildfires during droughts. Burning will not be conducted during fire bans. The Division of Air Quality and the local fire chief must be notified. Note that approval of the local fire marshal alone does not denote approval for burning. If the burn site is on private property, “Consent and Release” agreements must be obtained from the property owner. All impacted property owners should sign consent release letters. See **Appendix 17**.

Burning Procedures: Burning must be done on days when conditions, such as wind, do not pose a threat of igniting a fire offsite in adjacent woodlands, grasslands or structures. The woody debris should be relatively dry to avoid creating excessive smoke and air-borne particulates. Use of extraneous material such as tires or heavy oils, which tend to produce dense smoke, to start or sustain burning, is prohibited. Crews must be prepared to extinguish fires that cause a hazard or cannot be confined to the burn area. Personnel must be on site at all times while the fire is burning. The fire must be extinguished before personnel leave the site.

2.3.5. DRIFT REMOVAL



Do

- ✓ Notify regulatory agencies if the “One Step” method cannot be used.
- ✓ Plan and obtain approvals for drift disposal method(s) prior to beginning the job.
- ✓ Work only during no flow or low flow periods unless it’s an emergency.
- ✓ Obtain approval from Transportation Engineering Branch Manager for Operations for emergency work performed April 15th to June 15th.
- ✓ Use a cable and winch to remove large trees from the stream.
- ✓ Use chain saws to cut up large logs into smaller, more manageable pieces then lift to trucks for disposal.
- ✓ Put a front end loader inside large culverts to move the debris to the opening. Then use the “One Step” method to lift the debris from the stream.
- ✓ Where available, use long boom excavators to reach from the roadway to the streambed.
- ✓ When necessary, equipment designed to lift and trucks can be placed in the streambed.



Large debris jam on bridge.

Don't

- ✗ Don't perform drift removal activity between April 15th to June 15th unless it's an emergency.
- ✗ Don't place bulldozers in the stream without approvals from the regulatory agencies.



“One-Step Method for removal.

If...Then

- If equipment such as front end loaders or cranes is placed in the waterbody, minimize the number of access points to the stream.

Materials & Waste Management

- ▲ Separate trash, tires, barrels, unknown or hazardous wastes.
- ▲ Manage wastes according to **Section 2.3.4**

Factsheet Checklist

- Use **Section 2.3.2** to carefully evaluate whether regulatory notification is required.
- Evaluate whether the “One Step” method can be used.
- Ensure vehicles, equipment and safety equipment is available and in working order.

Tips & Tricks

- ! Local transportation agencies should obtain approval for emergency work between April 15th and June 15th from the County Judge Executive.

Relevant Environmental Programs

- | | |
|--|--|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input checked="" type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

Training: 1 per Year **Season:** Winter

KYTC FOG Reference: H320, J010, J020

INFORMATION SOURCES

33 CFR 209 Navigation and Navigable Waters, Administrative Procedure

33 CFR 325 Title 33, Part 135 - Processing of Department of the Army Permits

33 CFR 326 Title 33 - Navigation and Navigable Waters, Part 326- Enforcement

33 CFR 328 Title 33 - Definition of Waters of the US

400 KAR 2 Nature Preserves Commission

401 KAR 4:060 Stream construction criteria

401 KAR 4:100 Wild River Boundaries

401 KAR 5:026 Designation of Uses of Surface Waters

401 KAR 5:030 Antidegradation Policy Implementation Methodology

KRS 224.16-050 Issuance of federal permits by cabinet

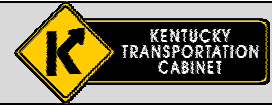
P.L. 90-542 National Wild and Scenic Rivers Act

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated.
(Unit 2)

Tetra Tech. *Kentucky Erosion and Sediment Control Field Guide*. Undated. Frankfort, Kentucky.

NOTES

2.3.6. BEAVER DAM REMOVAL



Do

- ✓ Work with a Nuisance Animal Control Officer to remove the beaver.
- ✓ Plan and obtain approvals for drift disposal method(s) prior to beginning the job.
- ✓ Work only during no flow or low flow periods unless it's an emergency.
- ✓ Obtain approval from Transportation Engineering Branch Manager for Operations for emergency work performed April 15th to June 15th.
- ✓ Prior to breaching the dam, inspect properties downstream of the dam site to evaluate flooding concerns.
- ✓ Breach the dam slowly so that discharge from the dam does not exceed normal high flows in the stream.
- ✓ Monitor the breach until normal flows have returned.
- ✓ Remove dam materials from the site using the "One Step" method and dispose away from the site.



Both the beaver and the dam must be removed to fully address potential flooding caused by beaver dams

Don't

- ✗ Don't breach the dam until downstream flooding concerns have been addressed.
- ✗ Don't place bulldozers in the stream without approvals from the regulatory agencies.

If...Then

- If equipment is placed in the waterbody, minimize the number of access points to the stream.

Materials & Waste Management

- ▲ Separate trash from woody debris.
- ▲ Manage wastes according to **Section 2.3.4**

Relevant Environmental Programs

- | | |
|--|--|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input checked="" type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

Factsheet Checklist

- Use **Section 2.3.2** to carefully evaluate whether regulatory notification is required.
- Evaluate whether the "One Step" method can be used.
- Ensure vehicles, equipment and safety equipment is available and in working order
- Ensure that flooding concerns are addressed.

Tips & Tricks

- ! **Regulatory agencies do not need to be notified for this activity.**
- ! Local transportation agencies should obtain approval for emergency work between April 15th and June 15th from the County Judge Executive.
- ! Remove dam materials from the site so that the beaver do not return and rebuild the dam.
- ! The KY Division of Fish and Wildlife has a database of Nuisance Wildlife Control businesses online at <http://fw.ky.gov/NuisanceLookup.aspx>.

Training: 1 per Year **Season:** Winter

KYTC FOG Reference: H320, J010, J020

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated.
(Unit 2)

Tetra Tech. *Kentucky Erosion and Sediment Control Field Guide*. Undated. Frankfort, Kentucky.

NOTES

2.3.7. SEDIMENT REMOVAL FROM STRUCTURES



Do

- ✓ Notification to regulatory agencies may be required. Refer to **Table 1** and General Conditions in **Section 2.3.2** for requirements.
- ✓ Plan and obtain necessary approvals for waste disposal method(s) prior to beginning the job.
- ✓ Work only during no flow or low flow periods unless it's an emergency.
- ✓ Remove sediment from the site using the "One Step" method.
- ✓ Access the stream at one location.
- ✓ Plan to reuse sediment as fill for roadway maintenance activities.
- ✓ Seed and mulch disturbed areas along the streambank.



Loose rock and sediment may deposit at culvert and bridge openings and should be removed to prevent misalignment of the stream and erosion of the structures and nearby roadway.

Don't

- ✗ Don't begin work without approvals from the regulatory agencies.
- ✗ Don't remove streambank vegetation unless absolutely necessary.
- ✗ Don't remove large trees.
- ✗ Don't undercut banks.
- ✗ Don't channelize the stream or deepen the channel during this activity.
- ✗ Don't use bulldozers in the stream without approval from the USACE or KDOW.
- ✗ Don't place sediment in the stream channel or floodplain.
- ✗ Don't flush the sediment into or within the stream.

If...Then

- If equipment is placed in the waterbody, minimize the number of access points to the stream.

Materials & Waste Management

- ▲ Separate trash from woody debris.
- ▲ Manage wastes according to **Section 2.3.4**

Relevant Environmental Programs

- | | |
|--|--|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input checked="" type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

Factsheet Checklist

- Use **Section 2.3.2** to carefully evaluate whether regulatory notification is required.
- Evaluate whether the "One Step" method can be used to remove sediment.
- Ensure vehicles, equipment and safety equipment is available and in working order
- Inspect work in progress to ensure that stream disturbance is minimized.

Tips & Tricks

Training: 1 per Year **Season:** Winter
KYTC FOG Reference: H320, J010, J020, J030

INFORMATION SOURCES

33 CFR 209 Navigation and Navigable Waters, Administrative Procedure

33 CFR 325 Title 33, Part 135 - Processing of Department of the Army Permits

33 CFR 326 Title 33 - Navigation and Navigable Waters, Part 326- Enforcement

33 CFR 328 Title 33 - Definition of Waters of the US

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401 KAR 4:060 Stream construction criteria

401 KAR 4:100 Wild River Boundaries

401 KAR 5:026 Designation of Uses of Surface Waters

401 KAR 5:030 Antidegradation Policy Implementation Methodology

KRS 224.16-050 Issuance of federal permits by cabinet

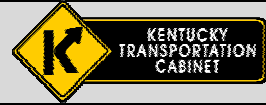
P.L. 90-542 National Wild and Scenic Rivers Act

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated.
(Unit 2)

Tetra Tech. *Kentucky Erosion and Sediment Control Field Guide*. Undated. Frankfort, Kentucky.

NOTES

2.3.8. EMBANKMENT REPAIR AND PROTECTION USING CHANNEL LINING



Do

- ✓ Notification to regulatory agencies may be required. Refer to **Table 1** and General Conditions in **Section 2.3.2** for requirements.
- ✓ Work only during no flow or low flow periods unless it's an emergency.
- ✓ If possible, work from the roadway and avoid using equipment in the stream.
- ✓ Access the stream at one location and use the "One Step" Method if equipment is placed in the stream.
- ✓ Dump Class III channel lining or quarry shot rock onto eroded embankment and arrange with a backhoe or Gradall from the roadway.
- ✓ Use a backhoe to place channel lining one bucket at a time if rock scatter is an issue.
- ✓ Use channel lining around bridge elements and culvert footings to minimize erosion.
- ✓ Use the One Step method if rock must be arranged with equipment in the stream.



Class III channel lining, large stone and geotextile were used to prevent erosion of this steep embankment.

Don't

- ✗ Don't bring equipment into the stream unless it is absolutely necessary.
- ✗ Don't use bulldozers in the stream.
- ✗ Don't remove streambank vegetation unless absolutely necessary.

If...Then

- If equipment is placed in the waterbody, use one access point to the stream.
- If there is the potential for sediment runoff from disturbed soils, use sediment barriers.
- If needed, revegetate disturbed streambanks as per the Kentucky Erosion Prevention and Sediment Control Field Guide.

Materials & Waste Management

- ▲ Reuse gravel as backfill for the job if appropriate.
- ▲ Remove excavated materials from the floodplain and stockpile at the facility for reuse.

Factsheet Checklist

- Use **Section 2.3.2** to carefully evaluate whether regulatory notification is required.
- Evaluate whether the "One Step" method can be used to construct bench.
- Check work in progress to ensure that stream disturbance is minimized.

Tips & Tricks

- ! Repair eroding banks as soon as possible to protect roadways and aquatic life in streams.
- ! Class III channel lining is covered in the Master Agreement price contract for coarse aggregates.

Relevant

Environmental Programs

- | | |
|--|----------------------------------|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input checked="" type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input type="radio"/> Facilities Pride | <input type="radio"/> Waste Mgt |

Training: 1 per Year **Season:** Winter

KYTC FOG Reference: C020, J110

INFORMATION SOURCES

33 CFR 209 Navigation and Navigable Waters, Administrative Procedure

33 CFR 325 Title 33, Part 135 - Processing of Department of the Army Permits

33 CFR 326 Title 33 - Navigation and Navigable Waters, Part 326- Enforcement

33 CFR 328 Title 33 - Definition of Waters of the US

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401 KAR 4:060 Stream construction criteria

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401 KAR 5:030 Antidegradation Policy Implementation Methodology

KRS 224.16-050 Issuance of federal permits by cabinet

P.L. 90-542 National Wild and Scenic Rivers Act

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated.
(Unit 2)

Tetra Tech. *Kentucky Erosion and Sediment Control Field Guide*. Undated. Frankfort, Kentucky.

NOTES

2.3.9. EMBANKMENT REPAIR AND PROTECTION USING GABION BASKETS



Do

- ✓ **Notification to regulatory agencies may be required.** Refer to **Table 1** and General Conditions in **Section 2.3.2** for requirements.
- ✓ Work only during no flow or low flow periods unless it's an emergency.
- ✓ If possible, work from the roadway and avoid using equipment in the stream.
- ✓ Access the stream at one location and use the "One Step" Method if equipment is placed in the stream.
- ✓ Movable concrete barrier walls may be placed in rock streambeds to support gabion baskets.
- ✓ Use a backhoe, Gradall or loader to remove eroded material and construct a level bench.
- ✓ If used, place barrier walls with a crane located on the roadway.
- ✓ Set the baskets in place, fill with stone for Gabions (4-12 inch), and tie together.
- ✓ Backfill as needed.

Don't

- ✗ Don't bring equipment into the stream unless it is absolutely necessary.
- ✗ Don't use bulldozers in the stream without approval from the USACE or KDOW.
- ✗ Don't remove streambank vegetation unless absolutely necessary.

If...Then

- If equipment is placed in the waterbody, use one access point to the stream.
- If there is the potential for sediment runoff from disturbed soils, use sediment barriers.
- If needed, revegetate disturbed areas as per the Kentucky Erosion Prevention and Sediment Control Field Guide

Materials & Waste Management

- ▲ Reuse gravel as backfill for the job if appropriate.
- ▲ Remove excavated materials from the floodplain and stockpile at the facility for reuse.

Relevant Environmental Programs

- | | |
|--|----------------------------------|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input checked="" type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input type="radio"/> Facilities Pride | <input type="radio"/> Waste Mgt |



Embankment repair using movable concrete barrier walls and channel lining prevents erosion of the embankment and roadway collapse along a stream.

Factsheet Checklist

- Use **Section 2.3.2** to carefully evaluate whether regulatory notification is required.
- Evaluate whether the "One Step" method can be used to construct bench.
- Check work in progress to ensure that stream disturbance is minimized.

Tips & Tricks

- ! Repair eroding banks as soon as possible to protect roadways and aquatic life in streams.

Training: 1 per Year **Season:** Winter

KYTC FOG Reference: C020, J110

INFORMATION SOURCES

33 CFR 209 Navigation and Navigable Waters, Administrative Procedure

33 CFR 325 Title 33, Part 135 - Processing of Department of the Army Permits

33 CFR 326 Title 33 - Navigation and Navigable Waters, Part 326- Enforcement

33 CFR 328 Title 33 - Definition of Waters of the US

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401 KAR 4:060 Stream construction criteria

401 KAR 4:100 Wild River Boundaries

401 KAR 5:026 Designation of Uses of Surface Waters

401 KAR 5:030 Antidegradation Policy Implementation Methodology

KRS 224.16-050 Issuance of federal permits by cabinet

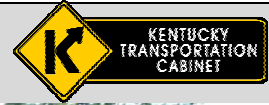
P.L. 90-542 National Wild and Scenic Rivers Act

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated.
(Unit 2)

Tetra Tech. *Kentucky Erosion and Sediment Control Field Guide*. Undated. Frankfort, Kentucky.

NOTES

2.3.10. EMBANKMENT REPAIR AND PROTECTION USING RAILROAD T-RAILS



Do

- ✓ Notification to regulatory agencies may be required. Refer to **Table 1** and General Conditions in **Section 2.3.2** for requirements.
- ✓ Work only during no flow or low flow periods unless it's an emergency.
- ✓ If possible, work from the roadway and avoid using equipment in the stream.
- ✓ Access the stream at one location and use the "One Step" Method if equipment is placed in the stream.
- ✓ Place cribbing against the rails to form a retaining wall.
- ✓ Backfill as needed.

Don't

- ✗ Don't bring equipment into the stream unless it is absolutely necessary.
- ✗ Don't use bulldozers in the stream without approval of the USACE or KDOW.
- ✗ Don't remove streambank vegetation unless absolutely necessary.

If...Then

- If equipment is placed in the waterbody, use one access point to the stream.
- If there is the potential for sediment runoff from disturbed soils, use sediment barriers.
- If needed, revegetate disturbed areas as per the Kentucky Erosion Prevention and Sediment Control Field Guide.

Materials & Waste Management

- ▲ Reuse gravel as backfill for the job if appropriate.
- ▲ Remove excavated materials from the floodplain and stockpile at the facility for reuse.



Railroad T- rails and cribs can be used to repair roadway slips adjacent to streams.

Factsheet Checklist

- Use **Section 2.3.2** to carefully evaluate whether regulatory notification is required.
- Evaluate whether the "One Step" method can be used to construct bench.
- Check work in progress to ensure that stream disturbance is minimized.

