Wellhead Protection Plan

Public Water Supply District #3

May 2010

Table of Contents

Department of Natural Resources
Public Drinking Water Branch

Guidelines for Developing a Source Water Protection Plan

General Information

Small Water System or Name: Public Water Supply District No. 3
System or Mailing Address: 106 SE 421 Road
Warrensburg, MO 64093
PWSID #: 1024311
Phone: (660)-429-2494
Primary Contact: David Streeter, General Manager
Phone Numbers: 441-7428 (cell) 816-835-7220 (home)
(Person responsible for water quality)
Directions to your location: Approximately 4 miles east of the town of Warrensburg, MO on DD Hwy. Turn right on SE 421 Road and immediately turn right at the next driveway.

Source/ Plan/ Funding Information

Source New or Existing? Existing
Source Type: Ground
Plan Original or Update: Update
Funding Sources for Plan Development: Internal

Background Information

What was the land used for before the establishment of the system? Residential and Farmland
How is the water used? Residential
Number of wells or springs: 3 Wells
Approximate year drilled: #1 well 1970 #2 well 1973 #3 well 2003
Driller's names: Wells number 1 and 2 were drilled by John Beckett Drilling, and Well number 3 was drilled by Harper Drilling Company
Depth of each well: #1 well – 600 feet, #2 well – 710 feet, #3 well – 1300 feet
List of Parameters that may be pertinent to understanding raw water quality: Roubidoux Aquifer
Assess elements of the raw water source's quantity and quality: Roubidoux Aquifer
Treatment: Chlorine is added when water is pumped from the wells.
Determination if current treatment is sufficient to handle characteristics of raw water: Acceptable

Is the overall treatment applied to the raw water sufficient to maintain finished water drinking water quality standards? Acceptable

Watershed or Wellhead Area Delineation and Inventory

Description of the geology of the identified protection area: Limestone
What method was used to delineate the area: Tape
Are maps of the delineated area included with the submitted document? Yes, maps included
Total Lake Surface and protection area in acres: See delineation map.
Number of Ponds, Lakes, Rivers, Streams and Wells: 1 Pond, 1 Wet Weather Creek, 2 Lagoon Systems, 3 Wells that are still in use
Was the geological survey and resource assessment division contacted to share global positioning information? Used website for information.
Types of agricultural practices within protection area: Livestock and Row Crop
Security Issues: Currently we have no external lighting around the critical components of the water system. We plan to put up external lights. Hickory Hills has a neighborhood watch but currently PWSD #3 is not involved. We should talk to the director of the neighborhood watch program to get involved.
Total number of acres of each: Cropland, Grassland, and Woodland etc. within the source water protection area: See delineation map for buffer zone.
Description and location of wastewater treatment facility discharge if it is within the protection area: 2 Wastewater Lagoon Systems in Hickory Hills located ½ to 1 mile from #1 and #2 Wells. The South Lagoon is located in Zone 2 and the North Lagoon is located in Zone 3 of the Wellhead Protection Area.
Any concentrated animal feed operations? None
List of potential or actual contaminant sites in the protection area: See Contaminant Inventory List on Pages 12 and 13
Description of the associated risk and potential impact of listed contaminants in the protection area: See Contaminant Inventory List on Pages 12 and 13
How will the plan be updated with information pertaining to the resolution of risks from listed contaminant sources? The Wellhead Protection Plan will be updated on an annual basis.

Source Water Protection Management Plan Information

Description of implementation practices planned to contain, eliminate or reduce the risks of contamination: Educational material such as Brochures and Newsletters dedicated to Wellhead Protection will be distributed to property owners throughout the Wellhead Protection Area to educate the public on how to properly dispose hazardous chemicals. We have also posted signs in the Wellhead Protection Area to remind people not to dump harmful contaminants.
For more information see Management Strategies on Page 20

Very specific information including plan of action for managing contamination: See Emergency Plan on Pages 21 - 23

A chronological listing or mention of when implementation of management practices will be utilized: See Management Strategies on Page 20

Description of measures taken to meet finished water standards: Chlorine added and detention time in Clearwell

Is protection plan mentioned in the annual Consumer Confidence Report published by the supply? Yes

How will the information that you gained in the writing of the plan be used to manage these sites in the future? This plan is intended to educate the customers of PWSD #3 on ways they could help protect our public drinking water facility via discussion with Wellhead Protection Committee members, newsletters, and brochures. The more we educate the public about harmful products the more aware they become of what they are putting in the environment.

What method of surveillance will be used to document changes in the source water protection area, and how frequently will these be completed? We intend on contacting the Hickory Hills Neighborhood Watch to get involved. The facility will also be surveyed on a daily basis by PWSD #3 maintenance technicians.

Indicate how often and by what method the plan will be reviewed and updated: Each year the Wellhead Protection Committee will look over the plan and make necessary updates.

List how the public will be involved in the project's future: Education material pertaining to Wellhead Protection will continue to be mailed to PWSD #3 customers and companies that have been identified as potential contaminants. We have also encourage local business owners and property owners within the Wellhead Protection Area to get involved in creating the Wellhead Protection Plan.

Wellhead Protection Plan

Missouri
Missouri Rural Water Association

Introduction

The purpose of the Wellhead Protection Plan is to protect the drinking water source for Public Water Supply District No. 3. Our Wellhead Protection Area consists of mostly residential home owners and a few local businesses. The key to a successful Wellhead Protection Plan is communication. Educating our customers on ways they could help protect our public drinking water facility is the only way to help keep the public drinking water from being contaminated. Our Wellhead Protection Committee is a team of individuals committed to doing everything we can to protect our public drinking water. The committee is made up of PWSD #3 staff, local business owners, PWSD #3 customers and concerned citizens. Brochures and Newsletters pertaining to Wellhead Protection will be distributed throughout the District to educate and inform the customers of Public Water Supply District No. 3. These brochures and newsletters will also be available at our office.

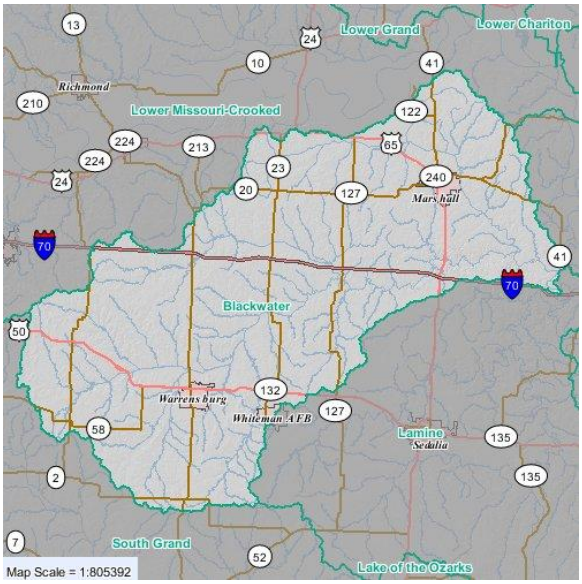
Plan Objective

The objective of the Wellhead Protection Plan is to protect the health and well being of all Public Water Supply District No. 3 customers. Information and education on ways to keep our public drinking water from being contaminated is a great way to protect both public health and the environment. Discussing this plan and distributing newsletters and brochures will inform the public of the situation and the negative effect dumping toxic chemicals has on our water supply.

