In your community

Learn about watershed and natural resource issues in your community. Get involved in decision-making processes that affect your life. Water supply planning councils, zoning and utility commissions, and local chapters of various interest groups all provide opportunities to have an impact on how your watershed is managed or protected. Form a local watershed task force to address important issues in your watershed.

In your watershed

Protect wetlands that serve as natural buffers against pollution, soil erosion, and flooding. Leave vegetation buffer strips along lake and stream banks to prevent erosion and runoff into the water. Don't build a house or business in the flood plain.

Whom do I contact for more information?

For more information on how you can get involved, contact:
Kentucky Division of Water
14 Reilly Road
Frankfort, KY 40601
Phone: 502-564-3410
E-mail: colten@nrdep.nr.state.ky.us
On the web: http://www.state.ky.us/agencies/nrepc/dow/watrshd.htm

Kentucky Division of Water
14 Reilly Road
Frankfort, KY 40601

Watershed Management in Kentucky…

Q&A for Homeowners

What is a watershed?

It is the land across and under which water flows on its way to a stream, river, lake, or other waterbody. So, we all live in a watershed.

What is watershed management?

Since every thing we do in a watershed affects the soil, water, air, plants, and animals in it, watershed management means reducing those activities that result in runoff of soil and pollutants that might negatively affect the quality or our streams, lakes and groundwater and that affect droughts and flooding because of too little or too much water in the watershed..

Why watershed management?

Water is vital to the life and growth of our communities. Your watershed is not only the source of your community's drinking water, but is essential to the local economy through use in industry and agriculture. Water provides scenic beauty and areas for recreational activity. If a watershed is not managed properly, these uses of water can be threatened by pollution, drought, or flooding, which cost money and can cost lives.

What is the watershed framework?

In an effort to coordinate resource management activities among many agencies and organizations, the state has adopted a Watershed Management Framework. Its mission is to serve as a means for integrating the programs, tools, and resources of multiple stakeholder groups to better protect, maintain, and restore the ecology of watersheds and support sustainable uses of watersheds. Coordination of activities under the Framework will take place at three levels: at the state level by the Statewide Steering Committee; at the local level by local watershed task forces; and at the regional level by river basin teams, which serve as intermediaries between the state and local groups.

What does this mean to me?

Benefits

A variety of information regarding the condition or our watersheds will be available to communities. Some types of government funding will be targeted toward solving environmental problems. Watershed management provides opportunities for citizens to influence management decisions and set priorities where they live.

Drinking Water

Managing activities that pollute a watershed will result in a safer source of your drinking water. Also, the less pollution in the source, the less the cost to treat it before it is sent to you. Every time you turn on the tap to take a shower, wash the car, or water the lawn, you're using water that had to be treated at some cost to you, the user. Watershed management also means managing the amount of water used. Wasted water can strain water systems and create the need to expand existing systems or build new treatment plants, increasing the cost of water..

Wastewater

Managing the amount of water used can also result in wastewater treatment savings. So will managing potential pollutants that drain to storm sewers. All this water must be treated before it is discharged to community rivers, streams, and lakes where it travels downstream to become another community's drinking water.

Flooding

Better planning for use of property in a floodplain, including construction of homes and businesses, can reduce the risk of flooding and the tragedy and cost that result from it.

Drought

Wise use of water resources extends the use of current water supplies for more uses, more users, and more itme during periods of low rainfall.

Recreation and beauty

The better we take care of our watersheds, the safer and more enjoyable boating, fishing, and swimming will be.

What can I do?

In the lawn and garden

Use fertilizers and pesticides only as directed on the labels. If you have questions about their proper use, contact your local extension agents. Landscape your yard with plants native to the area; they will need a minimum of water and fertilizer. When lawns or plants need water, water deeply and infrequently. Also, water in the evening when evaporation loss is less, or use a drip irrigiation system.

Around the house

Dispose of left over chemicals and wastes properly so that they do not run off to streams or soak into the groundwater. For example, used automobile oil can be recycled; leftover pesticides should be used, donated to a someone who will use them, or taken to a hazardous waste disposal center.

To protect and preserve Kentucky's land, air and water resources

The Kentucky Natural Resources and Environmental Protection Cabinet is a state agency with the mission of protecting and preserving Kentucky's land, air and water resources. We encourage you to use this directory, so we can help you find the answers you need. Our office hours are 8 a.m. to 4:30 p.m., Monday through Friday. Or visit the cabinet's web site at **http://www.nr.state.ky.us** for more information about the cabinet and its activities.

NREPC Regional Offices

For Questions and Concerns about Local Issues

All phone numbers are 502 area code unless otherwise designated.

Dept. for Environmental Protection

Ashland -- Air Quality 606/920-2067
Bowling Green 746-7475
Columbia
  Water 384-4734
  Waste Management 384-4735
Florence 606/292-6411
Frankfort 564-3358
Hazard 606/435-6022
London 606/878-0157
Louisville
  Water 425-4671
  Waste Management 425-4543
Madisonville
  Water 824-7529
  Waste Management 824-7532
Maxey Flats 606/784-6612
Morehead -- Water, Waste 606/784-6635
Owensboro -- Air Quality 687-7304
Paducah
  Air Quality, Water 898-8468
  Waste Management 898-8495

This publication and other materials offered by the cabinet can be provided in alternative formats to any individual with a disability. To request materials in an alternative format, contact the Public Information and Education Branch, Capital Plaza Tower, Frankfort, KY, 40601, or phone 502/564-5525. Hearing- and speech-impaired persons can contact the agency by using the Kentucky Relay Service, a toll-free telecommunication device for the deaf (TDD). For voice to TDD, call 800-648-6057. For TDD to voice, call 800-648-6056.