Tips & Tricks

- ! Repair eroding banks as soon as possible to protect roadways and aquatic life in streams.

Relevant Environmental Programs

- | | |
|--|----------------------------------|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input checked="" type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input type="radio"/> Facilities Pride | <input type="radio"/> Waste Mgt |

Training: 1 per Year **Season:** Winter

KYTC FOG Reference: C020, J110

INFORMATION SOURCES

33 CFR 209 Navigation and Navigable Waters, Administrative Procedure

33 CFR 325 Title 33, Part 135 - Processing of Department of the Army Permits

33 CFR 326 Title 33 - Navigation and Navigable Waters, Part 326- Enforcement

33 CFR 328 Title 33 - Definition of Waters of the US

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(Unit 2)

Tetra Tech. *Kentucky Erosion and Sediment Control Field Guide*. Undated. Frankfort, Kentucky.

NOTES

2.3.11. EMBANKMENT REPAIR USING CONCRETE RETAINING WALLS



Do

- ✓ Notification to regulatory agencies may be required. Refer to **Table 1** and General Conditions in **Section 2.3.2** for requirements.
- ✓ Obtain necessary approvals prior to beginning work.
- ✓ Work only during no flow or low flow periods unless it's an emergency.
- ✓ Engineering analysis is required to ensure that the stream bed can support the concrete wall.
- ✓ If possible, work from the roadway and avoid using equipment in the stream.
- ✓ Access the stream at one location and use the "One Step" Method if equipment is placed in the stream.
- ✓ Excavate a sound base for the concrete footing.
- ✓ Backfill behind the wall with excavated materials or quarry stone to facilitate proper drainage.



If the streambed is rock or has been evaluated by engineering analysis, concrete retaining walls may be used to repair eroding embankments.

Don't

- ✗ Don't begin work without approvals from the regulatory agencies.
- ✗ Don't bring equipment into the stream unless it is absolutely necessary.
- ✗ Don't use bulldozers in the stream without approval from the USACE or KDOW.
- ✗ Don't remove streambank vegetation unless absolutely necessary.

If...Then

- If equipment is placed in the waterbody, use one access point to the stream.
- If there is the potential for sediment runoff from disturbed soils, use sediment barriers.
- If needed, revegetate disturbed streambanks as per the Kentucky Erosion Prevention and Sediment Control Field Guide.

Materials & Waste Management

- ▲ Reuse gravel as backfill for the job if appropriate.
- ▲ Remove excavated materials from the floodplain and stockpile at the facility for reuse.
- ▲ Remove timber forms from the worksite.

Relevant

Environmental Programs

- Air Quality
- 401/404/WQC
- KPDES
- Facilities Pride
- GWPP
- Pesticides
- SPCC
- Waste Mgt

Factsheet Checklist

- Use **Section 2.3.2** to carefully evaluate whether regulatory notification is required.
- Evaluate whether the "One Step" method can be used to construct bench.
- Check work in progress to ensure that stream disturbance is minimized.

Tips & Tricks

- ! Repair eroding banks as soon as possible to protect roadways and aquatic life in streams.
- ! Concrete retaining walls are best suited for rock stream beds.

Training: 1 per Year **Season:** Winter

KYTC FOG Reference: C020, J110

INFORMATION SOURCES

33 CFR 209 Navigation and Navigable Waters, Administrative Procedure

33 CFR 325 Title 33, Part 135 - Processing of Department of the Army Permits

33 CFR 326 Title 33 - Navigation and Navigable Waters, Part 326- Enforcement

33 CFR 328 Title 33 - Definition of Waters of the US

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P.L. 90-542 National Wild and Scenic Rivers Act

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated.
(Unit 2)

Tetra Tech. *Kentucky Erosion and Sediment Control Field Guide*. Undated. Frankfort, Kentucky.

NOTES

2.3.12. EMBANKMENT REPAIR AND PROTECTION USING A-JACKS AND ARMORSTONE



Do

- ✓ Notification to regulatory agencies may be required. Refer to **Table 1** and General Conditions in **Section 2.3.2** for requirements.
- ✓ Work only during no flow or low flow periods unless it's an emergency.
- ✓ If possible, work from the roadway and avoid using equipment in the stream.
- ✓ Access the stream at one location and use the "One Step" Method if equipment is placed in the stream.
- ✓ To install A-Jacks, excavate a trench at the toe of the slope with base elevation below the streambed.
- ✓ Use geotextile fabric for erosion control in the trench and on the embankment slope.
- ✓ Backfill the A-Jacks with graded crushed stone or native soil to restore a natural slope and shape to the embankment.
- ✓ Backfill behind the wall with excavated materials or quarry stone to facilitate proper drainage.
- ✓ If needed, revegetate disturbed streambanks as per the Kentucky Erosion Prevention and Sediment Control Field Guide.



◀ *A-Jacks were used to stabilize the foot of this embankment*



Armorstone concrete interlocking blocks were used ▲ to protect the stream bank above. These approaches are useful to protect otherwise unprotected stream banks or banks that are susceptible to erosion from runoff or high water events.

Don't

- ✗ Don't begin work without approvals from the regulatory agencies.
- ✗ Don't bring equipment into the stream unless it is absolutely necessary.
- ✗ Don't use bulldozers in the stream.
- ✗ Don't remove streambank vegetation unless absolutely necessary.
- ✗ Don't remove large trees.

Materials & Waste Management

- ▲ Reuse gravel as backfill for the job if appropriate.
- ▲ Remove excavated materials from the floodplain and stockpile at the facility for reuse.

If...Then

- ▶ If equipment is placed in the waterbody, use one access point to the stream.
- ▶ If there is the potential for sediment runoff from disturbed soils, use sediment barriers.

Factsheet Checklist

- Use **Section 2.3.2** to carefully evaluate whether regulatory notification is required.
- Evaluate whether the "One Step" method can be used to construct bench.
- Check work in progress to ensure that stream disturbance is minimized.

Tips & Tricks

- ! Repair eroding banks as soon as possible to protect roadways and aquatic life in streams.

Relevant Environmental Programs

- Air Quality
- 401/404/WQC
- KPDES
- Facilities Pride
- GWPP
- Pesticides
- SPCC
- Waste Mgt

Training: 1 per Year **Season:** Winter

KYTC FOG Reference: C020, J110

INFORMATION SOURCES

33 CFR 209 Navigation and Navigable Waters, Administrative Procedure

33 CFR 325 Title 33, Part 135 - Processing of Department of the Army Permits

33 CFR 326 Title 33 - Navigation and Navigable Waters, Part 326- Enforcement

33 CFR 328 Title 33 - Definition of Waters of the US

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P.L. 90-542 National Wild and Scenic Rivers Act

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated.
(Unit 2)

Tetra Tech. *Kentucky Erosion and Sediment Control Field Guide*. Undated. Frankfort, Kentucky.

NOTES

2.3.13. SCOUR/EROSION REPAIR TO BRIDGE ELEMENTS



Do

- ✓ Notification to regulatory agencies may be required. Refer to **Table 1** and General Conditions in **Section 2.3.2** for requirements.
- ✓ Obtain necessary approvals prior to beginning work
- ✓ Work only during no flow or low flow periods unless it's an emergency.
- ✓ If possible, work from the roadway and avoid using equipment in the stream.
- ✓ Access the stream at one location and use the "One Step" Method if equipment is placed in the stream.
- ✓ Use channel lining around bridge elements and culvert footings to minimize erosion.
- ✓ Excavate as needed, then use concrete to supplement existing footing.
- ✓ Use geotextile fabric for erosion control in the trench and on the embankment slope.
- ✓ Use A-Jacks to encourage sediment deposition to fill in scour holes.



A-Jacks were used to encourage sediment deposits to fill in scour holes.

Don't

- ✗ Don't bring equipment into the stream unless it is absolutely necessary.
- ✗ Don't use bulldozers in the stream without approval from the USACE or KDOW.
- ✗ Don't remove streambank vegetation unless absolutely necessary.

If...Then

- If equipment is placed in the waterbody, use one access point to the stream.
- If needed, revegetate disturbed streambanks as per the Kentucky Erosion Prevention and Sediment Control Field Guide.
- If there is the potential for sediment runoff from disturbed soils, use sediment barriers.

Materials & Waste Management

- ▲ Reuse gravel as backfill for the job if appropriate.
- ▲ Remove excavated materials from the floodplain and stockpile at the facility for reuse.
- ▲ Remove timber concrete forms.

Factsheet Checklist

- Use **Section 2.3.2** to carefully evaluate whether regulatory notification is required.
- Evaluate whether the "One Step" method can be used to construct bench.
- Check work in progress to ensure that stream disturbance is minimized.

Tips & Tricks

- ! Repair eroding banks as soon as possible to protect roadways and aquatic life in streams.
- ! Class III channel lining is covered in the Master Agreement price contract for coarse aggregates.

Relevant Environmental Programs	<input type="radio"/> Air Quality	<input type="radio"/> GWPP
	<input checked="" type="radio"/> 401/404/WQC	<input type="radio"/> Pesticides
	<input type="radio"/> KPDES	<input type="radio"/> SPCC
	<input type="radio"/> Facilities Pride	<input type="radio"/> Waste Mgt

Training: 1 per Year **Season:** Winter
KYTC FOG Reference: C020, J110

INFORMATION SOURCES

33 CFR 209 Navigation and Navigable Waters, Administrative Procedure

33 CFR 325 Title 33, Part 135 - Processing of Department of the Army Permits

33 CFR 326 Title 33 - Navigation and Navigable Waters, Part 326- Enforcement

33 CFR 328 Title 33 - Definition of Waters of the US

400 KAR 2 Nature Preserves Commission

401 KAR 4:060 Stream construction criteria

401 KAR 4:100 Wild River Boundaries

401 KAR 5:026 Designation of Uses of Surface Waters

401 KAR 5:030 Antidegradation Policy Implementation Methodology

KRS 224.16-050 Issuance of federal permits by cabinet

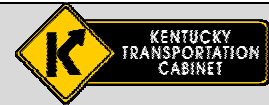
P.L. 90-542 National Wild and Scenic Rivers Act

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated.
(Unit 2)

Tetra Tech. *Kentucky Erosion and Sediment Control Field Guide*. Undated. Frankfort, Kentucky.

NOTES

2.3.14. BRIDGE AND CULVERT REPLACEMENT



Do

- ✓ Notification to regulatory agencies may be required. Notification to USACE is required for stream crossings. Refer to **Table 1** and General Conditions in **Section 2.3.2** for requirements.
- ✓ Obtain necessary approvals prior to beginning work.
- ✓ Plan and obtain necessary approvals for waste disposal method(s) prior to beginning the job.
- ✓ Work only during no flow or low flow periods unless it's an emergency.
- ✓ If possible, work from the roadway and avoid using equipment in the stream.
- ✓ Access the stream at one location and use the "One Step" Method if equipment is placed in the stream.
- ✓ Work from the road to remove the old structure with a backhoe, Gradall, loader, hoe-ram or crane.
- ✓ Backfill as needed with broken concrete, crushed rock or creek rock from within the project area.
- ✓ Use KyTC Standard Drawings (**Appendix 18**) to design stream crossings as needed for detours.



This bridge replacement includes stream isolation to minimize sediment discharge to the stream.

Don't

- ✗ Don't begin work without approvals from the regulatory agencies.
- ✗ Don't bring equipment into the stream unless it is absolutely necessary.
- ✗ Don't use bulldozers in the stream
- ✗ Don't remove streambank vegetation unless absolutely necessary. Don't remove large trees.

If...Then

- If equipment is placed in the waterbody, use one access point to the stream.
- If demolition waste is dropped in the stream, remove it for reuse as rip rap or landfill disposal.
- If needed, revegetate disturbed streambanks as per the Kentucky Erosion Prevention and Sediment Control Field Guide.
- If there is the potential for sediment runoff from disturbed soils, use sediment barriers.

Materials & Waste Management

- ▲ Remove excavated materials and broken concrete from the floodplain and stockpile for reuse on the project or at the facility.
- ▲ Remove timber concrete forms.

Factsheet Checklist

- Use **Section 2.3.2** to carefully evaluate whether regulatory notification is required.
- Evaluate whether the "One Step" method can be used to construct bench.
- Check work in progress to ensure that stream disturbance is minimized.

Tips & Tricks

- ! Repair eroding banks as soon as possible to protect roadways and aquatic life in streams.
- ! Class III channel lining is covered in the Master Agreement price contract for coarse aggregates.

Relevant

Environmental Programs

- | | |
|--|----------------------------------|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input checked="" type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input type="radio"/> Facilities Pride | <input type="radio"/> Waste Mgt |

Training: 1 per Year **Season:** Winter

KYTC FOG Reference: C020, J110

INFORMATION SOURCES

33 CFR 209 Navigation and Navigable Waters, Administrative Procedure

33 CFR 325 Title 33, Part 135 - Processing of Department of the Army Permits

33 CFR 326 Title 33 - Navigation and Navigable Waters, Part 326- Enforcement

33 CFR 328 Title 33 - Definition of Waters of the US

400 KAR 2 Nature Preserves Commission

401 KAR 4:060 Stream construction criteria

401 KAR 4:100 Wild River Boundaries

401 KAR 5:026 Designation of Uses of Surface Waters

401 KAR 5:030 Antidegradation Policy Implementation Methodology

KRS 224.16-050 Issuance of federal permits by cabinet

P.L. 90-542 National Wild and Scenic Rivers Act

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated.
(Unit 2)

Tetra Tech. *Kentucky Erosion and Sediment Control Field Guide*. Undated. Frankfort, Kentucky.

NOTES

2.3.15. BIOENGINEERING



Do

- ✓ Consider using bioengineering approaches to stabilize streambanks and restore channels.
- ✓ A site-specific plan must be developed by an experienced stream restoration specialist.
- ✓ Minimize disturbance to existing vegetation.
- ✓ Use native plants and rocks to restore the stream.
- ✓ Use bioengineering standard drawings in **Appendix 19** as a guide to implementing the site specific design.
- ✓ Involve the Division of Environmental Analysis in the development of bio-engineering plans.
- ✓ Work only during no flow or low flow periods unless it's an emergency.
- ✓ Access the stream at one location and use the "One Step" Method if equipment is placed in the stream.



◀ *Steep bank slopes are prone to erosion, which require maintenance and can harm aquatic life.*



Bioengineering methods use natural stream processes to design stable channels. Natural channels erode less, require less maintenance and provide better habitat for aquatic life.

▲ *The small slopes and wide floodplain will erode less, require less maintenance and provide good habitat for aquatic life.*

Don't

- ✗ Don't attempt to use Bio-Engineering without use of a person who is qualified to design the project.
- ✗ Don't bring equipment into the stream unless it is absolutely necessary.
- ✗ Don't use bulldozers in the stream without approval from the USACE or KDOW.
- ✗ Don't remove streambank vegetation unless absolutely necessary. Don't remove large trees.



Live root stock, mulch and low slopes were used to reduce erosion along this stream.

If... Then

- ▶ If equipment is placed in the waterbody, use one access point to the stream.
- ▶ If there is the potential for sediment runoff from disturbed soils, use sediment barriers.

Materials & Waste Management

- ▲ Remove excavated materials from the floodplain and stockpile for reuse on the project or at the facility.

Factsheet Checklist

- Use **Section 2.3.2** to carefully evaluate whether regulatory notification is required.
- Evaluate whether the "One Step" method can be used to construct bench.
- Check work in progress to ensure that stream disturbance is minimized.

Tips & Tricks

- ! Stream restoration using natural channel designs and bioengineering methods is a more proactive approach to stream restoration and is based on the hydrology of the watershed.
- ! Contact the DEA (564 7250) for guidance and training opportunities for use of bioengineering.
- ! <http://www.water.ky.gov/permitting/wqcert/>

Training: 1 per Year **Season:** Winter

KYTC FOG Reference: C020, J110

Relevant Environmental Programs

- | | |
|--|----------------------------------|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input checked="" type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input type="radio"/> Facilities Pride | <input type="radio"/> Waste Mgt |

INFORMATION SOURCES

33 CFR 209 Navigation and Navigable Waters, Administrative Procedure

33 CFR 325 Title 33, Part 135 - Processing of Department of the Army Permits

33 CFR 326 Title 33 - Navigation and Navigable Waters, Part 326- Enforcement

33 CFR 328 Title 33 - Definition of Waters of the US

400 KAR 2 Nature Preserves Commission

401 KAR 4:060 Stream construction criteria

401 KAR 4:100 Wild River Boundaries

401 KAR 5:026 Designation of Uses of Surface Waters

401 KAR 5:030 Antidegradation Policy Implementation Methodology

KRS 224.16-050 Issuance of federal permits by cabinet

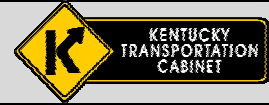
P.L. 90-542 National Wild and Scenic Rivers Act

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated.
(Unit 2)

Tetra Tech. *Kentucky Erosion and Sediment Control Field Guide*. Undated. Frankfort, Kentucky.