System Overview

Johnson County

Public Water Supply District No. 3 of Johnson County is located just outside the city of Warrensburg and supplies water to rural areas. PWSD #3 operates three deep wells ranging from 600 feet to 1300 feet all located within the Blackwater River watershed. Our water comes from the Roubidoux aquifer and serves a population of 4,082 with an average daily demand of 225,550 gallons. The Missouri Public Drinking Water Program considers Public Water Supply District #3's wellfield to be of low / medium susceptibility based on the factors outlined below.



Public Water Supply District #3's source type is strictly ground water which is considered low susceptibility to contamination. We are also located in a low susceptible aquifer because it is more than 100 feet deep. All three of our wells are more than 100 feet deep so chemicals that could potentially seep into the ground are still highly unlikely to contaminate the public drinking water. Within the wellhead protection area, the land use is characterized by mainly rural areas. There have been no known positive tests for Volatile Organic Chemicals (VOC), Synthetic Organic Chemicals (SOC), Inorganic Chemicals (IOC), or "nitrate" that was at or above ½ the MCL. Major highways that are located within the PWSD #3 wellhead protection area would be DD Hwy. 13 Hwy, Y Hwy, and PP Hwy are just outside of our wellhead protection area but could still be of concern. Public Water Supply District No. 3 is in compliance with all state and federal drinking water regulations.

Implementation Strategy

Public Water Supply District No. 3's Wellhead Protection Committee will meet with local landowners, local business owners, City / County officials, and customer of PWSD #3 to discuss actions that could be taken to protect our public drinking water supply. Brochures and Newsletters with information on ways people can help protect the Wellhead Protection Area will be distributed to homes and businesses located within the Wellhead Protection Area.

Wellhead Protection Committee

Below is a list of people who participated and helped PWSD #3 create and execute a Wellhead Protection Plan. This committee will meet on an annual basis to review and make necessary updates to the Wellhead Protection Plan. Team members include:

Angie Sanders – Project Clerk – PWSD #3
Trudy Tate – Project Clerk – PWSD #3
David Streeter – General Manager – PWSD #3
Reggie Nelson – District Clerk – PWSD #3

For more information on PWSD #3's Wellhead Protection Committee please contact:
Public Water Supply District No. 3
Angie Sanders
106 SE 421 Rd
Warrensburg, MO 64093
660-429-2494

Delineation

Public Water Supply District No. 3 has chosen a one mile fixed radius as the wellhead protection zone. We have also included businesses or home owners that are outside of the zone but may be of concern such as Allied Waste and many more.

Johnson Co. PWSD #3

PWSS No. 1024311

Johnson County, Map 1 of 2

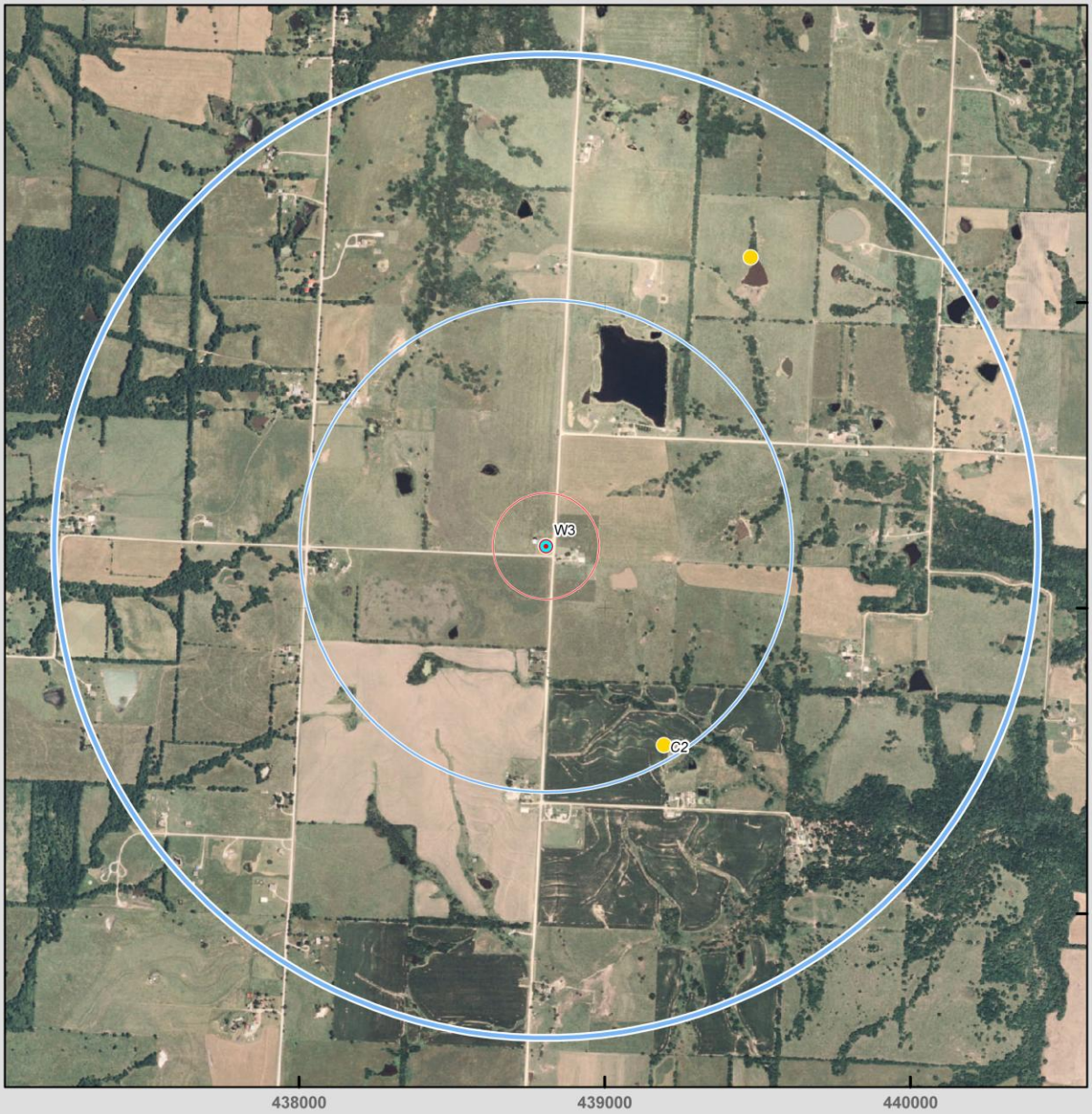
3 wells, 2 potential contaminant sources

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Map Update: Nov 11, 2009



Well System

- System Well

SWAP Delineation Boundary

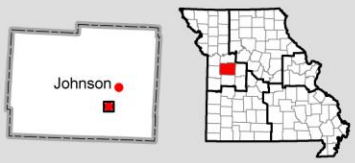
- 20-year time of travel
- Half-mile buffer
- One-mile buffer

Potential Contaminant Source

- Database Source (Location Confirmed)
- Database Source (Location Unconfirmed)
- SWIP Field Data

Miles

0 0.25 0.5



SWAP - Source Water Assessment Plan -- http://drinkingwater.missouri.edu/swap/
Aerial photos from 2007 USDA NAIP or the 2007 Missouri Leaf-Off Imagery Program (Eastern MO)