Dept. for Natural Resources

Division of Forestry
  Betsy Layne 606/478-4495
  Campbellsville 465-5071
  Elizabethtown 766-5010
  Gilbertsville
    (J.P. Rhody Nursery) 362-8331
  Hazard 606/435-6073
  Madisonville 824-7527
  Mayfield 247-3913
  Morehead 606/784-7504
  Pineville 606/337-3011
  Stamping Ground 535-7741
  West Liberty
    (Morgan Co. Nursery) ... 606/743-3511

Dept. for Surface Mining Reclamation and Enforcement

London 606/878-0098
Madisonville 824-7536
Middlesboro 606/248-6166
Pikeville 606/433-7726
Prestonsburg 606/886-8536
Division of Abandoned Mine Lands
  London 606/878-0071
  Madisonville 824-7534
  Prestonsburg 606/886-1786

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Kentucky Natural Resources and Environmental Protection Cabinet

Organizational Structure and Frankfort/Central Offices

Office of the Secretary 564-3350
  Administrative Services 564-7320
  Public Information and Education Branch 564-5525
  Office of Legal Services 564-5576
  Office of Information Services 564-5174
  Office of Administrative Hearings 564-7312
Dept. for Environmental Protection 564-2150
  Commissioner 564-2150
  Division of Water 564-3410
  Division for Air Quality 573-3382
  Division of Waste Management .. 564-6716
  Division of Env. Services 564-6120
Dept. for Natural Resources 564-2184
  Commissioner 564-2184
  Division of Energy 800/282-0868
  Division of Conservation 564-3080
  Division of Forestry 564-4496
Dept. for Surface Mining Reclamation and Enforcement ... 564-6940
  Commissioner 564-6940
  Division of Abandoned Mine Lands 564-2141
  Division of Field Services 564-2340
  Division of Permits 564-2320
Environmental Quality Commission 564-2150
Kentucky State Nature Preserves Commission 573-2886
Kentucky River Authority 564-2866

October 1998

EDUCATION PAYS

Inside the Kentucky NREPC

Inside the Kentucky NREPC

Kentucky Natural Resources and Environmental Protection Cabinet

For Answers to Questions about Environmental and Natural Resource Issues in Kentucky

For local and regional concerns, the appropriate NREPC regional office should be contacted.

All phone numbers with 502 area code unless otherwise specified.

Abandoned Drums/Oil Tanks 564-6716
Abandoned Vehicle Recovery 564-6716
Above-ground Storage Tanks 564-5981
Acid Rain 573-3382
Agricultural District Program 564-3080
Agricultural Equip. Revolving Fund . 564-3080
Agriculture Water Quality Authority 564-3080
Air Quality Permits 573-3382
Air Releases (vapors, fumes, odors) . 573-3382
Air Quality Index ..... 800/AIR INKY
Air Quality Rep. for Small Business 564-2150
Asbestos 573-3382
Best Management Practices
  Agriculture 564-3080
  Forestry 564-4496
Bioassay 564-3410
Biodiversity 573-2886
Blackwater Release 564-2340, 564-3410
Citizen Participation (water) 564-3410
Clean Air for KY Program 800/928-0047
Clean Air Act 573-3382
Clean Community Program 564-6716
Clean Water Act 564-3410
Comparative Risk 564-2150
Complaints
  Air 573-3382
  Water 564-3410
  Waste 564-6716
Compliance Monitoring (water) 564-3410
Composting 564-6716
Conservation Districts 564-3080
Conservation (soil) Education 564-3080
Dam Failure 564-3410
Dam Safety 564-3410
DEP Scholarship Program 564-2150
Drinking Water 564-3410
Drinking Water State Revolv. Fund .. 564-3410
Drought Response 564-3410
Dry Cleaners' Information 573-3382
Ecosystem Management 564-4496
Employment 564-2042
Endangered and Threatened Species 573-2886
Energy Conservation 564-7192
Energy Education 564-7192
Energy -- Renewable (solar, wind, etc.) 564-7192
Environmental Response Team 564-2380
Environmental Services (lab) 564-6120
Environmental Trends/Conditions 564-2150
Fires (outdoors)
  Air Quality Rules 573-3382
  Forestry Laws 564-4496
  Waste Management 564-6716
Fish Kills 564-3410
Fishing Advisories 564-3410
Flood Safety 564-3410
Floodplain Management 564-3410
Forest Conservation Act 564-4496
Forest Fires 564-4496
Forest Health 564-4496
Forest Product Utilization 564-4496
Forest Products Council 564-4496
Forest Stewardship 564-4496
Forestry Education 564-4496
Freon 573-3382
Geographic Information Systems 564-5174
Groundwater 564-3410
Groundwater Protection Plans 564-3410
Hazardous Air Pollutants 573-3382
Hazardous Waste 564-6716
Hazardous Waste Incinerators 564-6716
Hearings (administrative) 564-7312
Heritage Land Conservation Fund 564-2184
Houseboat Pump-out Facilities 564-3410
Household Hazardous Wastes 564-6716
Illegal Dumps ..... 888-NO DUMPS
Incinerators 573-3382
Indoor Air 573-3382
Kentucky Master Logger Program 564-4496
Kentucky River Locks and Dams 564-2866
Kentucky Rivers Assessment 564-3410
Laboratory Certification 564-6120
Lake Water Quality 564-3410
Landfarming/Landspreading 564-6716
Land, Air & Water Magazine 564-5525
Landfills 564-6716
Landslides 564-2340
Lead (air) 573-3382
Leaking Cargo/Drums 564-6716
Logger Education 564-4496
Mining Reclamation 564-2340
Monitoring Wells 564-3410
Natural Areas Registry 573-2886
Nature and Wildlife Fund 573-2886
Non-Coal Mining
  (clay, limestone, sand, gravel) 564-2340
Nonpoint Source Pollution 564-3410
Oil and Gas Wells Licensing 564-3410
Open Burning 573-3382
Ozone 573-3382
Package Sewage Treatment Plants 564-3410
Pollution Prevention
  Air 573-3382
  Waste 564-6716
Recycling and Marketing Assistance ... 564-6716
Sewage Treatment 564-3410
Shale Extraction 564-2340
Small Operator's Assistance Program . 564-2320
Smog Alert (Northern Ky) 800/621-SMOG
Soils and Erosion 564-3080
Soil Erosion and Water Quality
  Cost Share Program 564-3080
Soil and Water Conservation Comm. .. 564-3080
Solid Waste 564-6716
State Forests 564-4496
Stormwater Runoff 564-3410
Stream and River Water Quality 564-3410
Stream Construction 564-3410
Stream Dredging 564-3410
Superfund Sites 564-6716
Surface Mining Law Enforcement 564-2340
Surface Mining Permits 564-2320
Swimming Advisories 564-3410
Tire Dumps 564-6716
Toxic Release Inventory 564-2150
Toxics (air) 573-3382
Tree Farm Program 564-4496
Tree Seedlings 564-4496
Vehicle Emission Testing 573-3382
Urban Forestry 564-4496
Underground Storage Tanks 564-6716
Waste and Recycling Education 564-6716
Waste Tires 564-6716
Wastewater State Revolving Fund 564-3410
Wastewater Treatment 564-3410
Wastewater Discharge Permits 564-3410
Water Conservation 564-3410
Water Quality Certification 564-3410
Water Shortage 564-3410
Water Supply and Planning 564-3410
Water Toxicity Testing 564-3410
Water/Wastewater Operator Cert. 564-3410
Water Withdrawal 564-3410
Watershed Conservancy District 564-3080
Watershed Management 564-3410
Water Watch Program 800/928-0045
Water Well Drilling 564-3410
Wellhead Protection Program 564-3410
Wetlands 564-3410
Wild Rivers Program 564-3410
Wire Burning 564-6716