NOTES

2.4.1. STORING AND LOADING ROAD SALTS



Do

- ✓ Check for, and correct, deficiencies in salt storage units.
- ✓ Keep salt dry by covering the dome entrance or the face of the salt pile with tarps.
- ✓ Sweep the storage areas clean before salt delivery and sweep up spilled salt after delivery.
- ✓ Move delivered salt into storage immediately.
- ✓ If salt is stored on an uncovered concrete or asphalt pad, shape the salt pile to avoid pooling water and cover immediately with a tarpaulin weighted with sand bags, cinder blocks, tires on ropes, etc.
- ✓ Store dry calcium chloride indoors on pallets.
- ✓ Load salt trucks on a paved surface.
- ✓ Sweep the paved staging area prior to loading trucks and sweep spilled salt back into storage.
- ✓ Load what is needed for the job and return unused product to storage.
- ✓ Use grading, berms, swales, curbs and dikes to prevent stormwater run-on and run-off; direct downspouts away from storage and loading areas.

Don't

- ✗ Don't leave rock salt (sodium chloride) uncovered or unprotected from weather.
- ✗ Don't store calcium chloride on gravel or dirt floors.
- ✗ Don't use building walls as a backing for loading.
- ✗ Don't overfill storage areas.

If...Then

- If bags of dry calcium chloride break open, sweep up and put into a new bag or clean container for future use.
- If rainfall pools around salt storage areas, construct a drainage ditch, dikes or re-grade the area to send runoff to an area treated by a BMP and included in a KPDES monitoring control point.
- If possible, the entrances of new salt storage facilities will face away from prevailing weather.

Materials & Waste Management

▲ Dry calcium chloride or rock salt that becomes dirty is to be worked into future snow and ice operations.

Relevant Environmental Programs	<input type="radio"/> Air Quality	<input checked="" type="radio"/> GWPP
	<input type="radio"/> 401/404/WQC	<input type="radio"/> Pesticides
	<input checked="" type="radio"/> KPDES	<input type="radio"/> SPCC
	<input checked="" type="radio"/> Facilities Pride	<input type="radio"/> Waste Mgt



Storing rock salt in a covered dome helps to protect surface and ground water from chloride contamination.

Factsheet Checklist

- Check **EACH** salt delivery operation.
- Check salt pads **DAILY** for proper cover with tarps and signs of runoff when in use.
- Check salt storage domes and sheds **DAILY** during snow and ice season (October to April) for water-tight roof & floors, tarpaulin covers for entrances, ventilation fans, lights, and building damage. Immediately report repair needs to the Division of Property and Supply Services.
- Check salt storage areas for white chloride deposits **DAILY** during snow and ice season and **WEEKLY** during the rest of the year.
- Check salt domes, sheds and pads **MONTHLY** between May and September for structural integrity and runoff issues.
- Check salt pads **ANNUALLY** during summer for cracks and wear; repair as needed.
- To prevent salt tracking watch for and move salt away from storage entrances where rain is blown in.

Tips & Tricks

- ! Traffic dividers can be used to improve stockpiles of salt.
- ! Tires connected with ropes and help weight tarps and keep them from blowing off of salt stored on pads.

Training: 1 per Year **Season:** Fall

KYTC FOG Reference K040, K120, K170, K880, K990

INFORMATION SOURCES

401 KAR 5:031. Surface Water Standards.

401 KAR 5:050. KPDES Effluent Standards

401 KAR 5:055. Scope and applicability of the KPDES Program

401 KAR 5:065. KPDES permit conditions.

401 KAR 5:070. Provisions of the KPDES permit.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated.
(Unit 4, KPDES Permit, Good Housekeeping BMP; Unit 5 pages 5-9 & 10,13 to 15 and 5-19, p32)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002. (Chapters 3.6 and 4.3)

Salt Institute. *The Snowfighter's Handbook: A Practical Guide for Snow and Ice Control*. 1999.
Alexandria, Virginia. SI-1999-R.

NOTES

2.4.2. GENERATING SALT BRINE



Do

- ✓ Locate salt brine generators in an enclosed, heated shed near the salt storage area.
- ✓ Provide containment units made with concrete floors and walls.
- ✓ Include a five hundred (500) gallon concrete sump designed to contain the “end of operation” brine that cannot be moved when the brine maker is serviced. The division of Property and Supply Services has a standard drawing for brine generator buildings.
- ✓ Flush remaining brine from the generator to the sump, pump it into the storage tank or back into the generator or discharge to floor drains only when they are connected to city sewers.
- ✓ Sweep up spilled salt around the brine generator and on the grounds for reuse.
- ✓ Clean brine generator weekly when in use.
- ✓ Repair all problem areas prior to use.

Don't

- ✗ Don't store salt brine in the sump area for long periods where it can become contaminated.
- ✗ Don't release salt brine into or onto the ground.

If...Then

- ▶ See **Section 5** for spills outside the containment unit.

Materials & Waste Management

- ▲ End of operation brine is to be contained and re-introduced into the process. It is not to be discharged to the lot.
- ▲ Gravel waste from the generator that is free of excess salt can be put in material stockpiles or scattered on the lot.



This new salt brine generator provides an environmentally sound method to generate brine.

Factsheet Checklist

- Check the salt brine generator **WEEKLY** when in use. Look for releases of excess salt or brine and correct to eliminate them.

Tips & Tricks

- ! Calculate or predict the amount of salt needed to produce the target concentration for the volume of brine being generated. Make a higher concentration at the beginning and then flush the system to clear out the salt at the end. Then, the concentration of salt in the generator is relatively low when it is shut down for maintenance.
- ! The hydrometer can be used to check for an acceptable release concentration of salt in water. It should float no higher than one of the least division marks for the water to be safe for release.

Relevant Environmental Programs

- | | |
|---|---------------------------------------|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input checked="" type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input type="radio"/> Waste Mgt |

Training 1 per Year **Season:** Fall

KYTC FOG Reference K040, K120, K170, K880, K990

INFORMATION SOURCES

29 CFR 1910.1200. Labor, Occupational Safety and Health Standards, Subpart Z-Toxic and Hazardous Substances, Hazard Communication. (MSDS Sheet Requirements)

Hyman, William A. and Donald Vary. *Best Management Practices for Environmental Issues Related to Highway and Street Maintenance: A Synthesis of Highway Practice*. National Cooperative Highway Research Program Synthesis #272. 1999. National Academy Press. Washington, D.C.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 4, KPDES Permit, Unit 5 pg 19, p32, Unit 6)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002. (Chapters 3.6 and 4.3)

Salt Institute. *The Snowfighter's Handbook: A Practical Guide for Snow and Ice Control*. 1999. Alexandria, Virginia. SI-1999-R.

NOTES

**2.4.3. STORING AND LOADING LIQUID DE-ICERS
(SALT BRINE and LIQUID CALCIUM)**



Do

- ✓ Keep all storage tank connecting valves closed except when pumping to and from the tank.
- ✓ Ensure hoses and connections are not leaking before and during transfer of liquid de-icers.
- ✓ Put storage tanks in containment units with concrete floors and walls.
- ✓ Keep the containment wall drain plug closed except to release rainwater or snowmelt.
- ✓ Release rainwater or snowmelt before the depth inside the containment unit reaches one (1) foot.

Don't

- ✗ Don't open the containment wall drain plug if you know or suspect that liquid de-icers have leaked.

If...Then

- ▶ If you know or suspect that liquid de-icers have leaked, measure using a brine hydrometer or Total Dissolved Solids (TDS) meter.
- ▶ If there is a liquid de-icer spill, call Division of Environmental Analysis immediately.
- ▶ See **Section 5** for spills inside or outside the containment unit.

Materials & Waste Management



Secondary containment helps to protect surface and ground water from chloride contamination.

The containment wall drain plug remains closed except to release rainwater or snow melt.

Factsheet Checklist

- Check containment unit after rains of 1" or more and at least **MONTHLY** for accumulation of water, ensure drain cap is on and product valves are closed.
- Test hoses and pipes for leaks and inspect for cracks **EACH FALL** prior to use.
- Check containment structure and drain plugs **EACH FALL** prior to use.

Tips & Tricks

- ! The hydrometer can be used to check for an acceptable release concentration of salt in water. It should float no higher than the lowest division mark for the water to be safe for release.

Relevant Environmental Programs

- Air Quality
- 401/404/WQC
- KPDES
- Facilities Pride
- GWPP
- Pesticides
- SPCC
- Waste Mgt

Training : 1 per Year **Season:** Fall

KYTC FOG Reference K040, K120, K170, K880, K990

INFORMATION SOURCES

29 CFR 1910.1200. Labor, Occupational Safety and Health Standards, Subpart Z-Toxic and Hazardous Substances, Hazard Communication. (MSDS Sheet Requirements)

Hyman, William A. and Donald Vary. *Best Management Practices for Environmental Issues Related to Highway and Street Maintenance: A Synthesis of Highway Practice*. National Cooperative Highway Research Program Synthesis #272. 1999. National Academy Press. Washington, D.C.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 4, KPDES Permit, Unit 5 pg 19, p32, Unit 6)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002. (Chapters 3.6 and 4.3)

Salt Institute. *The Snowfighter's Handbook: A Practical Guide for Snow and Ice Control*. 1999. Alexandria, Virginia. SI-1999-R.

NOTES

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2.4.4. EQUIPMENT PREPARATION, USE AND MAINTENANCE



Do

- ✓ Calibrate equipment each season to apply the correct amount of salts or brine.
- ✓ Load salt or brine trucks on an asphalt or concrete surface, return spilled salt to the storage area for reuse.
- ✓ Keep all brine tank connecting valves closed except when pumping between tanks.
- ✓ Bring unused salt and liquid de-icers back to the maintenance facility for re-stocking and use in other snow and ice events.
- ✓ Use shovels and hand tools to remove caked salt from the truck bed and return it to the salt storage area.
- ✓ Clean remaining salt with water only.
- ✓ Wash equipment in areas designated as acceptable on the KPDES BMP Plan. (See **Appendix 2**).



Careful salt truck calibration will optimize salt applications.

Don't

- ✗ Don't overload the spreader or brine applicator, avoid spilling salt.
- ✗ Don't store equipment without cleaning it first.
- ✗ Don't wash trucks in an area that is not designated for equipment cleaning on the KPDES permit.
- ✗ Don't dispose of unused salt or brine along roadways, in ditches or near surface waters.



Clean trucks and equipment in location designated by the KPDES permit BMP Plan.

If...Then

- ▶ If the floor drain is either Type A or B, as shown in **Section 3.2**, equipment may be washed inside the facility.
- ▶ If the floor drain discharges to surface water or to a septic tank, do not wash equipment inside the building.
- ▶ If the pressure washer or steam cleaner is used, see **Section 3**.

Materials & Waste Management

- ▲ Return caked salt to the covered storage facility for reuse.
- ▲ Return salt brine to the storage tank for reuse.

Factsheet Checklist

- Check equipment and identify repair and replacement needs **EACH SPRING**.
- Check equipment **EACH FALL** to ensure proper maintenance and initial calibration .
- Check and repair vehicles after **EACH STORM**.
- Review calibration sheets to ensure proper applications.

Tips & Tricks

- ! Critical calibration components include the automatic ground speed controller, the flight chain or belt, the gate opening, the chute, the liquid nozzles, the spinner and the deflectors.

Relevant Environmental Programs

- | | |
|---|---------------------------------------|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input type="radio"/> Waste Mgt |

Training: 1 per Year

Season: Fall

KYTC FOG Reference K040, K120, K170, K880, K990

INFORMATION SOURCES

29 CFR 1910.1200. Labor, Occupational Safety and Health Standards, Subpart Z-Toxic and Hazardous Substances, Hazard Communication. (MSDS Sheet Requirements)

Hyman, William A. and Donald Vary. *Best Management Practices for Environmental Issues Related to Highway and Street Maintenance: A Synthesis of Highway Practice*. National Cooperative Highway Research Program Synthesis #272. 1999. National Academy Press. Washington, D.C.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 4, KPDES Permit, Unit 5 pg 19, p32, Unit 6)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002. (Chapters 3.6 and 4.3)

Salt Institute. *The Snowfighter's Handbook: A Practical Guide for Snow and Ice Control*. 1999. Alexandria, Virginia. SI-1999-R.

NOTES

2.4.5. PLOWING AND SPREADING OPERATIONS



Do

- ✓ Training in Snow and Ice Management is required for this activity.
- ✓ Evaluate road and weather conditions to tailor the type and timing of snow removal operations.
- ✓ Consider pavement temperatures instead of air temperatures when selecting treatment strategies.
- ✓ Plow snow or slush first, then apply brine or salt.
- ✓ Use brine as a pretreatment to prevent frozen precipitation from sticking to the pavement.
- ✓ Control spreading speeds to reduce bounce and scatter.
- ✓ Apply materials to the middle of the road, where they are most effective.
- ✓ When re-applying, consider partial applications and spot treatments.
- ✓ Consider alternative treatments (e.g., plow only, use of snow fencing) which do not involve materials usage where applicable.

Don't

- ✗ Don't overload the spreader or brine applicator, avoid spilling salt or brine.
- ✗ Don't do heavy "end of shift" applications that empty the trucks.
- ✗ Don't dispose of unused salt or brine along roadways, in ditches or near surface waters; return it to the facility for reuse.

If...Then

- ▶ If you receive any complaints about possible salt contamination, call the Division of Environmental Analysis.
- ▶ If there is an accident, recover as much salt as possible from the accident site when it is safe to do so.

Materials & Waste Management

- ▲ Return salt to the covered storage facility for reuse.
- ▲ Return salt brine to the storage tank for reuse.

Relevant Environmental Programs

- | | |
|---|----------------------------------|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input type="radio"/> Waste Mgt |



Goal: Provide acceptable level of service while using the minimum amount of materials.

Factsheet Checklist

- Check areas used to load de-icing materials and clean up spilled materials.

Tips & Tricks

Training: 1 per Year

Season: Fall

KYTC FOG Reference K040, K120, K170, K880, K990

INFORMATION SOURCES

29 CFR 1910.1200. Labor, Occupational Safety and Health Standards, Subpart Z-Toxic and Hazardous Substances, Hazard Communication. (MSDS Sheet Requirements)

Hyman, William A. and Donald Vary. *Best Management Practices for Environmental Issues Related to Highway and Street Maintenance: A Synthesis of Highway Practice*. National Cooperative Highway Research Program Synthesis #272. 1999. National Academy Press. Washington, D.C.

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New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002. (Chapters 3.6 and 4.3)

Salt Institute. *The Snowfighter's Handbook: A Practical Guide for Snow and Ice Control*. 1999. Alexandria, Virginia. SI-1999-R.

NOTES

2.4.6. POST STORM AND POST SEASON CLEANUP



Do

- ✓ Use locations designated by the KPDES permit BMP Plan for cleaning equipment.
- ✓ Clean trucks indoors only after obtaining your Superintendent's approval.
- ✓ Use shovels or other hand tools to scrape salt from the truck bed.
- ✓ Return loosened salt to the covered salt storage area for reuse.
- ✓ Use water to clean remaining salt from the vehicle and spreader.
- ✓ When washing trucks indoors, keep overspray off of the walls and doors of the maintenance building. Salt corrodes the metal parts.
- ✓ Use shovels and brooms to clean up loose salt from the staging areas, around domes and salt piles.
- ✓ Keep water from running into storage stock piles or storage buildings.



Don't

- ✗ Don't let overspray to get on overhead doors and walls when cleaning vehicles indoors.
- ✗ Don't wash equipment in areas not designated for this activity on the KPDES permit BMP Plan

If...Then

- If the floor drain is either Type A or B, as shown in **Section 3.2**, equipment may be washed inside the facility.
- If the floor drain discharges to surface water, do not wash equipment inside the building.
- If the pressure washer or steam cleaner is used, see **Section 3**.
- If salt builds up on the pavement or the ground, correct drainage and/or improve housekeeping to prevent salt accumulation.