Johnson Co. PWSD #3

PWSS No. 1024311

Johnson County, Map 1 of 2

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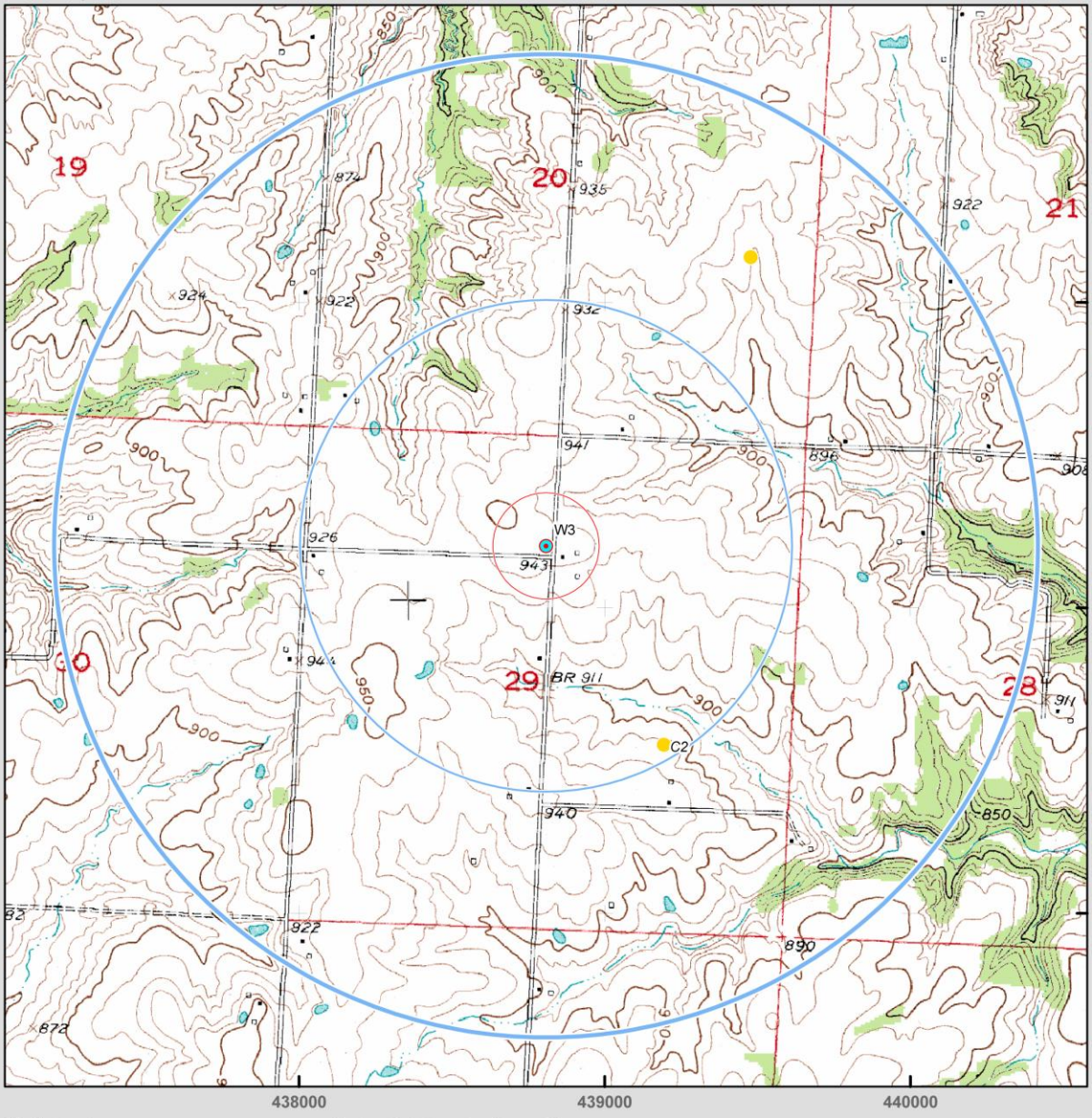

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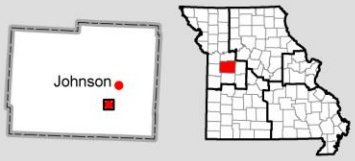

Johnson Co. PWSD #3

PWSS No. 1024311

Johnson County, Map 2 of 2

3 wells, 2 potential contaminant sources

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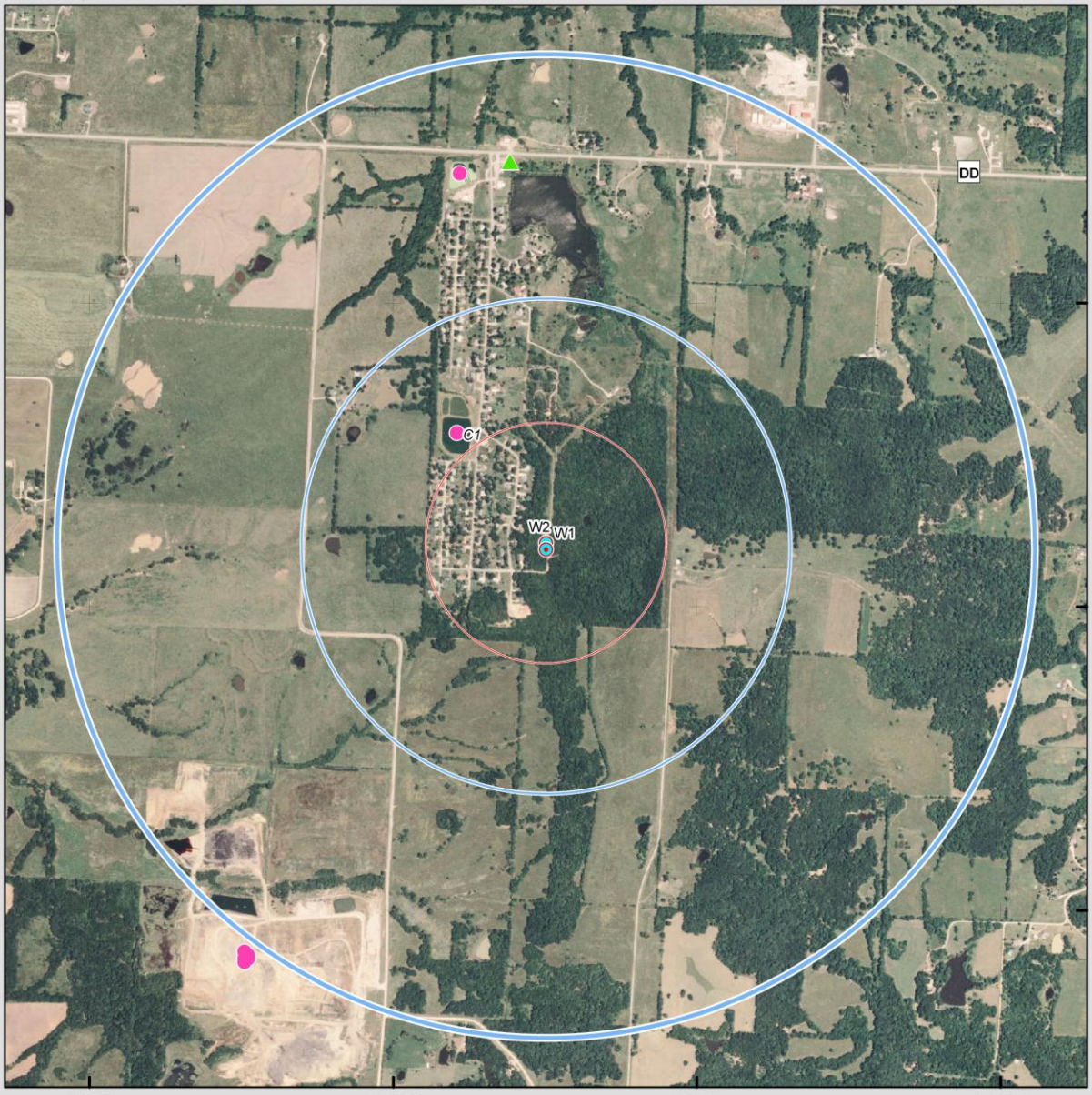