Groundwater Protection and Residential Septic Systems

How Kentucky's new groundwater regulation affects homes served by septic systems

A new groundwater protection regulation became effective August 24, 1994. Its purpose is to prevent groundwater pollution, and it applies to activities that have the potential to pollute groundwater.

Where can I obtain a groundwater protection plan?

You may obtain a GPP - free - at the following locations:

Groundwater Branch
Kentucky Division of Water
14 Reilly Road
Frankfort, KY 40601 (telephone 502/564-3410)

Libraries

Kentucky Division of Water
Regional Offices:

- 1508 Western Avenue
  Bowling Green, KY 42104 (502/7467475)
- 102 Burkesville Street
  Columbia, KY 42728 (502/384-4734)
- 7964 Kentucky Drive, Suite #8
  Florence, KY 41042 (606/292-6411)
- 1047 U.S. 127 South Annex Building
  Frankfort, KY 40601 (502/564-3358)
- 233 Birch Street, Suite 1
  Hazard, KY 41701 (606/439-2391)
- 85 State Police Rd., Reg. St. Office Bldg.
  London, KY 40741 (606/878-0157)
- 312 Whittington Parkway, Suite 205
  Louisville, KY 40222-4925 (502/595-4218)
- Madisonville State Office Building
  625 Hospital Drive
  Madisonville, KY 42431 (502/824-7529)
- Mabry Building, KY 32 South
  Morehead, KY 40351 (606/784-6635)
- 4500 Clarks River Road
  Paducah, KY 42003 (502/898-8468)

Division of Water
14 Reilly Road
Frankfort, Kentucky 40601

Natural Resources and Environmental Protection Cabinet

The Natural Resources and Environmental Protection Cabinet does not discriminate on the basis of race, color, national origin, sex, age, religion, or disability and provides, on request, reasonable accommodations including auxiliary aids and services necessary to afford an individual with a disability an equal opportunity to participate in all services, programs, and activities. These materials, and other materials offered to the public by the Natural Resources and Environmental Protection Cabinet, can be provided in alternative formats to any individual with a disability. To request materials in an alternative format, please contact Maleva Chamberlain, Division of Water, at 14 Reilly Road, Frankfort, Kentucky 40601 or telephone (502) 564-3410.

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How do we protect groundwater?

Kentucky's groundwater regulation requires that you take a long, hard look at your activities and ask, "Am I doing something that may possibly pollute groundwater?" If the answer is "yes," you may have to complete a Groundwater Protection Plan (GPP).

Since improperly designed, operated, and maintained septic systems are major potential sources of groundwater pollution, **all owners or operators of residential septic systems must have a Groundwater Protection Plan.**

How do I develop a groundwater protection plan? How much will it cost?

A generic groundwater protection plan for residential septic systems has been developed by the Natural Resources and Environmental Protection Cabinet as required by the new regulation. It is free.

How does a Groundwater Protection Plan help me protect groundwater?

You can protect groundwater by understanding how your septic system works and by following good operation and maintenance practices. The groundwater protection plan contains information to help you do this.

I already know how my system operates and how to care for it. Do I still need a Groundwater Protection Plan?

Yes. Anyone conducting an activity with the possibility to pollute groundwater is required to have a groundwater protection plan.

Your Groundwater Protection Plan can be an important document should you decide to sell your house. The GPP contains a record-keeping section in which you can record the layout of your septic system and any maintenance that is done, such as pumping the tank. Your records will show a prospective buyer that your septic system has been properly maintained.

Why protect groundwater?

Groundwater is the source of drinking water for hundreds of thousands of Kentuckians. They obtain their water from water wells or springs, either from private wells or municipal groundwater systems.

Groundwater provides water for our streams, rivers, lakes, ponds, and wetlands. Polluted groundwater can become polluted surface water, and in turn, polluted surface water can become polluted groundwater.

Your activities may pollute your own drinking water or even that of those who live outside your community. The groundwater underlying your property may travel great distances, eventually flowing onto the land's surface at a spring or being pumped from a well as someone else's drinking water.