Materials & Waste Management

- ▲ Return loosened salt to the covered salt storage area for reuse.

Factsheet Checklist

- Ensure trucks are being washed in an appropriate location. To an acceptable floor drain or outside in a location designated for this activity on the KPDES permit BMP Plan.
- Ensure loose salt is returned to the covered salt storage area.
- Check all storage locations and ensure all salt is under cover and cleaned up.
- Check truck washing and salt staging areas for white salt deposits; adjust operations to avoid salt build-up.
- Check liquid calcium and brine tanks, product valves closed, containment drains are capped or closed.
- Salt stored on pads are to be covered with tarps. Tarps are to be secured to keep them in place under windy conditions.

Tips & Tricks

- ! Tarps can be held in place using tires with ropes affixed to keep them spaced evenly over the stock piles.

Training: 1 per Year

Season: Winter

Relevant Environmental Programs

- | | |
|---|---------------------------------------|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input type="radio"/> Waste Mgt |

KYTC FOG Reference: K040, K120, K170, K880, K990

INFORMATION SOURCES

Hyman, William A. and Donald Vary. *Best Management Practices for Environmental Issues Related to Highway and Street Maintenance: A Synthesis of Highway Practice*. National Cooperative Highway Research Program Synthesis #272. 1999. National Academy Press. Washington, D.C.

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Salt Institute. *The Snowfighter's Handbook: A Practical Guide for Snow and Ice Control*. 1999. Alexandria, Virginia. SI-1999-R.

NOTES

3.1. FACILITIES PRIDE



Do

- ✓ Clean and repair gutters in November and May.
- ✓ Clear perimeter fencerows of brush and fallen trees.
- ✓ Replace furnace filters monthly.
- ✓ Replace or wash air conditioner filters monthly.
- ✓ Lubricate moving parts in overhead doors with lubricating spray.
- ✓ Reattach loose metal roofing and siding.
- ✓ Remove bird nests from buildings.
- ✓ Use a hose to remove grass clippings from HVAC condenser units.
- ✓ Establish erosion control on adjoining creek banks as per **Section 2.3**.
- ✓ Clean out and remove sediment from trench drains.
- ✓ Keep oil/water separators clean as per **Section 3.2**.
- ✓ Remove existing pavement around buildings before adding new layers to prevent trapped water.
- ✓ Use caulk, weather stripping, insulation and general repairs to improve energy efficiency.
- ✓ Report maintenance issues that cannot be addressed at the facility to the Administrative Manager and follow up until resolved.

Don't

- ✗ Don't direct downspouts toward stockpiled materials.
- ✗ Don't stockpile or store materials along perimeter fences.
- ✗ Don't use grease or oil to lubricate doors.

If...Then

- If gutters cannot be repaired, obtain approval from Property and Supply Services and remove damaged gutters.

Materials & Waste Management

- ▲ Follow storage and removal guidelines for street sweepings, tires and other materials.
- ▲ Transport guardrail that is bent to Frankfort for repair or salvage.

Relevant Environmental Programs

- | | |
|--------------------|--------------|
| ○ Air Quality | ● GWPP |
| ○ 401/404/WQC | ● Pesticides |
| ● KPDES | ● SPCC |
| ● Facilities Pride | ● Waste Mgt |



The Facilities Pride program promotes a clean facility that can reduce environmental pollution, and the contest winners receive a barbeque and signs highlighting their achievement!

Inspection Checklist

- Ensure furnace and air conditioner filters are changed or maintained **MONTHLY**.
- Walk through and identify routine maintenance needs **QUARTERLY**.
- Check that maintenance issues are addressed within reasonable timeframes.

Tips & Tricks

- ! Construction and operations superintendents will visit facilities quarterly to assist with Facilities Pride operations.
- ! Every year, three judges evaluate each facility on the items included in this fact sheet.
- ! The overall winner receives a barbeque and two signs, the second place winner receives two signs.

Training: 1 per Year

Season: Spring

KYTC FOG Reference:

INFORMATION SOURCES

Facilities Pride Memo

B. Engleman, *personal communication*

NOTES

3.2. FLOOR DRAINS and OIL/WATER SEPARATORS



Do

- ✓ Use floor drains to dispose of wash water only.
- ✓ Floor drains are required to have an oil/water separator or oil trap.
- ✓ Remove accumulated materials from the oil trap if spills enter the drain.
- ✓ Clean the floor drain at least annually.
- ✓ Promptly repair leaks to the floor drain sump.

Don't

- ✗ Don't use the floor drain like a trash can!
- ✗ Don't pour waste oil, antifreeze, paint, cleaning fluids or other material into the floor drain.
- ✗ Don't allow spilled chemicals to get to the floor drain.
- ✗ Adding oil from the oil/water separator to the used oil tank is not recommended.
- ✗ For Type B floor drains, don't use soaps in pressure washers or conduct degreasing.

If...Then

- Use spill kits to intercept spills before they reach the floor drain.
- Recover spilled materials that reach floor drain or the oil/water separator.
- If used oil from the oil/water separator is contaminated with solvents or due to a spill, conduct a hazardous waste determination.

Materials & Waste Management

- ▲ Coordinate with the Equipment Garage to manage oil from the oil/water separator if the Equipment Garage has a used oil burner. (See **Section 3.13**).
- ▲ Air dried sludge from floor drain may be disposed in a dumpster.
- ▲ Hazardous sludge from a spill must be managed by a hazardous waste vendor. (See **Section 4.3**)
- ▲ If the facility is connected to a sewer, the water (not the oil) from the oil/water separator may be discharged to the sewer system.
- ▲ An industrial cleaning service should be used to clean floor drains and oil/water separators at least annually or more often as needed.



Don't pour waste fluids into floor drains.

Type A: Floor drain is connected to a city sewer system or holding tank and waste water is removed to a treatment facility.

Type B: Floor drain waste water is handled on site by a sediment pond or by land application above a KPDES sampling point.

Factsheet Checklist

- Check the drain trap **MONTHLY** for oil accumulation and leaks.
- Check oil/water separators **ANNUALLY**.
- Check the floor drain **MONTHLY** for solids accumulation on the bottom and floating material on the surface.
- Check spill kit in accordance with Section 5.
- Type B Floor drain, inspect the discharge point for contaminants in the drainage way **QUARTERLY**.
- Submit a work order to Division of Property and Supply Services if the floor drain is connected to septic system or discharges to surface water.

Tips & Tricks

- ! Floor drains that discharge directly to surface water or septic systems are no longer allowed under the KPDES permit.

Relevant Environmental Programs

- | | |
|---|--|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

Training: 1 per Year **Season:** Spring

KYTC FOG Reference: N010, N040

INFORMATION SOURCES

Kentucky Department for Environmental Protection. *Preventing Ground Water Pollution: Oil/ Water Separators*. Undated. Division of Water, Ground Water Branch. Frankfort, Kentucky.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 5 Groundwater p 11)

Ohio Department of Transportation. *Section 800 Hazardous Waste Management Manual*. Office of Environmental Services. Columbus, Ohio. April, 2004. (ODOT 814.15.14 FLOOR DRAIN SLUDGE; ODOT 814.15.21 OIL AND WATER SEPARATORS)

NOTES

3.3 HYDRAULIC LIFTS



Do

- ✓ Clean all exposed parts of the lift with a biodegradable cleaner prior to monthly equipment check.
- ✓ Record the date and amount of hydraulic oil that is added to the lift.
- ✓ If significant or frequent additions of hydraulic oil are needed, investigate for leaks.
- ✓ Report leaks promptly to the Superintendent.
- ✓ Ensure that all hydraulic oil is removed from the lift and sump prior to closure.

Don't

- ✗ Don't exceed the rated capacity of the lift.
- ✗ Don't use the hydraulic lift if it is leaking.

If...Then

- Use spill kits to intercept spills of hydraulic oil before they reach the oil/water separator or floor drain.

Materials & Waste Management

- ▲ Remove hydraulic oil from the sump for reuse or dispose in the used oil tank. (See **Section 4.7**).
- ▲ Lifts that cannot be repaired will be decommissioned and removed by Division of Property and Supply Services.
- ▲ Coordinate lift closure with the Division of Environmental Analysis RCRA coordinator.
- ▲ All oils and sludges will be removed from the lift pit and a waste determination will be conducted.
- ▲ Non-hazardous oils may be added to the used oil tank.
- ▲ Sludge may be removed by an industrial waste vendor or air-dried and disposed in the dumpster.



Hydraulic fluid may contaminate groundwater if it is released. In-floor lifts are being replaced by above-ground type. These pose less risk of ground water contamination.

Factsheet Checklist

- Identify equipment and vehicles that exceed the rated capacity of the lift.
- Check lift operations **MONTHLY** to ensure proper use.
- Check the lift sump and pump for leaks **MONTHLY**.
- Check exposed piping, oil reservoir and controls for leaks **MONTHLY**.
- Promptly issue a work order for repairs to the Division of Property and Supply Services .

Tips & Tricks

- ! This factsheet applies to lifts with a hydraulic oil capacity of 55 gallons or greater.

Relevant Environmental Programs

- | | |
|---|--|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

Training: 1 per Year

Season: Spring

KYTC FOG Reference: N010, N040

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 5 Groundwater p 5-6, p 33)

NOTES

3.4 SEPTIC SYSTEMS (ON-SITE DISPOSAL)



Do

- ✓ Establish and implement a maintenance plan using **Appendix 5**.
- ✓ Allow only biodegradable materials to enter the septic system, including cleaners, detergents, toilet tissue, etc.
- ✓ Check for “biodegradable” material before ordering.
- ✓ Have the septic tank pumped by a licensed septic waste hauler before sludge reaches one-third (1/3) of the tank volume.
- ✓ Have a sketch showing the location of the septic system on file in the Superintendent’s office.
- ✓ Make personnel aware of the location of the system.

Don’t

- ✗ Don’t use garbage disposal units.
- ✗ Don’t put cigarette butts, cooking grease or other non-biodegradable materials in devices served by this system.
- ✗ Don’t connect floor drains, roof drains or other drains to the septic system.
- ✗ Don’t use septic system additives such as yeast, bacteria, lime.
- ✗ Don’t drive or park vehicles on the septic system lateral fields.
- ✗ Don’t pour wastes, paints, oils or other hazardous or toxic materials into devices served by this system.

If...Then

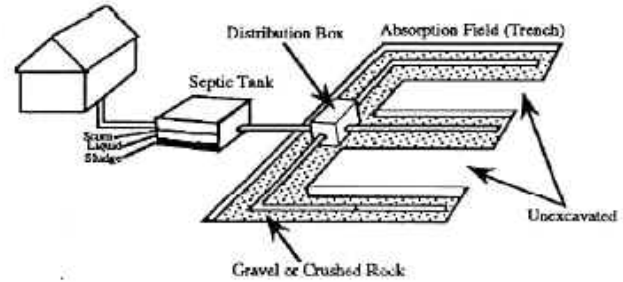
- If drain cleaners are needed, use only small quantities.
- If sewage is observed on the surface or near the drainfield, or other abnormal conditions are observed, call the system installer, local health department or licensed septic waste hauler.

Materials & Waste Management

- ▲ Septic tanks must be pumped by a licensed septic waste hauler.

Relevant Environmental Programs

- | | |
|--------------------|--------------|
| ○ Air Quality | ● GWPP |
| ○ 401/404/WQC | ○ Pesticides |
| ○ KPDES | ○ SPCC |
| ● Facilities Pride | ● Waste Mgt |



Conventional Septic System

Wastes enter the septic tank where solids sink and liquids travel to the distribution box and then to lateral lines for soil absorption. Bacteria decompose biodegradable wastes in the septic tank. Keeping bacterial action going is critical to proper operation. Don’t allow non-biodegradable or toxic materials into the system.

Graphic from USEPA Decentralized On-Site Wastewater Program.

Facility Checklist

- Ensure that vehicles are not being driven or parked on the septic system **MONTHLY**.
- Ensure that bulk materials are not being stored or stockpiled on the septic system **MONTHLY**.
- Check the septic tank sludge level **ANNUALLY**.
- Review purchase and waste procedures **ANNUALLY** to ensure only biodegradable materials enter the septic system.
- Check for the presence and use of a septic system plan in accordance with Appendix 5. **ANNUALLY**.

Tips & Tricks

- ! Contact the local Health Department for assistance with septic systems.

Training: 1 per Year **Season:** Spring

KYTC FOG Reference: N010, N040

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 3 page 13; Unit 5 Groundwater p 6-7, p 33)

Ohio Department of Transportation. *Section 800 Hazardous Waste Management Manual*. Office of
Environmental Services. Columbus, Ohio. April, 2004. (814.15.40 WASTEWATER)

NOTES

3.5. UNDERGROUND STORAGE TANKS (UST's)



Do

- ✓ Any underground storage tank subject to the federal UST rules must be registered by the Kentucky Division of Waste Management and follow the UST program regulations. This fact sheet applies to tanks used for waste water management and to other tanks not regulated by the UST rules.
- ✓ For tanks used to store a delivered product, a designated employee shall be present during all filling operations.
- ✓ Remove contents from leaking tanks and do not use until the tank is repaired.
- ✓ Remove contents from tanks before taking the tank out of service.
- ✓ Service tanks storing floor drain wastes or other wastewater when the tank approaches 80% full.
- ✓ Record the date and volume of wastewater removed, hauler and treatment plant receiving the waste.
- ✓ Perform tightness inspections or tank tightness tests once each three years.

Don't

- ✗ Don't accept delivery of new product or continue to use tanks that are known or suspected to be leaking.
- ✗ Don't continue to use wastewater storage tanks that are full.

If...Then

- Contain and clean-up spills and leaks immediately.
- If there is a release or confirmed contamination, report it immediately to the Division of Environmental Analysis. (See **Section 5**)
- If the tank is not part of a closed system or cannot be inspected or tested for leaks, take it out of service.

Materials & Waste Management

- ▲ Tank removal must be coordinated through the Division of Environmental Analysis RCRA Coordinator and performed by a certified removal operator.

Relevant Environmental Programs	<input type="radio"/> Air Quality	<input checked="" type="radio"/> GWPP
	<input type="radio"/> 401/404/WQC	<input type="radio"/> Pesticides
	<input type="radio"/> KPDES	<input type="radio"/> SPCC
	<input checked="" type="radio"/> Facilities Pride	<input type="radio"/> Waste Mgt

Leaking underground storage tanks can cause fires or explosions. In addition, leaking USTs can contaminate nearby groundwater.

Factsheet Checklist

- Designate a trained employee to oversee product delivery to underground storage tanks.
- Check wastewater tank level indicators **MONTHLY**.
- Check corrosion resistant tanks and pipes at the manufacturer's recommended schedule.
- Check all active underground storage tanks for leaks **EVERY 3 YEARS**.

Tips & Tricks

- ! This factsheet applies to **unregulated UST's**. If the UST must be registered, contact the Division of Environmental Analysis.
- ! **Unregulated underground** storage tanks include:
 - Any underground heating oil storage tank;
 - Any underground tank used to store products other than petroleum; and
 - Any underground petroleum storage tank with less than 1,100 gallon capacity.
- ! Petroleum products include fuel, kerosene, used oil, etc.
- ! Regulated underground storage tanks are used to store petroleum with a capacity of more than 1,100 gallons. These tanks have been removed from service.
- ! Detailed information regarding UST requirements is available from USEPA's UST Program at <http://www.epa.gov/swrust1/ustsystem/index.htm>

Training: 1 per Year

Season: Spring

KYTC FOG Reference: N010, N040

INFORMATION SOURCES

40 CFR 280. Technical Standards and Corrective Action Requirements For Owners and Operators of Underground Storage Tanks (UST)

401 KAR Chapter 42 Underground Storage Tanks

815 KAR 30:060. Certification of underground petroleum storage tank contractors.

Kentucky Division of Waste Management Website <http://www.waste.ky.gov/programs/ust/default.htm>

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 5 Groundwater p 7-8)

NOTES

3.6. ABOVE GROUND STORAGE TANKS (AST's)



Do

- ✓ Tanks must be located on an asphalt or concrete base or on impermeable soil.
- ✓ Secondary containment for tanks must be at least 110% of tank capacity.
- ✓ Keep product transfer valves closed when not in use.
- ✓ For waste tanks, report to the Superintendent when levels reach 80% of tank capacity.
- ✓ Check the condition of the tank for damage, spills, leaks or other issues each time the tank is used.
- ✓ Promptly report concerns to the Superintendent.
- ✓ A trained employee shall be present during all filling operations.
- ✓ Ensure that all connections are tight before filling or pump out operations begin.
- ✓ Record the date and volume of waste removed, hauler and treatment facility receiving the waste.
- ✓ Remove collected oil before release of rain water.
- ✓ Release rainwater or snowmelt before the depth inside the containment unit reaches one (1) foot.
- ✓ Discharges from the containment structure must be supervised at all times.