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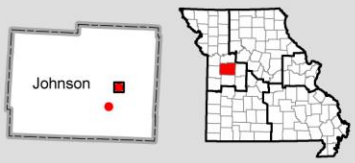

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Johnson Co. PWSD #3

PWSS No. 1024311

Johnson County, Map 2 of 2

3 wells, 2 potential contaminant sources

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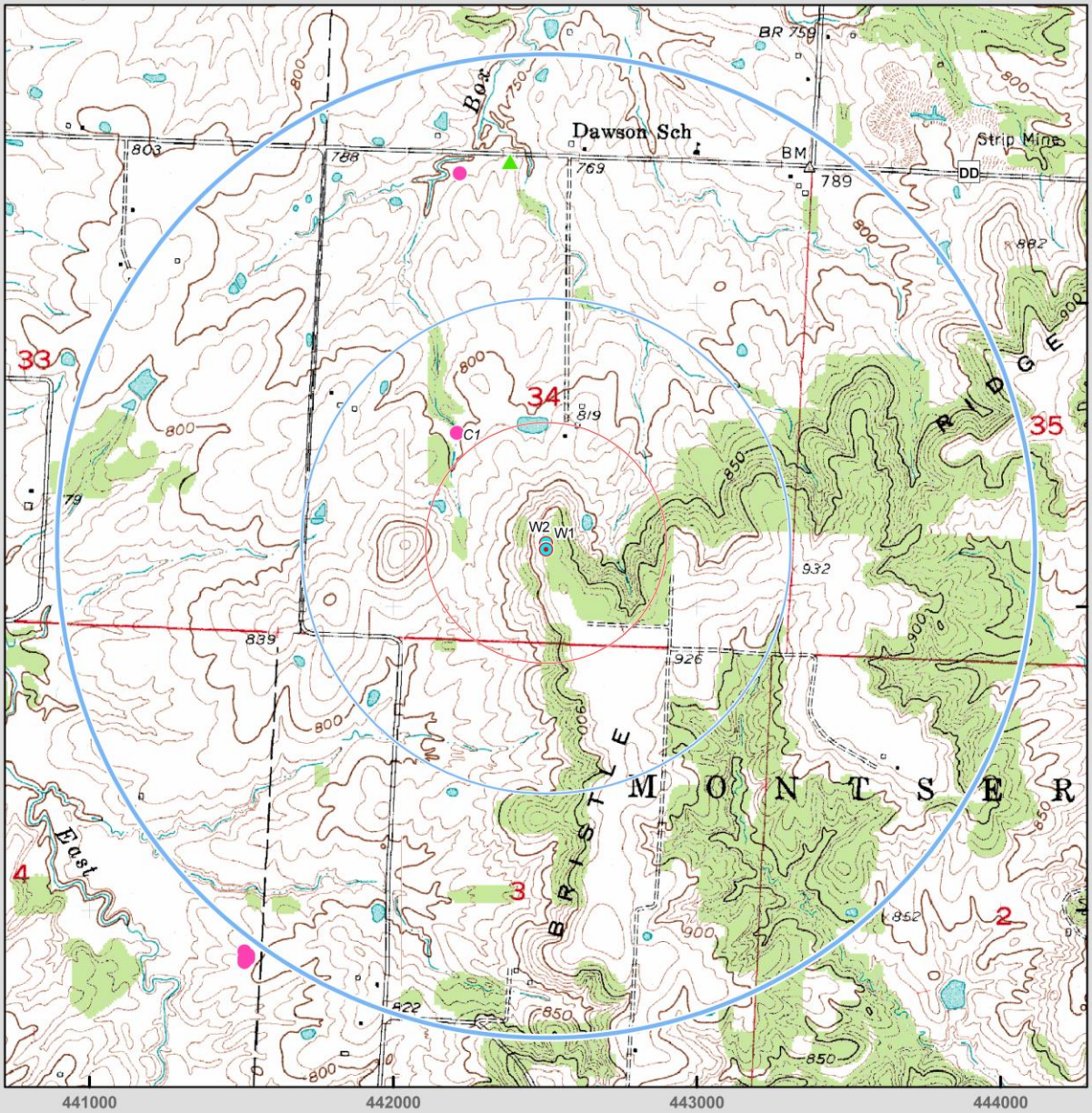

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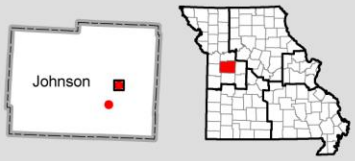

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Inventory

An inventory was conducted by the Wellhead Protection Committee via the University of Missouri CARES system, on-site verification and discussion. Taking an inventory of potential risks within our Wellhead Protection Area will help to identify and monitor these sites for potential contaminations. This inventory will consist of substances that could potentially contaminate the source water such as synthetic organic chemicals, volatile organic chemicals, fuel, oils, pesticides, nutrients, animal or human waste, etc.

The most likely threats to Public Water Supply District No. 3's source water supply would be chemicals such as fertilizers and pesticides that are applied to the agriculture surrounding our wells. Below is a list of other potential contaminant threats.

CONTAMINANT INVENTORY

NAME (cont. i.d.)	LOCATION	TYPE	CONTACT	THREAT
Show-Me Sanitary Landfill	230 South 421 Rd. Warrensburg, MO 64093 Zones 3 & 4	Solid Waste Landfill	Allied Waste Industries. Inc. 660-7474-7697	Groundwater contamination
Union Pacific Railroad	Runs east – west through Wells 1 & 2 Zone 4	Railroad	1-888-877-7267	Surface spills of petroleum and hazardous substances
St. Louis Southwestern Railroad – Missouri Central Railroad Company	Runs east – west though southern part of PWSD #3 Zone 4	Railroad	Jordan Buck, Missouri Central Railroad Comp. 618-667-9803 or AmerenUE 800-552-7583	Surface spills of petroleum and hazardous substances
LaFarge Cement	247 NE Division Warrensburg, MO 64093 Zone 4	Cement (ready-mix) plant	1-816-257-4040	Surface spills of petroleum and hazardous substances
Whiteman Air Force Base	Knob Noster, MO Zone 4	Store and Gas Station, Private wells, etc.	Public Affairs office at 660-687-6126	Petroleum spills, above ground storage tanks and potential conduit for contaminants
Public Water Supply District No. 3	SE 421 Rd. & Sycamore Rd. Zone 2	Lagoon System	PWSD #3	Biological contaminants
Public Water Supply District No. 3	106 SE 421 Rd. Zone 3	Lagoon System	PWSD #3	Biological contaminants
State Park Village Sewer	101 SE 591 Rd. Zone 4	Sewage Treatment Plant	Lisa Simpson 660-747-9900	Biological contaminants
DD Express	101 SE 421 Rd. Zone 3	Store and Gas Station	660-429-6684	Petroleum spills, above ground storage tanks
Landshire Foods, Inc.	97 SE 341 Rd. Zone 4	Food Processor Food & Beverage Manufacturer	660-747-2999 800-468-3354	
State Highway 13 Project	To run north – south on west side of wells 1 & 2 Zone 4	State Highway	MoDOT 1-888-275-6636	Surface spills of petroleum and hazardous substances due to close proximity to wells