If you would like a generic GPP, more information, or if you have a question, please fill out this form and mail it to the Groundwater Branch, Kentucky Division of Water, 14 Reilly Road, Frankfort, KY 40601, or call the Groundwater Branch at 502/564-3410.

Name: _____ Telephone: _____

Address: _____

City: _____ State: _____ Zip Code: _____

____ Send GPP for residential septic systems.

____ Send information on operation and maintenance.

____ Answer question(s): _____

Kentucky Water Well Inspection Form

KENTUCKY WATER WELL INSPECTION FORM

(1) AKGWA NUMBER:

☐☐☐☐ - ☐☐☐☐ - ☐☐

Attach Water Well Record Label Here (if applicable)

(2) GENERAL INFORMATION:

Well Owner's Name: _____ Last _____ First _____ MI

Mailing Address: _____

City: _____ **State:** _____ **Zip:** _____

Phone: ( ) _____ ( ) No Phone

(3) WELL RECORD LABEL LOCATION:

( ) well casing ( ) other _____

(4) WELL LOCATION:

USGS Quadrangle Name: _____

County: _____

Elevation: _____ ft. ( ) map ( ) altimeter ( ) other _____

Latitude: _____ **Longitude:** _____

Physiographic or Hydrologic Region:

( ) Blue Grass ( ) Ohio River Alluvium ( ) E. Coal Field

( ) Miss. Plateau ( ) Jackson Purchase ( ) W. Coal Field

(5) WELL CHARACTERISTICS:

Is this a hand dug well? ( ) yes ( ) no ( ) unknown

Who constructed well? _____ ( ) unknown

Address: _____

City: _____ **State:** _____ **Zip:** _____

Date well was completed: _____ Month Day Year ( ) unknown

Total depth: _____ ft. ( ) measured ( ) reported ( ) unknown

Does the casing extend above the ground? ( ) yes, _____ in. ( ) no

Casing Type(s)	Casing Inside Diameter (in)	Feet Below Surface From	To	Casing Wall Thickness
1.				
2.				
3.				
4.				

Is the well located in a pit? ( ) yes ( ) no ( ) unknown

Is the water discharge pipe below ground surface?

( ) yes ( ) no ( ) unknown

Is a pitless adapter used? ( ) yes ( ) no ( ) unknown

Well yield: ( ) gpm ( ) gph ( ) gpd

( ) measured ( ) estimated ( ) unknown

Surface annular material: ( ) clay ( ) sand ( ) cement

( ) drill cuttings ( ) gravel ( ) open annulus ( ) unknown

( ) other _____

Well head (casing top): ( ) well cap ( ) sanitary seal ( ) open

( ) other _____

Pump type: ( ) jet ( ) submersible ( ) hand pump ( ) turbine

( ) none ( ) bailer/bucket ( ) other _____

Level of pump intake: _____ ft. ( ) unknown

Age of pump: _____ yrs ( ) unknown

Electric connection for pump: ( ) 2 wire, 110V ( ) 3 wire, 220V ( ) unknown

Static water level: _____ ft. below surface ( ) measured ( ) reported

If unknown: ( ) can't be measured ( ) not measured

Does the owner have any log or record concerning this well?

( ) yes ( ) no If yes, specify: _____

(6) SKETCH MAP:

(7) WELL USE:

( ) domestic ( ) public ( ) irrigation

( ) industrial ( ) livestock ( ) monitoring

( ) unused ( ) other _____

PWSID #: _____

Water Withdrawal Permit #: _____

(8) WELL SERVICE:

Number of people served: _____

Number of service connections: _____

Any quantity problems? ( ) yes ( ) no

Any quality problems? ( ) yes ( ) no

Describe: _____

(9) COMPLIANCE TO STANDARDS:

Is this well in compliance with state water well construction standards? ( ) yes ( ) no ( ) unknown

If no, describe deficiencies: _____

(10) TYPE OF TREATMENT SYSTEM:

( ) none

( ) water softener

( ) ultra violet

( ) chlorination

( ) aeration

( ) charcoal filter

( ) sand filter

( ) iron inhibitor

( ) other _____

Is a treatment bypass available? ( ) yes ( ) no

Describe water quality problem requiring treatment: _____

(11) INSPECTION INFORMATION:

Date of Inspection: _____ Month Day Year

Check one: ( ) original inspection ( ) re-inspection

Was a water quality sample taken as part of this inspection? ( ) yes ( ) no

Reason for inspection (check all that are applicable): **Specify:**

( ) general water quality analysis requested

( ) specific complaint investigation

( ) general survey

( ) ambient groundwater monitoring

( ) other _____

Permit/Program Name

Other ID #: _____

Other ID #: _____

Well Inventory #: _____

(12) OPTIONAL USE:

Will well owner allow state monitoring? ( ) yes ( ) no ( ) unknown

Extent of monitoring allowed: ( ) collect sample ( ) measure static water level

( ) pump well ( ) remove well cap ( ) other _____

Monitoring feasibility: _____

(13) COMMENTS: _____

(14) INSPECTOR IDENTIFICATION:

Name: _____ Last _____ First _____ MI _____ Inspector ID #

Agency: ( ) CHR ( ) DOW ( ) DWM ( ) KGS ( ) SOAP

( ) Other _____

Signature of Inspector: _____

Date: _____ Month Day Year **Number of Attached pages:** _____

Distribution: White copy to DOW, Pink Copy to Inspecting Agency, Yellow Copy to Owner

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DEP-8051 Revised 12/15/87

Kentucky Spring Inventory Form

KENTUCKY SPRING INVENTORY FORM

(1) SPRING IDENTIFICATION NUMBER: ☐ ☐ ☐ ☐ – ☐ ☐ ☐ ☐

Official Use Only

Do not write in this space

(2) GENERAL INFORMATION

Spring owner's name: _____ ( ) unknown

Mailing Address: _____ ( ) unknown

City: _____ State: _____ Zip: _____

Phone: ( ) _____ ( ) no phone ( ) unknown

(3) SPRING LOCATION	County	Quadrangle	Latitude	Longitude	Elevation ( ) map ( ) survey _____ ft.