Don't

- ✗ Don't accept deliveries or continue to use tanks that are known or suspected to be leaking.
- ✗ Don't add to waste storage tanks that are full.
- ✗ Don't allow release of oil or other contaminants.

If...Then

- If there is a reportable release or confirmed contamination, report it to the Environmental Response Team (ERT) at (502) 564-2380 or (800) 928-2380 within 24 hours of discovery. (See **Section 5**)
- Report all spills to the Division of Environmental Analysis (502) 564-7250.

Materials & Waste Management

- ▲ Contain and clean-up spills and leaks immediately. Spilled materials that are wastes or are suitable for use can be returned to the tank or similar container.

Relevant Environmental Programs	<input type="radio"/> Air Quality	<input checked="" type="radio"/> GWPP
	<input type="radio"/> 401/404/WQC	<input type="radio"/> Pesticides
	<input type="radio"/> KPDES	<input checked="" type="radio"/> SPCC
	<input checked="" type="radio"/> Facilities Pride	<input type="radio"/> Waste Mgt



Leaking above ground storage tanks can cause fires or explosions. In addition, leaking ASTs can contaminate nearby surface water and ground water.

Factsheet Checklist

- Check tank filling and containment draining **DAILY** or during activity.
- Visually check the secondary containment and tank area **WEEKLY** and report leaks, spills and maintenance issues to the Superintendent immediately.
- Check valves, automatic shut off valves and pipes **MONTHLY** and before materials transfer.
- Check waste tank level indicators **MONTHLY**, and plan waste management accordingly.
- Check corrosion resistant tanks and pipes at the manufacturer's recommended schedule.
- Check spill kit in accordance with Section 5.
- Perform a tank tightness test once every **five** years.

Tips & Tricks

- ! KyTC's Above Ground Storage Tanks include: asphalt, used oil, and tack oil.
- ! A Spill Prevention Control Countermeasures Plan (SPCC) is required for any facility that has the capacity to store 1,320 gallons of petroleum products. (See **Appendix 6**).
- ! A container is any tank or drum with a capacity of 55 gallons or more and includes stationary and mobile (fuel or hydraulic) tanks.
- ! See **Section 4.7** for used oil storage tank management.

Training: 1 per Year **Season:** Spring

KYTC FOG Reference: N010, N040

INFORMATION SOURCES

40 CFR 112 Oil Pollution Prevention (SPCC Requirements)

Kentucky Department for Environmental Protection. *Preventing Groundwater Pollution: Secondary Containment*. Undated. Division of Water, Ground Water Branch. Frankfort, Kentucky.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 5 Groundwater p 22-23)

NOTES

State Fire Marshal's Office Website: <http://www.pmlis.com/ast.html>

3.7. LOADING AND UNLOADING TANK TRUCKS



Do

- ✓ The Facility Superintendent will provide training and designate a trained employee to oversee tank trucks on the lot.
- ✓ Carefully check the tank, containment unit and all connections prior to product delivery or waste pump out.
- ✓ The designated employee or Superintendent will inspect the tank truck upon arrival and departure to prevent spills while in transit on the lot.
- ✓ Park and properly brake the truck in the designated zone near the storage tanks.
- ✓ Check the product level in tank prior to filling.
- ✓ Check all hoses and connections before beginning material transfer.
- ✓ Constantly monitor material transfer and levels in the tank.
- ✓ Close the truck valve and drain the hose, then close the tank valve.
- ✓ Close and check all tank valves and connections.
- ✓ Record the material transfer as required.
- ✓ See **Sections 3.5** and **3.6** for more information regarding storage tanks.

Don't

- ✗ Don't leave the area for any reason while materials are transferred between the tank and the truck.
- ✗ Don't overfill the tank.

If...Then

- Contain and clean-up spills and leaks immediately.
- If there is a release or confirmed contamination, report it immediately to the Environmental Response Team (ERT) at (502) 564-2380 or (800) 928-2380. (See **Section 5**)

Materials & Waste Management

- ▲ Spilled materials that are suitable for reuse can be returned to the tank or similar container.



Carefully check the tank, containment unit and all connections prior to product delivery or waste pump out.

Factsheet Checklist

- Supervise filling or pumping out **DAILY** or during activity.
- Check valves, automatic shut off valves and pipes **MONTHLY** and before materials transfer.
- Check spill kit in accordance with Section 5.

Tips & Tricks

- ! Park delivery vehicle on the uphill side of the storage tank to drain delivery hosing easily.

Relevant Environmental Programs

- | | |
|---|--|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input checked="" type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

Training: 1 per Year **Season:** Spring

KYTC FOG Reference: N010, N040

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 5 Ground Water p 21)

Kentucky Transportation Cabinet. *Groundwater Protection Plan for the Kentucky Transportation
Cabinet's Marshall County Maintenance Facility and Operations, District One (1), County Number
079, Lot Number 450*. Undated. Benton, Kentucky. (Section 12)

Kentucky Transportation Cabinet. *Spill Prevention Control and Countermeasures Plan Template*.
February, 2003. Frankfort, Kentucky. (Page 8)

NOTES

3.8 HANDLING BULK LIQUIDS



Do

- ✓ Locate the bulk liquid storage area where spill containment can be readily accomplished, away from floor drains, or where spills could reach water in the area designated in the KPDES permit.
- ✓ Secondary containment requirements (100% for indoor drums, 110% for outdoor drums) apply to bulk oil (motor, hydraulic, tack) and grease.
- ✓ Place containers that are in use on spill pallets.
- ✓ Bulk liquids may be moved with front-end loader, backhoe, forklift or other equipment. The container should be secured with chains or other restraining devices.
- ✓ Forklifts should have a barrel or tote lifter.
- ✓ Use a pump or valve and tilt rack to transfer bulk liquids to smaller containers or for use.
- ✓ Completely empty containers.

Don't

- ✗ Don't allow any leaking containers to be unloaded from delivery trucks.
- ✗ Don't dispose of unused bulk liquids in any floor drains, streams, sinkholes, storm sewers, sanitary sewers or on the ground.
- ✗ Don't store drums upright in the outdoors where water can damage the container and contaminate the contents.
- ✗ Do not store materials that can freeze in unheated areas.

If...Then

- Have a spill kit and an empty barrel available at all times to contain spills or leaks.
- Contain and clean up spills using spill kits. See **Section 5**.

Materials & Waste Management

- ▲ Empty drums may be returned to the vendor, recycled or sent to a solid waste landfill.
- ▲ Spilled materials that are suitable for use can be returned to the tank or similar container.

Relevant Environmental Programs

- | | |
|--------------------|--------------|
| ○ Air Quality | ● GWPP |
| ○ 401/404/WQC | ○ Pesticides |
| ● KPDES | ● SPCC |
| ● Facilities Pride | ● Waste Mgt |



Bulk liquid storage drums are stored on pallets to protect the bottom from rust.

Factsheet Checklist

- Check **ALL** bulk liquid deliveries to ensure all containers are intact before unloading.
- Check liquid bulk storage areas **WEEKLY** to ensure containers are intact.
- Check drums for labeling, bulging, rusting or other damage.
- Check spill kit in accordance with Section 5.

Tips & Tricks

- ! Purchase oil in small containers to help keep from having to implement an SPCC plan.
- ! **Bulk liquids** are stored in 55 gallon or larger containers.
- ! Tanks are addressed separately.
- ! **Empty** means “no removable residue” remains in the container.
- ! **Empty** for 55 gallon drums means less than 1 inch (1”) of liquid remains in the drum.
- ! SPCC requirements apply to bulk oil and grease storage.

Training: 1 per Year

Season: Spring

KYTC FOG Reference: N010, N040

INFORMATION SOURCES

401 KAR 34:190. Tanks.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 4, Unit 5 Groundwater p 9, 21, 26, 29)

Kentucky Transportation Cabinet. *Groundwater Protection Plan for the Kentucky Transportation Cabinet's Marshall County Maintenance Facility and Operations, District One (1), County Number 079, Lot Number 450*. Undated. Benton, Kentucky.

Kentucky Transportation Cabinet. *Spill Prevention Control and Countermeasures Plan Template*. February, 2003. Frankfort, Kentucky.

Ohio Department of Transportation. *Section 800 Hazardous Waste Management Manual*. Office of Environmental Services. Columbus, Ohio. April, 2004.

NOTES

Ohio Department of Transportation reference includes a drum storage inspection log that could be useful on page 136.

3.9. SAND BLASTING



Do

- ✓ This practice may involve lead based paint or other materials of concern. Personnel should follow Employee Safety and Health guidance for proper protection.
- ✓ Conduct sand blasting indoors.
- ✓ Place tarpaulins under the equipment or vehicle to capture sand blasting waste.
- ✓ Store sand blasting waste in labeled drums in a dry location until the waste determination results are available.

Don't

- ✗ Don't dispose of sand blasting waste in floor drains, streams, sinkholes, storm sewers or on the ground.
- ✗ Don't allow visible emissions from sand blasting operations.

If...Then

- Sweep up spilled sand for reuse.
- Sweep up spilled sand blasting waste and place in a labeled drum.

Materials & Waste Management

- ▲ Sand blasting waste must undergo a hazardous waste determination for metals.
- ▲ If the waste is determined to be hazardous, see **Section 4.3**.
- ▲ If the waste is determined to be non-hazardous, dispose in the dumpster or at a permitted solid waste landfill.



Sand debris can contain metals that can contaminate groundwater .

Factsheet Checklist

- Check sand blasting work area to ensure proper containment of wastes **ANNUALLY**.

Tips & Tricks

- ! The Division of Air Quality regulates fugitive emissions from sand blasting.

Relevant Environmental Programs

- | | |
|--------------------|--------------|
| ● Air Quality | ● GWPP |
| ○ 401/404/WQC | ○ Pesticides |
| ○ KPDES | ○ SPCC |
| ● Facilities Pride | ● Waste Mgt |

Training: 1 per Year

Season: Spring

KYTC FOG Reference: N010, N040

INFORMATION SOURCES

401 KAR 63:010 Fugitive Emissions

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 5, Groundwater p 16, 22)

Kentucky Transportation Cabinet. *Groundwater Protection Plan for the Kentucky Transportation Cabinet's Marshall County Maintenance Facility and Operations, District One (1), County Number 079, Lot Number 450*. Undated. Benton, Kentucky. (page 32)

Ohio Department of Transportation. *Section 800 Hazardous Waste Management Manual*. Office of Environmental Services. Columbus, Ohio. April, 2004. (814.15.26 PAINT STRIPPING, SAND BLASTING MATERIAL)

NOTES

3.10. PRESSURE WASHERS



Do

- ✓ Operate the pressure washer as per the manufacturers operating instructions.
- ✓ Disposal of pressure washer waste in a Type A floor drain (see **Section 3.2**) is acceptable.
- ✓ For Type B floor drains and cleaning outside, use water only (no soap).
- ✓ Collect all wastewater from water-based or solvent-based *degreasing operations* in drip pans.
- ✓ Store drip pan waste in drums and conduct a hazardous waste determination.
- ✓ For outdoor *cleaning operations*, wastewater must flow to a BMP with a KPDES monitoring point.
- ✓ Remove dirt from heavy equipment outdoors.
- ✓ See **Section 2.6** for cleaning salt and de-icer trucks.

Don't

- ✗ For Type "B" floor drains, don't allow cleaners or detergents to enter the floor drains.
- ✗ Don't allow pressure washer overspray to get on building walls or doors.
- ✗ Don't allow spilled solvent or degreasing wastes to reach the floor drain.
- ✗ Don't use soaps or detergents for outdoor cleaning operations.
- ✗ Don't "degrease" outdoors.

If...Then

- If solvents or degreasing wastes are spilled, contain the spill and clean up using a spill kit.

Materials & Waste Management

- ▲ Store collected drip pan waste in clearly labeled drums.
- ▲ Conduct a hazardous waste determination for collected degreasing wastes.
- ▲ See **Section 4.3** for hazardous wastes.
- ▲ Dispose of collected degreasing wastes using an industrial waste vendor.

Relevant Environmental Programs

- | | |
|--------------------|--------------|
| ○ Air Quality | ● GWPP |
| ○ 401/404/WQC | ○ Pesticides |
| ● KPDES | ○ SPCC |
| ● Facilities Pride | ● Waste Mgt |



Wastes from pressure washers must be carefully managed to prevent contamination and ensure permit compliance.

Factsheet Checklist

- Identify and approve work locations and conditions for pressure washers.
- Check use of pressure washers **MONTHLY** to ensure proper procedures are being followed.
- Check runoff from outdoor use **AT RANDOM** several times per year to ensure that use will not cause a violation of the KPDES permit limits.
- Check spill kit in accordance with Section 5.

Tips & Tricks

- ! **Cleaning operation** means removing de-icers and / or dirt from equipment and vehicles using water only.
- ! **Degreasing operation** means using the pressure washer with water or solvents to remove grease, tar, oils, etc., from engines, vehicles and equipment.
- ! The preferred discharge location for pressure washer cleaning operations is to a floor drain that is connected to a sewer system.
- ! Soaps and detergents can cause emulsions and lead to failure of oil/water separators.

Training: 1 per Year **Season:** Fall

KYTC FOG Reference: N010, N040

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 5 p 25)

Kentucky Transportation Cabinet. *Groundwater Protection Plan for the Kentucky Transportation
Cabinet's Marshall County Maintenance Facility and Operations, District One (1), County Number
079, Lot Number 450*. Undated. Benton, Kentucky. (pages 32, 49)

NOTES

3.11. VEHICLE AND EQUIPMENT CLEANING AND MAINTENANCE



Do

- ✓ Wash vehicles in an area that drains to a type “A” floor drain.
- ✓ Outside washing areas must be designated on the KPDES permit BMP plan.
- ✓ Keep vehicles and equipment in clean and good working order.
- ✓ Repair leaks of oil, transmission and hydraulic fluid, radiators, etc., promptly.
- ✓ Collect waste wash water from degreasing and place it in containers for removal and proper disposal.
- ✓ See **Section 3.10** when using pressure washers and steam cleaners.
- ✓ See **Section 2.4.6** for post storm cleanup.



Clean trucks and equipment in the designated location.

Don't

- ✗ For Type “B” floor drains, don't allow cleaners or detergents to enter the floor drains. (See **Section 3.2**).
- ✗ Don't allow pressure washer overspray to get on building walls or doors.
- ✗ Don't allow spilled solvent or degreasing wastes to reach the floor drain.
- ✗ Don't use soaps or detergents for outdoor cleaning operations.
- ✗ Don't allow discharge from “degreasing” equipment to go outside or when a type “B” floor drain is used.

Factsheet Checklist

- Check to ensure vehicle and equipment cleaning is being done in the designated location..

If...Then

- If solvents or degreasing wastes are spilled, contain the spill and clean up using a spill kit.

Tips & Tricks

- ! Leaking vehicle fluids can contaminate ground water and wells. Repair promptly!
- ! Type A: Floor drain is connected to a city sewer system or holding tank and waste water is removed to a treatment facility.
- ! Type B: Floor drain waste water is handled on site by a sediment pond.

Materials & Waste Management

- ▲ Store collected drip pan waste in clearly labeled drums.
- ▲ Conduct a hazardous waste determination for collected degreasing wastes.
- ▲ See **Section 4.2** for hazardous wastes.
- ▲ Dispose of collected wastes using an industrial waste vendor.

Training: 1 per Year

Season: Fall

Relevant Environmental Programs

- | | |
|--|--|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

KYTC FOG Reference: N010, N040

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 5 p 25)

Kentucky Transportation Cabinet. *Groundwater Protection Plan for the Kentucky Transportation
Cabinet's Marshall County Maintenance Facility and Operations, District One (1), County Number
079, Lot Number 450*. Undated. Benton, Kentucky. (P 49, p32)

NOTES

3.12. PARTS WASHERS



Do

- ✓ Figures A or B: Operate parts washers as per the manufacturer's instructions.
- ✓ Figure A: Use a Central Office contract vendor to service and manage wastes from solvent washers.
- ✓ Figure B: Use the “cook down” cycle to clean the hot water parts washer.
- ✓ Figure B: Air dry the waste residue from the hot water parts washer and dispose in the dumpster.
- ✓ Figure B: Transfer the contents of the hot water parts washer to drums during maintenance and return them to the washer for reuse or elimination.
- ✓ Figure B: Have a waste determination done on the residue once each year and when type of soap or additives are changed.