Agriculture	Near well #'s 1, 2, & 3 Zone	Row crop farming and pasture land	Private land owners/farmers	Herbicides, pesticides, fertilizers, nutrients impacting shallow groundwater.
Private wells	Near well #'s 1, 2, & 3	Private wells	Private landowners	Potential conduit for contaminants
Miscellaneous above ground storage tanks		Above ground storage tanks containing petroleum		Surface spills of petroleum
Adams Memorial Cemetery	SE 521 Rd. Zone 4			
Sutton Cemetery	SE 301 Rd. Zone 4			
Greer Cemetery	SE PP Hwy & SE 371 Rd. Zone 4			
Mt. Zion Cemetery	13 Hwy & SW 600 Rd. Zone 4			
Mineral Creek Cemetery	2 Hwy Zone 4			

Other contaminant risks not specifically identified in the above table, but believed to be present near, or within the WPA include the following:

- Septic systems: potential for leakage of biological contaminants to the groundwater.
- Active or abandoned private wells and cisterns: potential conduit for contaminants to impact groundwater.

Public Water Supply District #3 Production Date: April 2010 **PWSS No. 1024311** **Susceptibility Determination** **3 Wells**	Missouri Department of Natural Resources

Although all data in this data set have been used by the Missouri Department of Natural Resources (MoDNR), no warranty, expressed or implied, is made by the MoDNR as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the MoDNR in the use of these data or related materials. This report is subject to change as additional information is acquired.

The Missouri Department of Natural Resources (MoDNR) has assembled this information on the accompanying pages in order to assess the susceptibility of the drinking water source to contamination. MoDNR makes no claim that this information is 100% accurate. There are many unforeseen and unpredictable factors that may cause a source to be contaminated. The overall susceptibility of the water system is equal to the highest susceptibility achieved in any category of the table below. A susceptible water source is still capable of providing safe drinking water. MoDNR routinely monitors all public supplies to ensure public health is protected. Public water systems and local communities are encouraged to take all measures possible to reduce the susceptibility of their drinking water source. For more information call 1-800-334-6946.	Not Susceptible	Moderately Susceptible	Highly Susceptible	No Data
A system is highly susceptible because of construction deficiencies if:				
A well was not constructed according to plans approved by PDWP	X			
A well was not cased to a depth approved by DNR	X			
A well casing is not of sufficient weight	X			
A well is not sufficiently sealed (grouted) around the casing, or A well has developed holes in the casing or other flaws that compromise its integrity.	X			
A system is highly susceptible due to direct influence of surface water if:				
A well has tested positive for surface water indicators such as algae or high turbidity				X
A system is highly susceptible to surface contaminants if:				
A well casing does not extend 12 inches above the wellhouse floor, or 18 inches above the ground surface	X			
A well casing does not extend four feet above the 100-year flood level, or four feet above the highest known flood elevation	X			
A well is not provided with a property screened vent	X			
All openings in a well casing are not properly sealed	X			
A system is highly susceptible based on detection				

histories if:				
Volatile Organic Chemicals (VOCs) have been detected in a well	X			
Synthetic Organic Chemicals (SOCs) have been detected in a well	X			
Inorganic Chemicals (IOCs) have been detected in a well above naturally occurring level	X			
Nitrates have been detected at or above one-half the MCL	X			
Bacteria has been consistently detected in a well	X			
Viruses or microbiological contaminants are detected in a well	X			
A system is highly susceptible to weather vandalism, and sabotage if:				
A well is not in a locked well house of adequate construction	X			
A system is moderately susceptible due to local geology if:				
A producing aquifer is less than 100 feet below the surface	X			
A producing aquifer has conduit flow conditions due to surficial karst topography	X			
A producing aquifer is not overlain by an impermeable confining layer	X			
A producing aquifer is overlain by a conductive (>5X 10e-4) formation (including soil)	X			
A producing aquifer is confined, but there are open wells nearby penetrating that layer	X			
A system is moderately susceptible to contaminants if:				
Any contaminants listed in Appendix F-a are found in the source water area				
Septic systems are present in the source water area	X			
A well is indirectly connected to a surface water body	X			
A submersible well pump cannot be ruled out from containing PCBs or PAHs	X			
There is a high density of transportation corridors in the source water area	X			
A system is highly susceptible to contamination if :				
Any contaminant sites identified in the source water area are known to have contaminated groundwater that may migrate toward a well.	X			

For more information contact the Missouri Department of Natural Resources at www.dnr.mo.gov. The Source Water Assessment Plan may be found by visiting the Department of Natural Resources Web site at http://drinkingwater.missouri.edu/swap/index.html.

Johnson Co. PWSD #3

PWSS No. 1024311
Johnson County
3 wells

Prepared by:
CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Nov 25, 2009

Well Number	W1	W2	W3
Extended PWS #	1024311101	1024311102	1024311103
Local Well Name	Well #1, South	Well #2, North	Well #3
Well ID #	14605	14606	16978
DGLS ID #	026553		029031
Facility Type	Water District	Water District	Water District
Status	Active	Active	Active
Latitude	38.7315	38.73169	38.6683
Longitude	-93.6615	-93.66151	-93.7034
Location Method	DOQQ	DOQQ	PLSS
Method Accuracy (ft)	33	33	32000
USGS 7.5 Quadrangle	Cornelia	Cornelia	Cornelia
County	Johnson	Johnson	Johnson
MoDNR Region	Kansas City	Kansas City	Kansas City
Date Drilled (year)	1983	1983	2004
Material (C/U)	Consolidated	Consolidated	Consolidated
Base of Casing Formation	Cotter	Pennsylvanian	Roubidoux
Total Depth Formation	Roubidoux	Jefferson City	Eminence
Total Depth	700	600	1300
Ground Elevation (ft)			945
Top Seal	Cement Grout		Pressure Grout
Bottom Seal			Pressure Grout
Casing Depth (ft)	500	200	700
Casing Size (in)		6	12
Casing Type	Steel	Steel	Steel
Elev. of Casing Top (ft)			
Outer Casing Depth (ft)			20
Outer Casing Size (in)			18
Screen Length (ft)	No Screen	No Screen	No Screen
Screen Size (in)	No Screen	No Screen	No Screen
Static Water Level (ft)	275	275	290
Well Yield (gpm)	160	160	600
Head (ft)	80	80	540
Draw Down (ft)	160	120	117
Pump Test Date (year)			2004
Pump Type	Submersible	Submersible	Submersible
Pump Manufacturer			
Pump Depth (ft)			483
Pump Capacity (gpm)	160	160	475
Pump Meter (Y/N)			
VOC Detection (Y/N)	N	N	
Nitrate Detection (Y/N)	N	N	
Chlorination (Y/N)	Y	Y	Y
Filtration (Y/N)	N	N	
GWUDISW (Y/N)			
Surface Drainage			
State Approved(Y/N)			
Date Abandoned (year)			
Date Plugged (year)			