(4) NAME OF SPRING ( ) unnamed

(5) PHYSIOGRAPHIC OR HYDROLOGIC REGION
( ) Bluegrass ( ) Ohio River Alluvium ( ) E. Coal Field
( ) Miss. Plateau ( ) Jackson Purchase ( ) W. Coal Field

(6) ATTACHMENTS
( ) Topographic map
( ) Other: _____

(7) PHYSICAL SETTING

Primary Spring Type:
( ) gravity (*falling*) ( ) trickle
( ) bluehole (*rising*) ( ) seep

Secondary Characteristics:
(mark all that apply)
( ) karst window ( ) perched
( ) sinking spring ( ) gravel
( ) epikarst ( ) mineral
( ) estavelle ( ) fracture
( ) other: _____

Aquifer Media:
( ) limestone ( ) sandstone
( ) dolostone ( ) coal
( ) shale/siltstone ( ) alluvium
( ) unknown
( ) other: _____

Spring Discharges From:
( ) conduit ( ) mine adit
( ) bedding plane ( ) soil
( ) cave ( ) fill
( ) fracture ( ) unknown
( ) talus/loose rock

Spring Discharges To:
( ) stream ( ) pond or lake
( ) sinkhole ( ) holding tank
( ) soil ( ) wetland

Name of Receiving Water Body: _____

(8) SPRING DISCHARGE
( ) perennial ( ) seasonal ( ) intermittent
_____ ( ) cfs ( ) gpm ( ) l/s
( ) measured ( ) estimated
( ) reported ( ) not determined

Please see worksheet and instructions on reverse of form for assistance in calculation of spring discharge.

(9) SURFACE FLOW CONDITIONS
Season:
( ) winter (November - April)
( ) summer (May - October)
Flow condition:
( ) low ( ) moderate ( ) high

(10) MODIFICATIONS (mark all that apply)
( ) spring house ( ) gravity pipe
( ) spring box ( ) pump
( ) walled pond ( ) dam
( ) storage trough or tank ( ) none
( ) other (describe in Comments)

(11) DYE TRACE INFORMATION
Has a trace been made to/from this site?
( ) Yes ( ) No ( ) Unknown
Investigator: _____
Project: _____
Date: _____
Comments: _____

(12) SPRING USE
( ) domestic ( ) irrigation ( ) public supply
( ) industrial ( ) livestock ( ) monitoring
( ) unregulated public access ( ) unused
( ) other: _____
PWSID#: _____
Water Withdrawal Permit #: _____

(13) SPRING SERVICE
Number of people served: _____
Number of service connections: _____
Quantity problems ( ) yes ( ) no ( ) unknown
Quality problems? ( ) yes ( ) no ( ) unknown
Use Comments Section to describe any problems

(14) TREATMENT SYSTEMS
( ) none
( ) water softener
( ) ultraviolet
( ) chlorination
( ) aeration
( ) charcoal filter
( ) sand filter
( ) iron inhibitor
( ) settling tank
( ) other
Treatment Bypass Available?
( ) yes ( ) no

(15) INSPECTION INFORMATION
Date of Inspection: _____
Water Sample Taken? ( ) yes ( ) no
Reason for Inspection:
( ) general survey
( ) specific complaint investigation
( ) spill or incident response
( ) contamination site investigation
( ) enforcement
( ) general water quality analysis
( ) ambient groundwater monitoring
( ) other (describe in Comments)
Program Name and Facility ID#: _____
Alternate Spring ID# _____

(16) OPTIONAL USE
Will Owner Allow State Access?
( ) yes ( ) no ( ) unknown
Extent of Monitoring Allowed:
( ) complete access
( ) collect sample
( ) access to spring/springhouse
( ) modify spring
( ) notification required
( ) other (describe in Comments)
Monitoring Feasibility: _____

(17) **Sketch Map** (show spring and associated features)

(18) COMMENTS _____

(19) INVESTIGATOR IDENTIFICATION
Name: _____ _____
Last First MI Inspector ID#
Agency: ( ) CHR ( ) DOW ( ) DWM ( ) KGS ( ) Other: _____
Signature of Inspector: _____ **Date:** _____

Distribution: White Copy to DOW, Pink Copy to Inspecting Agency, Yellow Copy to Owner

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Revised 4/10/99

Appendix D. – Data and References

Tables 3-9 show the tabulated results from the entire field screening analyses collected in the project.

NT = Not Tested, 0 = not detected at the laboratory detection limit, all chemical concentrations in ppm and all bacteria results in colonies per 100 ml. **Bold** means the result is at or above the primary or secondary drinking water standard. Conductivity is in microseimens and pH is in standard units.

Table 3. Hand-dug Well Data.