Don't

- ✗ Figures A or B: Don't drain the solvent washer or hot water parts washer to the floor drain.
- ✗ Figure B: Don't use mineral spirits, citrus-based cleaner or other cleaners.

If...Then

- Figure A: If spills or leaks from the solvent washer parts washer occur, contain the spill and protect the floor drain.
- Figure A: Use a spill kit to clean up the solvent.

Materials & Waste Management

- ▲ Figures A and B: Reuse fluids recovered from spills if possible.
- ▲ Figure A: If fluids cannot be reused, contact the vendor for the solvent washer for recovery and replacement.
- ▲ Figure A: Mineral spirits may be added to used oil that will be recycled, not used for oil burners. (See **Sections 3.13** and **4.8**.)
- ▲ Figure B: If fluids cannot be reused, conduct a waste determination and use an industrial waste vendor for removal of wastes.
- ▲ If dry wastes are non-hazardous, dispose with the solid waste. If wastes are hazardous, see **Section 4.3**.

Relevant Environmental Programs

- | | |
|--------------------|--------------|
| ○ Air Quality | ● GWPP |
| ○ 401/404/WQC | ○ Pesticides |
| ○ KPDES | ○ SPCC |
| ● Facilities Pride | ● Waste Mgt |



Figure A
Solvent Washer



Figure B
Hot Water Washer

If maintained properly, the hot water parts washer and solvent washer provide environmentally-sound, no-discharge, methods for cleaning parts.

Factsheet Checklist

- Check use of parts washer **QUARTERLY** to ensure proper procedures are being followed and that the unit is kept clean.
- Check spill kit in accordance with Section 5.

Tips & Tricks

Training: 1 per Year

Season: Spring

KYTC FOG Reference: N010, N040

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 3 p 8, 11; Unit 5 p 21, p 32)

NOTES

3.13. USED OIL BURNERS



Do

- ✓ Maintain a 2,000 to 3,000 gallon used oil storage tank above ground, outdoors protected from weather, in good condition, with secondary containment, clearly labeled “Used Oil”.
- ✓ Waste hydraulic, transmission and power steering fluid, gear and lube oil less than SAE 50 are acceptable for the burner as “used oils”.
- ✓ Establish a bulk oil transfer program with equipment and personnel to collect oil from satellite garages.
- ✓ Establish procedures to remove water from the oil supply without releasing oil to the environment.
- ✓ Register the transfer group with the Division of Waste Management to get a USEPA ID number for transporters.
- ✓ Require garages that supply oil for the burner to label their used oil tank with appropriate cautions and train the garage personnel about the program.
- ✓ Establish a procedure to test used oil for total arsenic (As), lead (Pb), chromium (Cr), TOX and flash point (FP) at each contributing garage. This test should be performed once each year.
- ✓ Establish a record of used oil collection that shows the source, date, amount and laboratory test associated with the oil.
- ✓ A Spill Prevention Control Countermeasures Plan (SPCC) is required for any facility that has the capacity to store 1,320 gallons of petroleum products. (See **Appendix 6**).

Don't

- ✗ Don't add brake fluid, carburetor cleaner, paint thinner, lacquer thinner, parts washer solvents, gasoline, oil additives, or chlorinated solvents to used oil that will be burned.
- ✗ Don't add waste materials from cleaning drains to the used oil tank.
- ✗ Don't put oil from floor drain oil/water separators to the used oil tank.
- ✗ Don't drain secondary containment if oil is in the water.

Relevant Environmental Programs

- | | |
|--------------------|--------------|
| ○ Air Quality | ● GWPP |
| ○ 401/404/WQC | ○ Pesticides |
| ● KPDES | ● SPCC |
| ● Facilities Pride | ● Waste Mgt |



▲ *Clean (not contaminated) used oil provides an excellent source of heating fuel, while reducing waste and associated costs for management.*



▲ *Oil leaks can contribute to ground water contamination.*

Materials & Waste Management

- ▲ Small amounts of used absorbent materials can be sent to an approved solid waste landfill.
- ▲ Use a registered transporter to collect and transfer used oil.

Factsheet Checklist

- Check for leaks, spills and housekeeping **DAILY**.
- Check secondary containment **WEEKLY**.
- Check oil levels each time oil is added to storage tank and do not overfill the tank.
- Check spill kit in accordance with Section 5.

If...Then

- If the test returns As > 5 ppm, Cd > 2 ppm, Cr > 10 ppm, Pb > 100 ppm, FP < 100 and TOX > 4,000, then have a used oil recycler remove the oil.
- See **Section 5.1** for spills of 25 gallons or more.

Tips & Tricks

- ! Using waste oil burners can reduce waste disposal problems and reduce the cost to heat garages.
- ! The use of oil for dust control is prohibited.
- ! Oil that collects in the secondary containment must be removed before releasing collected rain water. Use “hydrophobic” pads to skim the oil.

Training: 1 per Year **Season:** Fall

KYTC FOG Reference N040

INFORMATION SOURCES

40 CFR 112 Oil Pollution Prevention (SPCC Requirements)

40 CFR 279 Used Oil Management

401 KAR 44:020. Standards for used oil generators

401 KAR 44:080. Standards for use as a dust suppressant and disposal of used oil.

KRS 224.01. Reportable quantities and release notification requirements for hazardous substances, pollutants, or contaminants hazardous substances, pollutants, or contaminants

Kentucky Department for Environmental Protection. *Managing Automotive Repair Shop Wastes*. January, 1995. Division of Waste Management. Frankfort, Kentucky.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 3 p 8, Unit 5, p 17, 23)

Kentucky Transportation Cabinet. *Spill Prevention Control and Countermeasures Plan Template*. February, 2003. Frankfort, Kentucky.

NOTES

3.14. GROUND WATER PROTECTION PLAN EXCLUSIONS



The following materials do not cause ground water pollution and are therefore not included in the Ground Water Protection Plan.

EXCLUSIONS

- ✓ Aggregates
- ✓ Asphalt, cold mix and hot mix
- ✓ Asphalt, millings
- ✓ Glass beads used for highway striping
- ✓ Floor drain connected to sewer or holding tank
- ✓ Light standards
- ✓ Metal culverts
- ✓ Metal drums, empty
- ✓ Metal guard rails
- ✓ Metal signs, sign posts
- ✓ Metal wire lane markers
- ✓ Plastics
- ✓ Plastic drums, empty
- ✓ Stone, crushed
- ✓ Sand, clean
- ✓ Soil, clean
- ✓ Tires, used
- ✓ Traffic control equipment
- ✓ Wood, treated posts
- ✓ Woody debris, tree limbs, branches, chips

DO

- ✓ Store materials in locations designated in the KPDES permit.
- ✓ Divert runoff away from storage locations.
- ✓ Reuse materials for road maintenance or on the lot.

Environmental practices associated with these materials may be included under other environmental regulations and programs.

See **Section 2.1** for environmental practices associated with asphalt.

See **Section 2.3.4** for environmental practices associated with soil, wood and woody debris.

See **Section 3.2** for additional information regarding floor drains.

See **Section 4.8** for environmental practices associated with metal and concrete wastes

Exclusions do not apply to contaminated soil, sand that has been used for sand blasting, materials containing solvents or materials are known or suspected to be contaminated by spills or leaks of hazardous materials.

All materials excluded from ground water plans must not exhibit the characteristic of toxicity as reflected by TCLP test procedures.

Relevant Environmental Programs

- | | |
|---|---------------------------------------|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input type="radio"/> Waste Mgt |

Training: 1 per Year **Season:** Spring

KYTC FOG Reference: N010, N040

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 5 p 33)

Kentucky Transportation Cabinet. *Groundwater Protection Plan for the Kentucky Transportation
Cabinet's Marshall County Maintenance Facility and Operations, District One (1), County Number
079, Lot Number 450*. Undated. Benton, Kentucky. (page 49)

NOTES

3.15. STORM WATER MANAGEMENT



Do

- ✓ Refer to the KPDES BMP Plan for specific guidance concerning storm water management.
- ✓ Refer to the Facility Guide for sampling in **Appendix 3**.
- ✓ Have an active BMP committee for the lot.
- ✓ Review storm water quality information and data and correct the BMP Plan as needed.
- ✓ Manage materials on the lot the way the BMP plan describes.
- ✓ Have a properly prepared sampling point for each discharge location.
- ✓ Keep necessary sampling supplies on hand.
- ✓ Maintain the Weather Log each day.
- ✓ Sample once each quarter when rain of more than 0.10 inch occurs.
- ✓ Note conditions of concern on the weather log.
- ✓ Note conditions of concern on the sampling form.
- ✓ Try to achieve chlorides less than 1,200 mg/l, Oil and Grease less than 10 mg/l, pH between 6 and 9, suspended solids less than 100 mg/l (arbitrary).



◀ *This stormwater outfall carries stormwater away from the facility lot and eventually to a stream.*



◀ *This grassy swale treats runoff from the road, adjacent areas and salt storage.*

Don't

- ✗ Don't sample more than once each quarter.
- ✗ Don't accept pH readings when the meter does not calibrate properly.

If...Then

- If sample results are high, review the BMP plan and conditions on the lot and make improvements.

Materials & Waste Management

- ▲ Materials need to be stored in areas as designated in the facility KPDES BMP Plan.

Factsheet Checklist

- The superintendent should check the lot **QUARTERLY** and observe BMPs and material management. Compare to BMP plan.
- pH meter is to be calibrated **MONTHLY**.
- Check sample kits when they are returned from the lab.
- Records at the facility should be checked by the Area Engineer **ANNUALLY**.

Tips & Tricks

- ! Conditions of concern – things that cause chlorides, oil or suspended solids to be released into storm water run off.
- ! pH meter calibration is to be within +/- 0.10 of the buffer value. If a meter does not calibrate, soak the meter in pH 4 buffer for an hour and re-try.
- ! Keep the pH meter probe wet or moist.
- ! Calibrate the pH meter every month to keep it working.
- ! pH buffer solutions have an expiration date. Replace them with fresh solution when they have expired.

Relevant Environmental Programs

- | | |
|---|--|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

Training: 1 per Year **Season:** Fall

KYTC FOG Reference: P030

INFORMATION SOURCES

401 KAR 5:002. General permit procedure exemptions.

401 KAR 5:031. Surface Water Standards

401 KAR 5:050. KPDES Effluent Standards

401 KAR 5:055. Scope and applicability of the KPDES Program

401 KAR 5:065. KPDES permit conditions.

401 KAR 5:070. Provisions of the KPDES permit

KRS 224.01. Environmental Protection

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated.
(Unit 4, KPDES Permit, Good Housekeeping)

Kentucky Transportation Cabinet. *Facility Guidance Manual for K.P.D.E.S. Sampling, Monitoring and Reporting for Storm Water Run-off for Discharges Covered by the General KPDES Permit: KYG500000*.
March, 2005. Division of Environmental Analysis. Frankfort, Kentucky.

Surface Water Protection at Highway Maintenance Facilities (powerpoint)

NOTES

3.16. BLUK DRY MATERIALS STORAGE



Do

- ✓ Store bags of fertilizer, dry calcium chloride or other bulk materials indoors, on pallets, in clean, dry, weather-tight facilities.
- ✓ Use a storage area with a concrete or paved floor.
- ✓ Keep brooms, shovels, bags or other containers, in the work area to clean up spills.
- ✓ Bulk materials not in bags are to be applied when purchased.



Don't

- ✗ Don't store any fertilizer, calcium chloride or other bulk materials outside.
- ✗ Don't store bulk materials that are not in bags.
- ✗ Don't store bulk materials in wet locations or where rainwater runs toward the storage location.
- ✗ Don't store bags of bulk materials on dirt floors.
- ✗ Don't dispose of un-used bulk materials in streams, stormdrains or sinkholes.

Proper storage and use of fertilizer protects ground water, wells and streams from nutrient pollution.

If...Then

- Spilled bulk materials must be swept up for reuse.
- If spilled materials can not be re-used, the Environmental Coordinator or Division of Environmental Analysis should be contacted for guidance on disposal.
- Notify the Division of Environmental Analysis when bulk dry materials are spilled and are or can be exposed to weather.

Factsheet Checklist

- Check storage areas **MONTHLY** for proper storage.
- Check the storage area **ANNUALLY** to ensure it is weather tight.
- Review storage procedures **ANNUALLY**, improve as needed.

Materials & Waste Management

- ▲ Excess fertilizer should be properly stored or transferred to another highway garage for use.

Tips & Tricks

This FACT sheet does not apply to Bulk Road Salt.

Training: 1 per Year

Season: Spring

Relevant Environmental Programs

- | | |
|---|---------------------------------------|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input type="radio"/> Waste Mgt |

KYTC FOG Reference: E210, E330

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 5 Groundwater p 11, p 32)

NOTES

4.1. REDUCE, REUSE, RECYCLE AND EXCHANGE



Do

- ✓ Reduce, reuse, recycle and exchange as the first step in managing solid waste.
- ✓ **Reduce** the amount of wastes generated and products used to the extent possible.
- ✓ Use less toxic products whenever possible.
- ✓ **Reuse** concrete, asphalt and soil for road repair.
- ✓ Using waste oil burners for heat converts waste to energy and reduces waste production.
- ✓ **Recycle** newspaper, cardboard, glass, plastic and metal containers and items, copper wire and tubing, rubber, and other items at local recycling facilities.
- ✓ **Exchange** vehicle batteries, water pumps, carburetors, alternators, pesticide containers, etc., with vendors or when local purchases are made.
- ✓ Use available recycling contracts.
- ✓ Store materials for recycling in a location that is consistent with the KPDES permit.
- ✓ Divert runoff from recycling storage locations.
- ✓ Always ask for a Material Safety Data Sheet (MSDS) before ordering any new product.
- ✓ Keep lids on all solvents and turn off solvent parts washer when not in use.
- ✓ Have qualified personnel service equipment that contains Freon.



KyTC encourages facilities to reduce, reuse, recycle and exchange to reduce environmental concerns, improve safety and reduce costs.

Factsheet Checklist

- Check storage areas for recycleable materials to ensure that the handlers' conditions are being met.
- Check to ensure that materials are routinely transferred to a recycling vendor or facility.

Don't

- ✗ Don't throw away items that can be reused, recycled or exchanged.
- ✗ Don't accumulate batteries; avoid regulation!

If...Then

- If you are not sure whether an item can be recycled, contact the County Solid Waste Coordinator.

Materials & Waste Management

- ▲ Follow appropriate guidelines from recycling contracts, vendors or recycling centers for allowable items, materials management, separation and transportation arrangements.
- ▲ Regularly request removal or transport items to the facility.
- ▲ Double wrap broken or cracked vehicle batteries in heavy plastic and exchange promptly.

Relevant Environmental Programs	<input type="radio"/> Air Quality	<input type="radio"/> GWPP
	<input type="radio"/> 401/404/WQC	<input type="radio"/> Pesticides
	<input checked="" type="radio"/> KPDES	<input type="radio"/> SPCC
	<input checked="" type="radio"/> Facilities Pride	<input checked="" type="radio"/> Waste Mgt

Tips & Tricks

- ! Containers that can be recycled: washer fluid, new oil, new anti-freeze, battery acid gas line anti-freeze, diesel conditioner, radiator cleaner, brake fluid, starting fluid, liquid soap, solvents, brake cleaner, carburetor cleaner, paints, toluene, hand cleaner, janitorial products, etc.
- ! Recycling contracts may be available for tires, batteries, anti-freeze, vehicle oils, oil filters, fuel filters, parts cleaning machine systems, etc. See individual factsheets for more information.
- ! Recycling and exchanging materials is a good housekeeping practice and ensures compliance with hazardous waste and solid waste regulations and avoids costly penalties.
- ! Remember that "biodegradable" does not necessarily mean environmentally safe or that the product is exempt from regulations.
- ! Solvent losses due to evaporation, equipment leaks or spills and inappropriate usage can range from 25-40 percent.
- ! Recycling vendors are listed on this website: <http://www.waste.ky.gov/programs/rcla/Resource+Conservation+Section.htm>

Training: 1 per Year **Season:** Winter

KYTC FOG Reference N040

INFORMATION SOURCES

Kentucky Department for Environmental Protection. *Managing Automotive Repair Shop Wastes*. January, 1995. Division of Waste Management. Frankfort, Kentucky.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 3 pages 2-9; Unit 5 p 17)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002. (p 34-35)

Ohio Department of Transportation. *Section 800 Hazardous Waste Management Manual*. Office of Environmental Services. Columbus, Ohio. April, 2004. (814.15.4 AEROSOL CANS/COMPRESSED GAS CYLINDERS)

NOTES

4.2. SOLID WASTE MANAGEMENT



Do

- ✓ Arrange for solid waste service that provides covered dumpsters.
- ✓ Place trash in dumpster and close the lids.
- ✓ Keep dumpsters closed from weather.
- ✓ Have damaged dumpsters replaced or repaired.
- ✓ Use plastic bags for litter patrols and other solid waste.
- ✓ Store potentially hazardous left over products in a compatible, intact container.
- ✓ Keep water from running through stored solid waste.
- ✓ Have wastes hauled off before they over fill containers.
- ✓ Recycle as much material as feasible (cardboard, metals, glass, etc.) to keep it out of landfills.
- ✓ Obtain approval for spill cleanup waste from the landfill owner.