Johnson Co. PWSD #3

PWSS No. 1024311

29101 County

2 potential contaminant sources

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Nov 13, 2009

Map C.No.	CARES ID	Site Name	Type	Location Code	Accuracy Code	Method Code	Database Code
C1	103425	Johnson Co Pwsd#3,hic	Wqis Entry	UN	33 ft	I2	WQIS
C2	103444	Myers, Martin		UN	NV	UN	WQIS

Method Codes

Code	Address Matching (Geocoding)
A2	Block/Group
A3	Street Centerline
A4	Nearest Street Intersection
A5	Primary Street Name
A6	Digitization
AO	Other Address Matching
Z1	ZIP Code Centroid
	Census - 1990
C1	Block Centroid
C2	Block/Group Centroid
C3	Tract Centroid

Code	Global Positioning System
G1	Static Mode
G2	Kinematic Mode
G3	Differential Post Processing
G4	Precise Positioning Service
G5	Signal Averaging
G6	Real Time Differential Processing
	Interpolation
I1	Topo Map
I2	Aerial Photography (DOQQ)
I3	Satellite Imagery

Code	Other
P1	Land Survey
S2	Quarter Description
UN	Unknown

Location Codes

BL	Building
CF	Center of Facility
IN	Intersection
LS	Lagoon or Pond
MG	Main Access Point (Gate)
MA	Main Office
OT	Other
PL	Pile
RD	Road
TK	Tank, Standpipe, or Tower
WL	Well
UN	Unknown

Accuracy Codes

Code	Metric
m	Meters
km	Kilometers
	English
ft	Feet
yd	Yards
mi	Miles
UN	Unknown
NF	Site not found at database position
NV	Site position not verified

Johnson Co. PWSD #3

PWSS No. 1024311

Contaminant Summary Sheet

2 potential contaminant sources

Prepared by:

CENTER FOR APPLIED RESEARCH AND ENVIRONMENTAL SYSTEMS UNIVERSITY OF MISSOURI

Missouri Department of Natural Resources

Sheet Update: Nov 13, 2009

2 Potential Contaminant Sources in the Listed Databases:

AFS (EPA AIRS Facility Sites)	Perchlo (MoDNR Perchlorate Sites in Missouri)
APCP (MoDNR Air Pollution Control Program Sites)	Pest Ap (MDA Licensed Pesticide Applicators)
APF (MoDNR Active Permitted Landfills & Transfer Stations)	RCRIS (EPA Resource Conservation and Recovery Information System)
CERCLIS (EPA CERCLIS)	Silos (USGS Minuteman II Missile Silos)
Chemcov (VA Selected Chemical Sites)	SMARS (MoDNR Superfund Management and Registry System)
Dealcov (MDA Pesticide Dealer Locations)	Tanks (MoDNR Petroleum Tank Database)
Dioxin (MoDNR Confirmed Dioxin List)	Tier 2 (MERC Tier II Reports)
Grain B (USDA Former Grain Bin Sites)	Tire D (MoDNR Resolved and Unresolved Waste Tire Dumps)
HW Gen (MoDNR Hazardous Waste Generators)	TRI (EPA Toxic Release Inventory)
HW Tran (MoDNR Hazardous Waste Transporters)	VCP (MoDNR Voluntary Cleanup Program Sites)
LUST (MoDNR Leaking Underground Storage Tanks)	2 WQIS (MoDNR Water Quality Information System)
MoDOT (MoDOT Highway Maintenance Facilities)	
PADS (EPA PCB Activity Data Base System)	SWIP Field Inventory (see below)

No Potential Contaminant Sources in the SWIP Field Inventory:

0	Airport or abandoned airfield	0	Machine or metalworking shop
0	Animal feedlot	0	Manufacturing (general)
0	Apartments and condominiums	0	Material stockpile (industrial)
0	Asphalt plant	0	Medical institution
0	Auto repair shop	0	Metal production facility
0	Automotive dealership	0	Mining operation
0	Barber and beauty shop	0	Other
0	Boat yard and marina	0	Paint store
0	CAFO	0	Park land
0	Campground	0	Parking lot
0	Car wash	0	Petroleum production or storage
0	Cement Plant	0	Pharmacies
0	Cemetery	0	Photography shop or processing lab
0	Communication equipment mfg	0	Pit toilet
0	Country club	0	Plastic material and synthetic mfg
0	Dry cleaner	0	Print shop
0	Dumping and/or burning site	0	Railroad yard
0	Electric equipment mfg or storage	0	Recycling/reduction facility
0	Electric substation	0	Research lab
0	Farm machinery storage	0	Restaurant
0	Feed/Fertilizer/Co-op	0	Sawdust pile
0	Fire station	0	School
0	Funeral service and crematory	0	Sports and hobby shop
0	Furniture manufacturer	0	Swimming pool
0	Furniture repair or finishing shop	0	Tailing pond
0	Garden and/or nursery	0	Tank (above-ground fuel)
0	Garden, nursery, and/or florist	0	Tank (other)
0	Gasoline service station	0	Tank (pesticide)
0	Golf courses	0	Tank (underground fuel)
0	Government office	0	Trucking terminal
0	Grain bin	0	Veterinary service
0	Hardware and lumber store	0	Wastewater treatment facility
0	Hazardous waste (Federal facility)	0	Well (abandoned)
0	Highway maintenance facility	0	Well (domestic)
0	Jewelry or metal plating shop	0	Well (irrigation)
0	Junk yard or salvage yard	0	Well (livestock)
0	Lagoon (commercial)	0	Well (monitoring)
0	Lagoon (industrial)	0	Well (public water supply)
0	Lagoon (municipal)	0	Well (unknown)
0	Lagoon (residential)		
0	Landfill (municipal)		
0	Laundromat		
0	Livestock auction		

Management Strategies

Once the risks and threats have been identified the next step would be to establish an effective Wellhead Protect Plan to prevent or reduce/eliminate potential contaminations. To achieve this objective we must perform the following tasks.