Well ID.#	Well Depth	People Served	Nitrate – N	Nitrite – N	Ammonia – N	Detergents	Phosphate – PO4	pH	Conductivity	Soluble Iron	Soluble Mn	Nitrate Test Strip – NO3-	Nitrite Test Strip– NO2-	Total Coliform Bacteria	E-coli Bacteria	Fecal Coliform Bacteria	Caffeine and/or Caffeine Breakdown products
0005-5291	12	4	1.5	**1.5**	0.5	0	0	**5.14**	351	NT	NT	0	0	2400	**57**	**66**	0.00027
0005-5393	15	3	0	0	0	0	0	6.5	180	0.05	0	0	0	1700	**9**	**10**	0
0005-5296	18	3	2.5	0	2	0.1	0	6.75	191	0	0	50	NT	2400	**24**	**610**	NT
0005-5313	19	2	0	0		0	0	**6.4**	510	0.05	0	NT	NT	NT	NT	NT	NT
0005-5292	25	1	1	0	1	0.1	0	**5.88**	397	**0.5**	NT	NT	NT	2400	0	0	0
0005-5338	25	3	0	0	0	0	0	7.2	900	0	0	NT	NT	56	0	0	NT
0005-5321	50	5	0	0	0	0	0	**6**	170	0.05	0	25	0	NT	NT	NT	NT
0005-5396	50	2	0	0	0	0	0	**5.07**	57.4	0	0	0	0	NT	NT	NT	NT
0005-5311	60	4	0	0		0	0	6.7	200	**0.6**	0	10	0	NT	NT	NT	NT
Total People		27															

Table 4. Data for wells that appear to meet current well construction standards.

Well ID.#	Well Depth	# People	Nitrate – N	Nitrite – N	Ammonia – N	Detergent	Phosphate – PO4	pH	Conductivity	Soluble Iron	Soluble Mn	Nitrate Test Strip – NO3-	Nitrite Test Strip– NO2-	Total Coliform Bacteria	E-Coli Bacteria	Fecal Coliform Bacteria	Caffeine & Breakdown products
0005-5326	60	5	0	0	0	0	0	**6.4**	670	0	0	NT	NT	NT	NT	NT	NT
0004-9856	65	1	0	0	1	0	0	7.6	680	NT	NT	NT	0	150	0	0	NT
0005-4838	65	4	0	0	0	0	0	NT	NT	**5**	0	NT	NT	NT	NT	NT	NT
0005-5394	80	6	0	0	0	0.1	0	**9**	2400	0.15	0	NT	NT	NT	NT	NT	NT
0005-0534	85	6	0	0	0	0	0	NT	NT	0	0	NT	NT	NT	NT	NT	NT
0005-5324	87	6	0	0	0	0	0	**6.3**	**410**	**3**	0	NT	NT	NT	NT	NT	NT
0005-5345	95	6	0	0	0	0	0	7.4	430	**10**	0	NT	NT	NT	NT	NT	NT
0005-5318	103	2	0	0	0	0	0	7.45	361	0.1	0	NT	NT	NT	NT	NT	NT
0003-0661	103	9	0	0	0	0	5	7.7	480	0.1	0	NT	NT	NT	NT	NT	NT
0005-5400	120	2	0	0	0	0	0	**5.6**	150	**4**	0	0	0	0	0	0	NT
0003-1954	120	3	0	0	0	0	3.5	6.5	390	**0.4**	0	NT	NT	310	0	0	0.00021
0005-5398	130	3	0	0	1	0	2	7.4	490	0	0	0	0	NT	NT	NT	NT
0005-5634	138	3	0	0	0	0	0	7.6	510	0.2	0	NT	NT	NT	NT	NT	NT
0005-5398	156	2	0	0	0	0	0	**6.38**	185.2	0.1	0	0	0	NT	NT	NT	NT
0005-3932	158	6	0	0	0	0	0	NT	NT	0	0	NT	NT	NT	NT	NT	NT
0004-7938	165	3	0	0	0	0	0	**5.9**	1120	**10**	**2**	0	0	NT	NT	NT	NT
0005-5322	185	2	0	0	0	0	0	6.9	310	**0.35**	0	NT	NT	**2400**	**110**	**94**	0
0002-8785	185	4	0	0	0	0	0	NT	NT	0.1	0	NT	NT	NT	NT	NT	NT
0001-2137	200	7	0	0	0	0	0	**4.62**	108.7	0.1	**0.15**	0	0	NT	NT	NT	NT
0004-9147	220	3	0	0	0	0	0	6.8	430	**1**	0	NT	NT	NT	NT	NT	NT
0001-1234	230	9	0	0	0	0	1	6.5	390	0	0	NT	NT	NT	NT	NT	NT
0001-1873	310	6	0	0	1	0	0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
0005-5320	480	4	0	0	0	0	0	7.5	370	0	0	NT	NT	NT	NT	NT	NT
0005-5395	UNK	2	0	0	0	0	0	6.7	174	0	0	0	0	NT	NT	NT	NT
0005-5347	UNK	4	0	0	0	0	0	7.4	290	**0.5**	**0.15**	NT	NT	NT	NT	NT	NT
0004-6718	UNK	1	0	0	NT	0	0	6.8	480	**10**	0	0	0	NT	NT	NT	NT
0003-3313	UNK	5	0	0	1	0	0	7.24	523	**1.5**	NT	NT	NT	NT	NT	NT	NT
0005-5297	UNK	6	0	0.5	6	0	0	7	540	0.25	0	0	0	NT	NT	NT	NT
0004-1290	UNK	1	0	0	0	0	0	**6.4**	1080	0	0	NT	NT	NT	NT	NT	NT
0005-5391	UNK	3	0	0	0	0	0	NT	NT	0	0	NT	NT	NT	NT	NT	NT
0005-0539	UNK	4	0	0	0	0	0	NT	NT	0.1	0	0	0	NT	NT	NT	NT
Total # People	128																