Your gateway to the landfill for solid wastes.

Factsheet Checklist

- Check solid waste storage areas **WEEKLY**.

Don't

- ✗ Don't dispose of hazardous wastes in the dumpster.
- ✗ Don't dispose of whole tires, lead-acid batteries, liquids, large spill clean-up.
- ✗ Don't store solid wastes that are not in a dumpster on site for more than 30 days.
- ✗ Don't place spill cleanup in the dumpster unless approved by the landfill.

Tips & Tricks

- ! Most things that may go into the dumpster are empty containers and wastes that are not hazardous waste and wastes that do not have free liquids.
- ! Clean-up from small spills (one or two bags) of "unused" oil may go into the dumpster.
- ! Clean-up waste of spills of any fluids from equipment must be contained and evaluated.
- ! Liquid wastes generally cannot drip to be accepted at the landfill.
- ! A list of landfills is provided in **Appendix 10**.
- ! County solid waste coordinators are provided in **Appendix 11**.

If...Then



Materials & Waste Management

- ▲ Waste from hazardous materials may or may not be hazardous wastes. Have these wastes evaluated. Contact DEA for assistance when needed.
- ▲ Solid waste landfills are the authority on what may or may not be disposed at their facility.

Relevant Environmental Programs

- | | |
|---|--|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

Training: 1 per Year

Season: Winter

KYTC FOG Reference N040

INFORMATION SOURCES

NOTES

4.3. HAZARDOUS WASTES



Do

- ✓ Notify DEA of the need to manage hazardous wastes or if registration as a Generator is needed.
- ✓ Promptly request waste determinations as needed to classify waste materials.
- ✓ Have current Material Safety Data Sheets (MSDS) available for each hazardous material.
- ✓ Label drums of all wastes found to be hazardous as “Hazardous Waste – (contents)” with the accumulation start date and type of waste.
- ✓ Store potentially hazardous leftover products in compatible, intact container(s) on pallets.
- ✓ Store absorbent from cleanup of hazardous spills in a closed drum.
- ✓ Maintain the hazardous waste records for at least three (3) years after disposal.
- ✓ See **Section 5.1** for additional information on hazardous spills.
- ✓ Explore use of non-hazardous products.

Don't

- ✗ Don't dispose of hazardous wastes or spoiled, partially used hazardous materials in the dumpster, on the ground or otherwise release to the environment.
- ✗ Don't store hazardous wastes for more than 1 year.
- ✗ Don't over-order supplies of hazardous products.
- ✗ Don't allow shelf life to be exceeded.
- ✗ Don't allow water to collect and rust drum lids.

If...Then

- If leaks develop, move the product or waste to an intact container.
- If drums are stored outdoors, divert runoff away from the storage location.

Materials & Waste Management

- ▲ Store all hazardous materials in containers that are intact and made of compatible materials.
- ▲ Store containers in a protected location to minimize employee exposure and protect against spills.
- ▲ Promptly manage hazardous wastes using an EPA registered hazardous waste disposal vendor. DEA can assist in arranging for a vendor when needed.

Relevant Environmental Programs

- | | |
|--------------------|--------------|
| ○ Air Quality | ● GWPP |
| ○ 401/404/WQC | ○ Pesticides |
| ○ KPDES | ○ SPCC |
| ● Facilities Pride | ● Waste Mgt |



Careful handling, accurate labeling and prompt management are keys to safely handling hazardous wastes.

Factsheet Checklist

- Monitor hazardous waste storage areas for leaks, spills, deteriorating containers, and other storage issues **WEEKLY or as directed by DEA.**
- Check waste hazardous waste materials inventory and volumes **WEEKLY or as directed by DEA.**
- Check recordkeeping **MONTHLY.**
- Check spill kit in accordance with Section 5.
- Review hazardous waste management procedures **ANNUALLY.**

Tips & Tricks

- ! Products that cannot be used, such as recalled pesticides, spoiled and out-dated products, are classified as “waste”.
- ! **Registration as a Small Quantity Generator is required if the amounts for a “Conditionally Exempt Small Quantity Generator” are exceeded.**
- ! A “Conditionally Exempt Small Quantity Generator” generates less than 220 pounds per month and stores less than 2,200 pounds per facility.
- ! A half-full drum weighs about 220 pounds. 5 full drums weigh about 2,200 pounds.
- ! Products with labels indicating flammable, toxic, reactive or corrosive usually generate hazardous wastes.

Training: 1 per Year **Season:** Winter

KYTC FOG Reference N040

INFORMATION SOURCES

Kentucky Department for Environmental Protection. *Hazardous Waste Generators Handbook*. July 2002. Division of Waste Management, Hazardous Waste Branch. Frankfort, Kentucky.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 3 P 7, 8, 22-25; Unit 5)

NOTES

4.4. UNIVERSAL WASTE



Do

- ✓ Store *spent lamps* that contain hazardous components in boxes, drums or other containers.
- ✓ Store waste *recalled pesticides* in the original container.
- ✓ Store waste *mercury thermostats* in a closed, structurally sound container.
- ✓ Store waste *non-lead acid batteries* in a closed, structurally sound container.
- ✓ Repackage damaged universal waste containers in a closed, structurally sound container that is compatible with the waste and protects against damage and leaks.
- ✓ Clearly label the container “Universal Waste – (contents)”.
- ✓ Use the original pesticide label if possible.
- ✓ Store Universal Wastes for less than 1 year.
- ✓ Contact DEA for assistance with traffic switches that contain mercury and other questions regarding universal waste.

Don't

- ✗ Don't crush spent lamps.
- ✗ Don't remove mercury ampules from thermostats.
- ✗ Don't put Universal Wastes in the dumpster.

If...Then

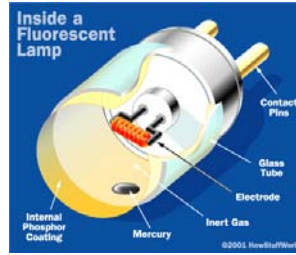
- Use a mercury spill cleanup kit to immediately clean up broken ampules.
- Sweep broken lamps and dispose of glass in the dumpster; include remaining lamp parts with Universal Waste.

Materials & Waste Management

- ▲ Use the Division of Waste Management's Directory of Spent Lamp Recyclers to identify an approved transport and recycle vendor.
- ▲ Separate fluorescent lamp ballasts from bulbs and manage as a hazardous waste (See **Section 4.3**).
- ▲ Manifests are not required for shipment.

Relevant Environmental Programs

- | | |
|--------------------|--------------|
| ○ Air Quality | ○ GWPP |
| ○ 401/404/WQC | ○ Pesticides |
| ○ KPDES | ○ SPCC |
| ● Facilities Pride | ● Waste Mgt |



Factsheet Checklist

- Check and approve Universal Waste storage location and methods.
- Check containers *QUARTERLY* to ensure containers are closed, sound and properly labeled.
- Ensure that Universal Wastes are removed by an appropriate handler *ANNUALLY*.

Tips & Tricks

- ! Universal Wastes are:
 - lamps;
 - mercury thermostats; and
 - recalled or banned pesticides.
- ! Small quantity handlers generate 200 to 11,000 pounds per year of Universal Wastes.
- ! Spent lamps include: incandescent (regular) light bulbs, fluorescent, high pressure sodium, mercury vapor, metal halide, high intensity discharge (HID) and neon bulbs or tubes.
- ! Lead acid batteries (i.e., vehicle batteries) are typically exchanged when the new battery is purchased.
- ! Waste lead acid batteries may be handled as either hazardous or universal waste.

Training: 1 per Year **Season:** Winter

KYTC FOG Reference: N040

INFORMATION SOURCES

Kentucky Department for Environmental Protection. *Universal Waste*. Undated. Division of Waste Management. Frankfort, Kentucky.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 3)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002. (p 36)

NOTES

4.5. WASTE ANTIFREEZE



Do

- ✓ Collect all antifreeze drained from vehicles.
- ✓ If the antifreeze is usable, return it to the vehicle.
- ✓ Maintenance Facilities will regularly transport waste antifreeze to Equipment Repair Garages.
- ✓ Equipment garages are to manage all of the antifreeze not returned to vehicles for a district.
- ✓ Clearly label containers of re-usable antifreeze.
- ✓ Store waste antifreeze in a re-sealable, plastic, 30 gallon, or smaller, drum(s).
- ✓ For waste antifreeze, label drums "Waste Antifreeze – Do Not Reuse"
- ✓ Store waste antifreeze indoors, in a secure location.
- ✓ Maintain a log for each drum of waste antifreeze to record the first date antifreeze is added and the date the drum is filled.
- ✓ Drums of waste antifreeze will be tested for TCLP lead when 25 gallons has accumulated, or as needed by the recycling vendor.
- ✓ If the lead test result is over 5 mg/l TCLP Lead, manage the waste as a hazardous waste.
- ✓ The facility must register as a Hazardous Waste Generator if more than 25 gallons per month of waste antifreeze is collected and it is hazardous.

Don't

- ✗ Don't mix other wastes, used oil, cleaners, solvents brake fluid with waste anti-freeze.
- ✗ Don't pour waste anti-freeze in a floor drain, storm drain, septic system, or dry well.
- ✗ Don't pour waste antifreeze on the ground.

If...Then

- See **Section 4.3** to manage waste antifreeze that is a hazardous waste.
- Immediately contain and clean up all spills, using a spill kit.
- Immediately protect floor drains from the spill.
- Immediately pump waste antifreeze from leaking drums into an intact container.



Antifreeze that contains more than 5 mg/l (ppm) TCLP lead must be managed as a hazardous waste.

Materials & Waste Management

- ▲ Contact the Contract Laboratory to request tests for total lead and TCLP lead.
- ▲ A chain of custody form, provided by the laboratory, must accompany each sample.
- ▲ Send a copy of the chain of custody and test results to Central Office Division of Equipment.
- ▲ Waste antifreeze is non-hazardous if total lead or TCLP lead is less than 5 mg/l (ppm).
- ▲ A used oil vendor or non-hazardous waste recycling vendor should remove the non-hazardous antifreeze.

Factsheet Checklist

- Monitor re-useable and waste antifreeze storage drums for leaks, spills and housekeeping **DAILY**.
- Check waste antifreeze volumes **MONTHLY**.
- Check recordkeeping **MONTHLY**.
- Check spill kit in accordance with Section 5.

Tips & Tricks

- ! A 30 gallon drum of antifreeze weighs 200 pounds.
- ! Obtain drum labels from the Central Warehouse.
- ! The Central Office may establish price contracts or formal guidelines for recycling antifreeze.

Relevant Environmental Programs

- | | |
|---|--|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

Training: 1 per Year

Season: Winter

KYTC FOG Reference N040

INFORMATION SOURCES

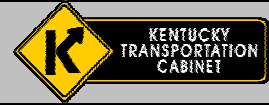
Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 3 p 4,12)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations
A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing
Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002. (p 41)

Ohio Department of Transportation. *Section 800 Hazardous Waste Management Manual*. Office of
Environmental Services. Columbus, Ohio. April, 2004. (814.15.6 ANTIFREEZE)

NOTES

4.6. WASTE TIRE MANAGEMENT



Do

- ✓ Facilities that handle more than 100 waste tires must be registered with the Division of Waste Management. Size is not a factor when counting to determine if registration is required.
- ✓ Un-registered facilities may accumulate less than 100 waste tires.
- ✓ Un-registered facilities should plan for disposal when 90 waste tires have accumulated.
- ✓ Stack all tires neatly in a designated Tire Storage Area.
- ✓ Stack tires for salvage sale separately.
- ✓ Cover stacks of tires to prevent accumulation of water which fosters breeding mosquitoes that may carry diseases.
- ✓ Registered facilities must: store tires 30 feet from utility easement, property line or highway right of way and 250 feet from a residence, karst feature or stream, store tires where fire fighting equipment will have access in case of a fire, obtain and keep receipts for disposal of tires for three years.



Covered storage for waste tires reduces mosquitoes that may carry disease. This tire storage container needs to be covered.

Don't

- ✗ Don't allow more than 100 tires to accumulate at facilities that are not registered.
- ✗ Don't burn tires.
- ✗ Don't put waste tires in the dumpster or landfill; landfills do not accept tires.

If...Then

- Notify the Superintendent immediately if more than 100 tires are being stored at an unregistered facility.

Materials & Waste Management

The two methods of waste tire management apply:

- ▲ *Salvage Sale.* Tires with street value may be removed from the waste pile for salvage sale. These tires must be covered to keep water from accumulating.
- ▲ *Solid Waste Landfill.* Some solid waste landfills may accept shredded tires or pieces. Contact the landfill operator for procedures.

Relevant Environmental Programs

- | | |
|---|--|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

Factsheet Checklist

- Check the tire storage area **MONTHLY** to ensure tires are covered
- Check the number of tires collected. For un-registered facilities, have tires removed before 100 tires have been accumulated.

Tips & Tricks

- ! The Central Office may establish price contracts or formal guidelines for recycling tires.
- ! The Division of Purchases may provide vendor lists, contacts and conditions for tire recycling.
- ! Disposal of whole tires in a solid waste landfill is prohibited by law.
- ! Keeping tires covered to prevent water entrapment keeps environmental inspectors happy.

Training: 1 per Year **Season:** Winter

KYTC FOG Reference N040

INFORMATION SOURCES

KRS 224.50-852 Waste tire program -- Administrative regulations.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 3 p 8-9, Unit 5)

New York State Department of Transportation. *Environmental Handbook for Transportation Operations
A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing
Highways and Transportation Systems*. Environmental Analysis Bureau. January, 2002. (p 41)

Ohio Department of Transportation. *Section 800 Hazardous Waste Management Manual*. Office of
Environmental Services. Columbus, Ohio. April, 2004. (814.15.34 TIRES)

NOTES

4.7. USED OIL and FILTERS



Do

- ✓ Maintain a 250 to 660 gallon used oil storage tank above ground, indoors protected from weather, in good condition, on an asphalt or concrete base and clearly labeled.
- ✓ Provide extra used oil storage containers.
- ✓ Provide a drum for used oil filters.
- ✓ Carefully (without spilling) pour used oil into the Used Oil tank.
- ✓ Waste hydraulic, transmission and power steering fluid, gear and lube oil are “used oils”.
- ✓ Waste fuel from fuel filters may be added if allowed by the recycling vendor.
- ✓ Drain oil filters on the drain rack for 24 hours and place in the Used Oil Filter drum.
- ✓ Notify the Superintendent when the tank reaches 80% full.
- ✓ The Superintendent will promptly request vendor removal.



This used oil tank is stored indoors, clearly labeled and the work area is orderly.

Don't

- ✗ Don't use underground storage tanks for used oil.
- ✗ Don't add other wastes such as cleaners, brake fluid or used anti-freeze to used oil.
- ✗ Don't add brake fluid, carburetor cleaner, paint thinner, lacquer thinner, parts washer solvents, gasoline, oil additives, or chlorinated solvents to used oil that will be burned.
- ✗ Adding oil from the oil/water separator to the used oil tank is not recommended when the oil is part of a used oil furnace fuel supply.
- ✗ Don't pour used oil in a storm drain, septic system, floor drain, dry well, sewer.
- ✗ Don't pour on the ground for disposal, dust or weed control.