1) Public Water Supply District No. 3's Wellhead Committee will submit the Wellhead Protection Plan to the Missouri Department of Natural Resources for their review. This plan will be submitted in 2010.
2) The Committee will routinely observe activities within the Wellhead Protection Area and report all pertinent information to the Missouri Department of Natural Resources, Public Drinking Water Branch. This will be done on a daily basis.
3) The Wellhead Committee will contact representatives of Show-Me Landfill, Union Pacific Railroad, Missouri Central Railroad Company, LaFarge Cement, Whiteman Air Force Base, State Park Village Sewer, DD Express, Landshire Foods, Missouri Dept of Transportation, Adams Memorial Cemetery, Sutton Cemetery, Greer Cemetery, Mt. Zion Cemetery, and Mineral Creek Cemetery to present and discuss our approved Wellhead Protection Plan and strategies to prevent contaminants from entering the groundwater source. To be completed once our Wellhead Protection Plan has been approved by Missouri Department of Natural Resources.
4) The Committee will review and update the potential contaminant source inventory with any significant changes within the Wellhead Protection Area. To be completed in 2010 once our Wellhead Protection Plan has been approved and continued annually.
5) In addition to updating the inventory list, the Committee will also make necessary changes to the Wellhead Protection Plan. To be completed in 2010 once our Wellhead Protection Plan has been approved and continued annually.
6) The District will create newsletters and brochures to educate the customers of PWSD #3 about Wellhead Protection. This task is to be completed in 2010.
7) The Committee will help land owners that have abandoned wells apply for funding to plug their abandoned wells. This funding opportunity is mentioned in our Wellhead Protection brochures and newsletters. This task is to be completed as necessary.
8) The District will not store chemicals (other than water treatment chemicals) or allow chemicals to be stored on property owned by the District within 300 ft. of the Wellhead Protection Area. This task will be done on a daily basis.
9) The District will not apply chemicals on property owned by the District within 100 ft. of their sources. The property has signs posted that read: "Wellhead Protection Area – No Chemicals To Be Applied". This task will be done on a daily basis.
10) PWSD #3 has contingency arrangements as follows: The District has an emergency interconnect agreement with the Town of Leeton. If an emergency were to occur near our water sources we would still be able to supply water to the customers of PWSD #3. This will be done on an as needed basis.
11) PWSD #3 staff will continuously monitor for any potential problems or contaminants. This will be done on a daily basis.

Emergency Plan

In the event of a spill or contamination Public Water Supply District No. 3 will contact the appropriate authorities listed in the Emergency Plan. Listed below are Emergency Contacts that should be called to assist in the event of a major disaster and PWSD #3's guidelines to follow during an emergency.

Johnson County Ambulance Service: 911

Warrensburg Fire Department: 660-747-9136
Knob Noster Fire Department: 660-747-2233
Johnson County Fire District: 660-747-5220

Warrensburg Police Department: 660-747-9133
Police Department Dispatch Office: 660-747-2211
Johnson County Sheriff Department: 660-747-5511
Missouri Highway Patrol:
Local: 660-584-5577
Central Office: 573-751-3313

Missouri Department of Transportation:
Local: 816-622-6500
Central Office: 1-888-275-6636

Missouri Department of Natural Resources:
Jefferson City: 573-751-3443
Kansas City Regional Office: 816-622-7000
Emergencies: 573-634-2436

CHEMTREC: 1-800-424-9300

State of Missouri State Emergency Management
Agency (SEMA): 573-526-9100 during business hours
573-751-2748 all other times

Missouri Emergency Response Commission:
(MERC): 573-526-9239

Johnson County Local Emergency:
Planning Committee (LEPC): 660-747-2666.
Emergencies: 660-441-0297

U.S. Food and Drug Administration (FDA):
Poison Control Center: 1-800-222-1222

Neighboring Water Systems:

PWSD #1 (Warrensburg): 429-2231
PWSD #2 (Holden): 816-732-6658
MO-AWC (Warrensburg): 747-3191
Knob Noster Water (Knob Noster): 563-2595
Leeton Water (Leeton): 653-4622
Lafayette #2 (Higginsville): 660-584-2344

Missouri Rural Water Association:

Mike Hollis: 573-996-8814
Joe Anstine: 660-653-2360
Tom Hyatt: 573-783-1745
Billy Everett: 417-455-6275

Emergency Response Plans – For Contamination of Source

1. Notify the Following:
   a. Media
   b. Customers
   c. SEMA: 573-526-9100
      573-751-2748
   d. Johnson County Local Emergency Planning Committee: 660-747-2666.
2. Shut down the wells.
3. Valve off storage tank.
4. Arrange for water testing.
5. Determine extent of contamination.
6. Provide safe water to customers.
7. Stay in contact with regulatory agency until contamination has been stopped.
8. When contamination of source is abated:
   a. Restore plant to service
   b. Flush system, if necessary, and restore it to service.
9. Notify the media, customers, SEMA, and Missouri DNR to let them know service has been restored.

Emergency Response Plans – For Contamination of System

1. Notify the Following:
   a. Media
   b. Customers
   c. SEMA: 573-526-9100
      573-751-2748
   d. Johnson County Local Emergency Planning Committee: 660-747-2666.
2. Shut down the treatment plant, if necessary to prevent spread of contamination.
3. Provide safe water to customers.
4. Valve off uncontaminated tanks.
5. Flush out affected portion of system.
6. Arrange for water analyses.
7. Stay in contact with regulatory agency until contamination is eliminated.
8. Restore system to full service.
9. Notify the media, customers, SEMA, and Missouri DNR to let them know service has been restored.

Emergency Response Plans – For Chlorine Release – Minor Leak

In case of minor chlorine leak, immediately contact the local fire department hazardous chemical unit.

Emergency Response Plans – For Chlorine Release – Major Leak

In case of a major leak, immediately contact the local fire department hazardous chemical unit. The Sheriff's department will evacuate the public downwind of the leak.
Notify the following:

SEMA: 573-526-9100
573-751-2748
Missouri Department of Natural Resources
Environmental Emergency Responses: 573-634-2436

Emergency Response Plans – For a Hazardous Materials Spill

If a hazardous material spill contaminates the raw water source, the water treatment plant will be shut down. The above ground storage will be utilized until the water is safe to treat. If this requires more time than the above ground storage tank can provide, the emergency response plan for contamination of source will be put into effect.

If a hazardous material spill contaminates the distribution system, the possibly contaminated part of the system will be valved off and tested. If contaminated, the emergency response plan for contamination of system will be put into effect.

Recommendations

Public Water Supply District No. 3's Wellhead Protection Committee would like to encourage everyone to become involved in protecting our public drinking water. The best way to help protect your water supply is to do it yourself through local community involvement. Becoming a member of your local Public Water Supply Wellhead Protection team enables you to protect the ground water you, your family, and your neighbors drink. Protecting our source water today is the most effective way to guarantee safe drinking water for future generations. By performing the actions that have been identified in this plan we should be able to achieve our objectives.

Wellhead Protection Committee Signatures

Angie Sanders
PWSD #3 Project Clerk _____

Trudy Tate
PWSD #3 Project Clerk _____

David Streeter
PWSD #3 General Manager _____

Reggie Nelson
PWSD #3 District Clerk _____

2009
Annual Water Quality Report
(Consumer Confidence Report)
Public Water Supply District No. 3 of Johnson County
106 SE 421 Rd Warrensburg, MO 64093
MO1024311

What is an Annual Water Quality Report?

The State of Missouri and the U.S. Environmental Protection Agency requires all Public Water Supplies to send out a Consumer Confidence Report (CCR) to describe the quality of the water people are consuming. The guiding principle behind CCRs is that all people have the right to know what is in their drinking water and where it comes from. The CCR provides an opportunity for water suppliers to educate consumers about the sources and quality of their drinking water. In compliance with the Safe Drinking Water Act, Public Water Supply District No. 3 is delivering this CCR to all its customers. **We ask that landlords, employers, and anyone else who receives the water bill for other water users to share this report with them.** Additional copies of this report are available by contacting our office at 660-429-2494. This report is intended to provide you with important information about your drinking water and the efforts made to provide safe drinking water. It includes basic information on the source(s) of water, the levels of any contaminants detected in the water, and compliance with other drinking water rules, as well as some brief educational material.