Table 5. Data for wells with buried well heads

Well ID.#	Well Depth	Persons Served	Nitrate – N	Nitrite – N	Ammonia – N	Detergents	Phosphate – PO4	pH	Conductivity	Soluble Iron	Soluble Mn	Nitrate Test Strip – NO3-	Nitrite Test Strip– NO2-	Total Coliform Bacteria	E-Coli Bacteria	Fecal Coliform Bacteria	Caffeine & Breakdown products
0005-5330	20	5	0	0	0	0	0	7.9	**860**	0	0	NT	NT	40	0	0	NT
0003-9155	60	2	0	0	0	0	0	**6.3**	**470**	**8**	**0.15**	0	0	NT	NT	NT	NT
0005-5317	60	5	0	0	0	0	0	7.9	**689**	**0.05**	0	NT	NT	NT	NT	NT	NT
0005-5336	60	4	0	0	0	0.25	0	7.7	**380**	**0.3**	0	NT	NT	NT	NT	NT	NT
0005-5323	70	5	0	0	0	0	0	**6.4**	**530**	**7.5**	**0.6**	0	0	NT	NT	NT	NT
0005-5339	75	4	0	0	0	0	0	7.3	**490**	**0.8**	0	NT	NT	NT	NT	NT	NT
0005-5314	77	2	0	0	0	0	0	6.86	**369**	**10**	0	NT	NT	0	0	0	NT
0005-4035	80	8	0	0	1.25	0	5	6.8	**350**	**0.5**	0	NT	NT	NT	NT	NT	NT
0005-5327	87	7	0	0	0	0	0	**6.1**	**550**	**10**	0	NT	NT	50	0	0	NT
0005-5299	90	2	0	0	1	0	0	8	**430**	0	0	0	0	NT	NT	NT	NT
0005-5399	90	3	0	0	0	0	0	6.7	**575**	**4.5**	**0.3**	0	0	17	0	0	NT
0005-5316	92	3	0	0	2.5	0.5	0	7.84	820	NT	NT	NT	NT	0	0	0	NT
0005-4040	100	2	0	0	0	0	0	7.2	550	**0.6**	0	NT	NT	NT	NT	NT	NT
0005-0536	113	5	0	0	0	0	0	NT	NT	**0.5**	0	0	0	NT	NT	NT	NT
0005-5295	120	5	0	0	2.5	0	0	6.67	335	**3**	0	NT	NT	0	0	0	NT
0005-5333	120	2	0	0	0	0	0	7.2	500	0	0	NT	NT	NT	NT	NT	NT
0005-5392	145	6	0	0	0	0	0	NT	NT	**4**	0	NT	NT	NT	NT	NT	NT
0005-4034	150	1	0	0	0	0	1	**6.35**	335	**0.35**	0	0	0	NT	NT	NT	NT
0005-5315	155	4	0	0	0	0	0	7.75	366	NT	NT	NT	NT	NT	NT	NT	NT
0005-4032	169	2	0	0	2.5	0	0	7.3	310	**0.3**	0	0	0	3	0	0	NT
0005-5344	185	6	2.5	0	0	0	0	7.5	430	0.1	0	NT	NT	2400	0	0	NT
0005-4033	190	1	0	0	3	0	3	7.3	330	**0.7**	0	0	0	5	0	0	NT
0005-5300	200	2	0	0	1	0	0	8.3	470	0.05	0	0	0	NT	NT	NT	NT
0005-5340	200	6	0	0	0	1	0	6.6	380	0	0	NT	NT	NT	NT	NT	NT
0005-1392	285	3	0	0	NT	0	0	**6.3**	560	**10**	**1.8**	NT	NT	NT	NT	NT	NT
0005-5319	285	3	0	0	0	0	0	6.8	260	0.1	0	0	0	NT	NT	NT	NT
0005-5342	310	1	0	0	0	0	0	7.2	515	**5**	0	NT	NT	NT	NT	NT	NT
0005-5312	UNK	3	0	0	0	0	0	7.86	645	NT	NT	NT	NT	NT	NT	NT	NT
0005-5328	UNK	4	0	0	0	0	0	**6.2**	260	0.15	0	NT	NT	NT	NT	NT	NT
0005-5331	UNK	5	0	0	0	0	0	7.9	1890	0.2	0	NT	NT	NT	NT	NT	NT
0005-5335	UNK	5	0	0	0	0	0	7	500	0.2	0	NT	NT	NT	NT	NT	NT
Total # People		112															

Table 6. Improperly constructed or maintained wells

Well ID.#	Well Depth	Persons Served	Nitrate – N	Nitrite – N	Ammonia – N	Detergents	Phosphate – PO4	pH	Conductivity	Soluble Iron	Soluble Mn	Nitrate Test Strip – NO3-	Nitrite Test Strip– NO2-	Total Coliform Bacteria	E-Coli Bacteria	Fecal Coliform Bacteria	Caffeine & Breakdown products	Well Type
0005-5294	80	5	0	0	0	0	0	**6.48**	234	**10**	0	NT	NT	NT	NT	NT	NT	Drilled in Pit
0005-5350	128	2	0	0	0	0	0	7.4	530	0.2	0	NT	NT	NT	NT	NT	NT	Drilled in Pit
0005-5293	UNK	10	0	0	1	0	0	6.84	444	0.15	0	NT	NT	NT	NT	NT	NT	Drilled in Pit
0005-5337	UNK	3	0	0	0	0.75	0	7.3	290	**1**	0	NT	NT	NT	NT	NT	NT	Drilled in Pit
0005-5325	60	2	0	0	0	0	0	**6.2**	270	0.1	0	NT	NT	NT	NT	NT	NT	Drilled, Open Top
0005-5397	UNK	2	0	0	0	0	0	**5.98**	194	**10**	0	0	0	NT	NT	NT	NT	Drilled, Top of Casing
0005-5329	100	4	0	0	0	0	0	**6.1**	240	**10**	0	NT	NT	NT	NT	NT	NT	Drilled, Top of Casing
0005-5388	450	5	0	0	0	0	0	**4.6**	350	0.15	0	0	0	NT	NT	NT	NT	Drilled, Used as a Cistern,
0005-5349	60	4	0	0	0	0	0	6.9	200	**0.4**	0	NT	NT	NT	NT	NT	NT	Drilled in Pit, Open Top
Total # People		37																

Table 7. Data for Spring and Mine water Sources.