If...Then

- If hazardous wastes are accidentally mixed with used oil, conduct a hazardous waste determination. See **Section 4.3** to manage hazardous wastes.
- Immediately contain and clean up all spills, regardless of size using a spill kit, Oil Dry or sand.
- Immediately protect floor drains from spilled oil.
- Pump oil from leaking tanks into an intact container.
- See **Section 5.2** for spills of 25 gallons or more.

Relevant Environmental Programs

- | | |
|--------------------|--------------|
| ○ Air Quality | ● GWPP |
| ○ 401/404/WQC | ○ Pesticides |
| ● KPDES | ● SPCC |
| ● Facilities Pride | ● Waste Mgt |

Materials & Waste Management

- ▲ Drained used oil filters should be recycled.
- ▲ Small amounts of used absorbent materials can be sent to an approved solid waste landfill.
- ▲ Use an approved vendor to move used oil and oil filters to recycling facilities
- ▲ Hot drained oil filters may be sent to a solid waste landfill, with prior approval from the operator.

Factsheet Checklist

- Check for leaks, spills and housekeeping **DAILY**.
- Check oil levels **WEEKLY**.
- Check spill kits in accordance with Section 5.

Tips & Tricks

- ! Contact the Division of Purchases for approved vendors.
- ! The Central Office may establish price contracts or formal guidelines for recycling used oil and filters.
- ! See **Section 3.13** regarding used oil burners.
- ! Run equipment until operating temperature is reached (about 20 minutes) to completely drain oil.
- ! Crushing oil filters conserves space.
- ! The use of oil for dust control is prohibited.

Training: 1 per Year

Season: Winter

KYTC FOG Reference N040

INFORMATION SOURCES

40 CFR 112 Oil Pollution Prevention (SPCC Requirements)

40 CFR 279 Used Oil Management

401 KAR 44:020. Standards for used oil generators

401 KAR 44:080. Standards for use as a dust suppressant and disposal of used oil.

KRS 224.01. Reportable quantities and release notification requirements for hazardous substances, pollutants, or contaminants hazardous substances, pollutants, or contaminants

Kentucky Department for Environmental Protection. *Managing Automotive Repair Shop Wastes*. January, 1995. Division of Waste Management. Frankfort, Kentucky.

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*. Undated. (Unit 3 p 8, Unit 5, p 17, 23)

Kentucky Transportation Cabinet. *Spill Prevention Control and Countermeasures Plan Template*. February, 2003. Frankfort, Kentucky.

NOTES

4.8. CONCRETE AND METAL WASTE



Do

- ✓ Reuse and recycling are the preferred options.
- ✓ Disposal in a construction and demolition (C&D) or an approved solid waste landfill are less preferable options.
- ✓ Reuse concrete for road repair and in-stream projects (gabion baskets, rip rap, fill).
- ✓ Reuse aluminum and steel guardrails for road repair projects.
- ✓ Reuse metal drums for storing wastes.
- ✓ Use a drum recycling vendor to remove excess empty drums.
- ✓ Divert runoff from storage locations.
- ✓ Store concrete and metal in an orderly way to encourage reuse and recycling.
- ✓ Remove excess materials periodically to keep the lot in good order.



Concrete may be reused as road fill or in gabion baskets. Metal guardrails can be straightened.

Don't

- ✗ Don't allow water to be collected on or in stored materials or drums.

If...Then

- ✗ Contact the Central Maintenance Facility in Frankfort to have metal guardrails straightened or recycled.

Materials & Waste Management

- ▲ Concrete is considered "inert" material by the Division of Waste management and may be used as "clean fill" for projects.
- ▲ Concrete waste that can not be used in projects may be disposed in Construction and Demolition waste landfills. See **Appendix 10**.
- ▲ Use a metal recycling vendor for metal items that cannot be reused.
- ▲ Metal items may be sent to an approved solid waste landfill.
- ▲ Contact the Division of Waste Management for a list of metal recycling vendors.

Factsheet Checklist

- Check storage locations to ensure compliance with the KPDES permit.
- Check drainage to ensure runoff is diverted away from storage locations.
- Check to ensure wastes are stored separately by type of material.

Tips & Tricks

- ! C&D landfill disposal fees are lower than solid waste landfill fees.
- ! Metal and concrete wastes do not cause ground water pollution and are therefore excluded from the Ground Water Protection Plan (See **Section 3.14**).

Relevant Environmental Programs

- | | |
|---|--|
| <input type="radio"/> Air Quality | <input type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input checked="" type="radio"/> KPDES | <input type="radio"/> SPCC |
| <input checked="" type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |

Training: 1 per Year **Season:** Winter

KYTC FOG Reference N040

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Concrete - Unit 3 p. 5,17; Metal - Unit 3 p. 7, 16, 25; Exclusion - Unit 5 p. 33)

NOTES

5.1. HAZARDOUS AND NON-HAZARDOUS SPILLS AT THE FACILITY



Do

- ✓ Treat spills of products or wastes that are flammable, toxic, reactive or corrosive as hazardous spills.
- ✓ Refer to the Material Safety Data Sheet (MSDS) for spill response procedures and personal protective equipment needs.
- ✓ Isolate the area.
- ✓ Safely **stop the release** if possible and protect streams, sewers and other waterways.
- ✓ **Report all releases** that are larger than a routine spill to DEA; call **911 or local emergency responders when warranted.** (See Appendix 9).
- ✓ If the spill exceeds reportable quantities on the “List of Lists” (40 CFR 302) or enters a water of the commonwealth, call the Environmental Response Team (800) 928-2380 or (502) 564-2380 and call the National Response Center.
- ✓ **Clean up** the spilled material.
- ✓ **KyTC personnel** - Coordinate any cleanup involving removal of soil with DEA.
- ✓ **Local government** should use an environmental consultant to oversee clean up of spills involving removal of soil.
- ✓ **Manage the waste**- store absorbent in drums and conduct a waste determination if a hazardous spill is known or suspected.
- ✓ Use absorbent pads or socks for pesticide cleanup.
- ✓ Review emergency response actions after an incident to highlight appropriate responses and needed improvements.

Don't

- ✗ Don't risk injury to yourself or co-workers.
- ✗ Don't panic, respond calmly and quickly.
- ✗ Don't stop the release if it is hazardous to do so.

Materials & Waste Management

- ▲ Store contaminated absorbent in drums until the results of a waste determination are available.
- ▲ Promptly manage spill cleanup waste with other hazardous wastes.

Relevant Environmental Programs

- | | |
|--------------------|--------------|
| ○ Air Quality | ● GWPP |
| ○ 401/404/WQC | ○ Pesticides |
| ○ KPDES | ○ SPCC |
| ○ Facilities Pride | ● Waste Mgt |



The spill kit contains protective equipment and absorbent materials for emergency use. Place the spill kits locations where materials are stored and used.

Factsheet Checklist

- Check product and waste storage areas for leaks, spills and housekeeping **WEEKLY.**
- Check hazardous waste storage areas for leaks, spills and housekeeping **WEEKLY.**
- Check spill kits **QUARTERLY** and promptly restock after use.
- Check spill response and cleanup procedures **ANNUALLY.**
- Check for the presence of copies of MSDS sheets for all products handled at the facility **ANNUALLY.**

Tips & Tricks

- ! Reportable quantities are 25 gallons or more of a petroleum product within a 24-hour period and 75 gallons or more of diesel fuel in a 24-hour period or any amount that creates a visible sheen on surface waters.
- ! EPA's “List of Lists” document, which identifies reportable chemicals, can be downloaded from the Environmental Response Team's website.
- ! Wring oil absorbent pads into a bucket to collect spilled material for reuse or disposal.

If...Then

- If the materials can be reused, place them in a suitable container and label them.

Training: 1 per Year

Season: Winter

KYTC FOG Reference M140

INFORMATION SOURCES

40 CFR 302

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 3 p 7, 8)

Kentucky Transportation Cabinet. *Spill Prevention Control and Countermeasures Plan Template*.
February, 2003. Frankfort, Kentucky.

Kentucky Transportation Cabinet. *Stormwater Best Management Practices Plan for District 5 – Poplar
Level Lost 392*. Undated. (p 6-7)

United States Environmental Protection Agency. *List of Lists: Consolidated List of Chemicals Subject to
the Emergency Planning and Community Right-To-Know Act (EPCRA) and Section 112(r) of the
Clean Air Act*. October, 2001. Office of Solid Waste and Emergency Response. Washington, D.C.
EPA 550-B-01-003.

NOTES

5.2. PETROLEUM SPILLS



Do

- ✓ District employees are the first responders to spills of oil or other petroleum products at the facility.
- ✓ Safely **stop the release** if possible by closing valves and/or turning power off.
- ✓ Notify the District Operations Manager of all spills at the facility.
- ✓ If the spill can't be safely and effectively handled by facility personnel, the District Operations Manager will **call 911 or local emergency response team** and DEA. (See **Appendix 9**).
- ✓ Notify the Environmental Response Team **(800) 928-2380** or **(502) 564-2380** if the spill is 25 gallons or more of a petroleum product within a 24-hour period or 75 gallons or more of diesel fuel in a 24-hour period or any amount that creates a visible sheen on surface waters.
- ✓ **Clean up** the spilled material.
- ✓ **KyTC personnel** - Coordinate any cleanup involving removal of soil with DEA.
- ✓ **Local government** should use an environmental consultant to oversee clean up of spills involving removal of soil.
- ✓ Return any useable product to the container or store in drums for later use.
- ✓ Use sorbent materials to clean up spill residues with the secondary containment area.
- ✓ Excavate all visibly contaminated soil.
- ✓ Store sorbent materials and excavated soil in drums and perform tests as needed to secure approval for disposal.

Don't

- ✗ Don't risk injury to yourself or co-workers.
- ✗ Don't panic, respond calmly and quickly.
- ✗ Don't stop the release if it is hazardous to do so.

If...Then

- If the spill can't be safely and effectively handled by facility personnel, the District Manager will promptly **call 911 or local emergency response team** and DEA. (See **Appendix 9**).
- If the spill reaches a waterbody or storm drain, immediately notify the DEP Environmental Response Team.

Relevant Environmental Programs

- | | |
|--|--|
| <input type="radio"/> Air Quality | <input checked="" type="radio"/> GWPP |
| <input type="radio"/> 401/404/WQC | <input type="radio"/> Pesticides |
| <input type="radio"/> KPDES | <input checked="" type="radio"/> SPCC |
| <input type="radio"/> Facilities Pride | <input checked="" type="radio"/> Waste Mgt |



Petroleum spills can contaminate surface water and ground water and can cause violations of KPDES permit limits for oil and grease.

Materials & Waste Management

- ▲ If the material is confirmed non-hazardous, wastes may be accepted by the Solid Waste Landfill.
- ▲ Material sent to a landfill must not drip.
- ▲ Follow the landfill's procedures and contact them if there are questions. (See **Section 4.2**).
- ▲ If wastes are hazardous or not accepted by the landfill, use an approved hazardous waste vendor.

Factsheet Checklist

- Check spill kits **QUARTERLY** and promptly restock after use.
- Check spill response and cleanup procedures **ANNUALLY**.
- Ensure that all employees that handle petroleum product transfers are adequately trained.

Tips & Tricks

- ! Clean up of visibly contaminated soil is required even if there are no notification requirements.
- ! Notification requirements apply to all petroleum products, including asphalt.
- ! EPA Region 4 must be notified within 60 days if a facility has an SPCC plan and a single spill of petroleum product that is more than 1,000 gallons, or more than 42 gallons is spilled in each of 2 spills in any 12 month period. See **Appendix 6**.
- ! Tests for disposal usually include BTEX and free liquids.

Training: 1 per Year **Season:** Winter

KYTC FOG Reference M140

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated.

Kentucky Transportation Cabinet. *Spill Prevention Control and Countermeasures Plan Template*.
February, 2003. Frankfort, Kentucky. (p35)

United States Environmental Protection Agency. *List of Lists: Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-To-Know Act (EPCRA) and Section 112(r) of the Clean Air Act*. October, 2001. Office of Solid Waste and Emergency Response. Washington, D.C. EPA 550-B-01-003.

NOTES

5.3. HAZARDOUS OR UNKNOWN WASTES OR SPILLS ON THE RIGHT-OF-WAY (ROW)



Do

- ✓ **Immediately call 911 or local emergency response team** if the waste is known or suspected to be hazardous, petroleum spill or any leaking materials due to an accident. (See **Appendix 9**).
- ✓ Then call the Environmental Response Team **(800) 928-2380** or **(502) 564-2380**.
- ✓ Report any unknown wastes found in the right of way (ROW) to the Environmental Response Team.
- ✓ Request that the emergency responders move the materials from the driving lane and place it behind a guardrail or barrier for traffic safety.
- ✓ Only trained, directly authorized KyTC personnel may investigate and handle hazardous or unknown materials on the ROW.



Don't

- ✗ Don't approach or come into contact with hazardous or unknown materials on the ROW.

If...Then

- If necessary and directed by an emergency responder, the facility may provide:
 - A crew to provide traffic control until the area is safe.
 - Sand and/or equipment.
 - If the owner or responsible party is unknown or if immediate cleanup is needed, provide the name of person who discovered the waste, route number, mile point, type of container, markings or labels, contents and source of drum or spill to the Operations Engineer, District Environmental Coordinator, Central Office Division of Operations and Division of Environmental Analysis.
- The Environmental Coordinator will contact the Division of Waste Management's Superfund Branch to investigate the incident and arrange for cleanup.
- If the District Maintenance Engineer cannot be reached, the Superintendent may call the Environmental Response Team directly.

This spill requires immediate attention!

Materials & Waste Management

- ▲ If the material is confirmed non-hazardous, contact the Division of Environmental Analysis for disposal instructions.

Factsheet Checklist

- Ensure that staff are adequately trained regarding emergency procedures.

Tips & Tricks

- ! After the emergency is over, the responsible party is required to obtain traffic encroachment permits to complete the cleanup and restoration.
- ! As a last resort, the foreman may call a Waste removal company before approval has been given by the area engineer.
- ! If emergency response is required and the response unit exceeds the district's authorization level for expenditure, the Division of Purchases must be contacted as soon as possible for emergency guidance.

Relevant Environmental Programs	<input type="radio"/> Air Quality	<input type="radio"/> GWPP
	<input type="radio"/> 401/404/WQC	<input type="radio"/> Pesticides
	<input type="radio"/> KPDES	<input type="radio"/> SPCC
	<input type="radio"/> Facilities Pride	<input checked="" type="radio"/> Waste Mgt

Training: 1 per Year **Season:** Winter

KYTC FOG Reference M140

INFORMATION SOURCES

Kentucky Transportation Cabinet. *Environmental Awareness: A Road Master Training Course*.
Undated. (Unit 3 P 19-21)

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February, 2003. Frankfort, Kentucky.

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EPA 550-B-01-003.

NOTES

6. References

- California Department of Transportation. *Statewide Storm Water Quality Practice Guidelines*. CalTrans, Division of Environmental Analysis, Sacramento, California. 2003. CTSW-RT-02-009.
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- Kentucky Department for Environmental Protection. *Hazardous Waste Generators Handbook*. July 2002. Division of Waste Management, Hazardous Waste Branch. Frankfort, Kentucky.
- Kentucky Department of Agriculture. *2002 Kentucky Agricultural Emergency Plan*. 2002. Frankfort, Kentucky.
- Kentucky Transportation Cabinet. *Field Operations Guide*. Undated.
- Kentucky Transportation Cabinet. *Groundwater Protection Plan for the Kentucky Transportation Cabinet's Marshall County Maintenance Facility and Operations, District One (1), County Number 079, Lot Number 450*. Undated. Benton, Kentucky.
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- Kentucky Transportation Cabinet. *Facility Guidance Manual for K.P.D.E.S. Sampling, Monitoring and Reporting for Storm Water Run-off for discharges covered by the general KPDES Permit: KYG500000*. March, 2005. Division of Environmental Analysis. Frankfort, Kentucky.
- New York State Department of Transportation. *Environmental Handbook for Transportation Operations A Summary of the Environmental Requirements and Best Practices for Maintaining and Constructing*

Highways and Transportation Systems. January, 2002. Environmental Analysis Bureau.

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Salt Institute. *The Snowfighter's Handbook: A Practical Guide for Snow and Ice Control*. 1999. Alexandria, Virginia. SI-1999-R.

Tetra Tech. *Kentucky Erosion and Sediment Control Field Guide*. Undated. Frankfort, Kentucky.

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Note: Regulatory citations are provided in **Appendix 1**.