Well ID.#	Persons Served	Nitrate – N	Nitrite – N	Ammonia – N	Detergents	Phosphate – PO4	pH	Conductivity	Soluble Iron	Soluble Mn	Nitrate Test Strip – NO3-	Nitrite Test Strip– NO2-	Total Coliform Bacteria	E-Coli Bacteria	Fecal Coliform Bacteria	Caffeine & Breakdown products	Water Source Type
9000-2821	6	0	0	0	0	2.5	6.5	130	0	0	NT	NT	NT	NT	NT	NT	Spring
9000-2643	4	0	0	0	0	0	7.3	300	0	0	NT	NT	NT	NT	NT	NT	Spring
9000-2644	2	0	0	0	0	0	**6.3**	140	0.2	0	NT	NT	NT	NT	NT	NT	Spring
9000-2645	4	0	0	0	0	0	8	910	0.05	0	NT	NT	NT	NT	NT	NT	Spring
9000-2646	10	0	0	0	0	0	7.4	490	0	0	NT	NT	NT	NT	NT	NT	Spring
9000-2647	12	0	0	0	0	0	**5.6**	430	0.05	**0.15**	NT	NT	73	0	0	NT	Spring
9000-2648	8	0	0	0	0	0	7.5	275	0.15	0	NT	NT	NT	NT	NT	NT	Spring
Total # People	46																

Table 8. Tabulated results from all the bacterial & caffeine analyses.

Site ID.	Total Coliform Bacteria- 24 hour	Total Coliform Bacteria -48 hour	E-Coli Bacteria- 24 hour	E-Coli Bacteria- 24 hour	Total Coliform Bacteria- 24 hour	Fecal Coliform Bacteria- 48 hour	Caffeine	1,7 - Dimethylxanthine	7- Methylxanthine	1- Methylxanthine	Site Type
0005-4032	3	5	<1	<1	<2		NT	NT	NT	NT	Drilled
0005-4033	5	7	<1	<1	<2	<2	NT	NT	NT	NT	Drilled
0004-9856	150	150	<1	<1	<2		NT	NT	NT	NT	Drilled
0005-5291	**>2400**		**57**	**66**	**66**	**60**	0.00021	0.00006	0	0	Hand-dug
0005-5292	>2400		<1	<1	<2		0	0	0	0	Hand-dug
0005-5295	<1		<1	<2	<2		NT	NT	NT	NT	Drilled
0005-5296	**>2400**		**24**	**36**	**610**		0	0	0	0	Hand-dug
0005-5298	12	20	<1	<1	<2		NT	NT	NT	NT	Drilled
0005-4036	980	1100	<1	<1	<2		0	0	0	0	Drilled
0005-5314	<1	<1	<1	<1	<2	<2	NT	NT	NT	NT	Drilled
0005-5316	<1	<1	<1	<1	<2		NT	NT	NT	NT	Drilled
0003-1954	310	460	<1	2	<2		0.00021	0	0	0	Drilled
0005-5322	**>2400**		**110**	**120**	**94**		0	0	0	0	Drilled
0005-5330	50	101	<1	<1	<2		NT	NT	NT	NT	Drilled
0005-5338	56	62	<1	<1	<2		NT	NT	NT	NT	Drilled
0005-5339	<1	<1	<1	<1	<2		NT	NT	NT	NT	Drilled
0005-5327	50	101	<1	<1	<2		NT	NT	NT	NT	Hand-dug
0005-5344	>2400		<1	<1	<2		NT	NT	NT	NT	Drilled
9000-2647	73	133	<1	<1	<2		NT	NT	NT	NT	Spring
0005-5393	**1700**	**2400**	**9**	**9**	**10**		0	0	0	0	Hand-dug
0005-5399	17	26	<1	<1	<2		NT	NT	NT	NT	Drilled
0005-5400	<1	2	<1	<1	<2		NT	NT	NT	NT	Drilled
Cram #1	**2400**		**1300**	**1600**	**740**		0	0	0	0	Stream
Cram #2	**2400**		**2400**		**4200**		0	0	0	0	Stream
Cram #3	**2400**		**2400**		**4300**		0	0	0	0	Stream
Cram #4	2400		93	101	100		0.00011	0.00004	0	0.0346	Stream
Cram #5	**2400**		**313**	**515**	**240**		0	0	0	0	Stream
Pine #1	**2400**		**980**	**1100**	**1400**		0.00034	0.00005	0.136	0	Stream
Pine #2	2400		100	120	150		0	0	0.0242	0	Stream
Pine #3	**2400**		**580**	**650**	**2400**	**1300**	0.00007	0	0	0	Stream
Pine #4	2400	>2400	81	86	84		0	0	0	0	Stream

Table 9. Comparison of field screening and laboratory verification analyses.

Well ID. Number	Nitrate– N field	Nitrate Test Strip – NO_3^-	Nitrate – N Laboratory	Nitrite – N field	Nitrite Test Strip – NO_2^-	Nitrite – N Laboratory	Ammonia - N field	Ammonia -N Laboratory	Phosphate - PO_4 field	Phosphate Laboratory	Iron field	Iron Laboratory	Manganese field	Manganese Laboratory
0005-1392	0	NT	0	0	NT	0	NT	.402	0	.007	**10+**	**43.7**	**1.8**	**2.6**
0005-5311	0	2.3	.981	0	0	0	NT	0	0	0	**0.6**	**.514**	0	**.267**
0005-5313	0	NT	.200	0	NT	0	NT	0	0	0	.05	.166	0	.014
0004-6718	0	0	0	0	0	0	NT	.351	0	.032	**10+**	**20.5**	0	**.878**
0004-9147	0	NT	0	0	0	0	1.0	.127	0	.054	**1.0**	**1.17**	0	**.233**
0005-0534	0	NT	.037	0	NT	0	0	.463	0	.065	0	NT	0	NT
0005-5296	2.5	11.5	5.48	0	NT	0	2	0	0	.007	0	.063	0	.006