What is the Source of my Water?

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and groundwater wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pickup substances resulting from the presence of animals or from human activity.

Public Water Supply District No. 3 draws groundwater from an aquifer though 3 deep wells.

SOURCE NAME	TYPE
Well #1 North	Ground Water
Well # 2 South	Ground Water
Well # 3	Ground Water

Source Water Assessment

The Department of Natural Resources conducted a source water assessment to determine the susceptibility of our water source to potential contaminants. This process involved the establishment of source water area delineations for each well or surface water intake and then a contaminant inventory was performed within those delineated areas to assess potential threats to each source. Assessment maps and summary information sheets are available on the internet at http://maproom.missouri.edu/swipmaps/pwssid.htm. To access the maps for your water system you will need the State-assigned identification code, which is printed at the beginning of this report. The Source Water Inventory Project maps and information sheets provide a foundation upon which a more comprehensive source water protection plan can be developed.

Is our Water System Meeting other Rules that Govern our Operations?

The Missouri Department of Natural Resources regulates our water system and requires us to test our water on a regular basis to ensure it's safety. Our system has been assigned the identification number MO1024311 for the purposes of tracking our test results. Last year, we tested for a variety of contaminants. The detectable results of these tests are on the following pages of this report. Any violations of state requirements or standards will be further explained later in this report.

Why are there Contaminants in my Water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

Contaminants that may be present in source water include:

A. Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

B. Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming.

C. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

D. Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

E. Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the Department of Natural Resources prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Department of Health regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

How Might I Become Actively Involved?

If you would like to observe the decision-making process that affect drinking water quality, please attend our regularly scheduled meetings. They are held on the **3rd Tuesday of each month,** at our office in Hickory Hills subdivision at **5:30 P.M.** If you have any further questions, please call David Streeter at 660-429-2494.

Do I Need to Take Any Special Precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ trans-plants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Contaminants Report

Public Water Supply District No. 3 is pleased to report that all state and federal drinking water requirements have been followed. Below is a list of substances that were detected in our drinking water. All of the substances found in our water are under the Maximum Contaminant Level (MCL) set by the Environmental Protection Agency.

Lead and Copper	Date	90TH Percentile	Range	Unit	AL	Sites Over AL	Typical Source
Copper	2008—2010	0.205	0.0226—0.231	ppm	1.3	0	Corrosion of household plumbing systems
Lead	2008—2010	2.63	1.05—5.91	ppb	15	0	Corrosion of household plumbing systems
Disinfection By Products	**Monitoring Period**	**RAA**	**Range**	**Unit**	**MCL**	**MCLG**	**Typical Source**
TTHM	2005—2007	3.76	3.76	ppb	80	0	By-product of drinking water chlorination
Regulated Contaminants	**Collection Date**	**Highest Value**	**Range**	**Unit**	**MCL**	**MCLG**	**Typical Source**
Barium	5/20/2008	0.106	0.0693—0.106	ppm	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Fluoride	5/20/2008	0.68	0.63—0.68	ppm	4	4	Natural deposits; Water additive which promotes strong teeth.

Regulated Contaminants

Radionuclides	Collection Date	Highest Value	Range	Unit	MCL	MCLG	Typical Source
Combined Radium (-226 & -228)	3/7/2007	1.6	1.1—1.6	pCi/l	5		Erosion of natural deposits
Gross Alpha Particle Activity	3/7/2007	6	5.3—6	pCi/l			Erosion of natural deposits
Radium—226	3/7/2007	1.6	1.1—1.6	pCi/l	5	0	

Optional Monitoring (not required by EPA) Optional Contaminants

Secondary Contaminants	Collection Date	Highest Value	Range	Unit	MCL	MCLG	Typical Source
Alkalinity, CACO3 Stability	5/20/2008	262	235—262	MG/L			
Alkalinity, Total	5/25/2005	214	208—214	MG/L			
Calcium	5/19/2008	47.6	44.6—47.6	MG/L			
Chloride	5/20/2008	44.5	38.3—44.5	MG/L	250		
Hardness, Carbonate	5/19/2008	210	199—210	MG/L			
Iron	5/20/2008	0.17	0.05—0.17	MG/L	0.3		
Magnesium	5/19/2008	22.1	21.3—22.1	MG/L			
Manganese	5/20/2008	0.00342	0.00163—0.00342	MG/L	0.05		
PH	5/19/2008	7.58	7.32—7.58	PH	8.5		
Potassium	5/20/2008	5.01	4.12—5.01	MG/L			
Sodium	5/20/2008	37.2	34.2—37.2	MG/L		20	
Sulfate	5/19/2008	30.5	22.5—30.5	MG/L	250		
TDS	5/19/2008	319	313—319	MG/L	500		
Zinc	5/19/2008	0.0231	0.0231	MG/L	5		

Abbreviations

PPB: parts per billion or micrograms per liter.
PPM: parts per million or milligrams per liter.
N/A: not applicable
NTU: Nephelometric Turbidity Unit, used to measure cloudiness in drinking water.
MFL: million fibers per liter, used to measure asbestos concentration.
ND: not detectable at testing limits.
The state has reduced monitoring requirements for certain contaminants to less often than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Records with a sample year more than one year old are still considered representative.

Definitions

MCLG: Maximum Contaminant Level Goal, or the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
MCL: Maximum Contaminant Level, or the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
AL: Action Level, or the concentration of a contaminant which, when exceeded, triggers treatment or other requirements which a water system must follow.
TT: Treatment Technique, or a required process intended to reduce the level of a contaminant in drinking water.
90th Percentile: For Lead and Copper testing. 10% of test results are above this level and 90% are below this level.
Level Found: is the average of all test results for a particular contaminant.
Range of Detections: Shows the lowest and highest levels found during a testing period, if only one sample was taken, then this number equals the Level Found.
MRLDG: Maximum Residual Disinfectant Level Goal, or the level of a drinking water disinfectant below which there is no known or expected risk to health.
MRDL: Maximum Residual Disinfectant Level, or the highest level of a disinfectant allowed in drinking water.
RAA: Running Annual Average, or the average of sample analytical results for samples taken during the previous four calendar quarters.

The Importance of Water

Next to air, water is the most essential element to our survival. Water makes up more than two thirds of the weight of the human body, and without it, we would die in a few days. The human brain is made up of 95% water, blood is 82% and lungs 90%. Just a 2% drop in our body's water supply can trigger signs of dehydration. Mild dehydration is one of the most common causes of daytime fatigue. Dehydration in excess of 3% may lead to heat stroke, a condition to which children are much more prone than adults. An estimated seventy-five percent of Americans have mild, chronic dehydration.

Water also plays a key role in the prevention of disease. Drinking eight glasses of water daily could decrease the risk of colon cancer by 45%, bladder cancer by 50% and it can potentially even reduce the risk of breast cancer.

Since water is such an important component to our physiology, the quality of the water should be just as important as the quantity.

Table 1 – Sources of Ground Water Contamination

<table>
<tr>
<td>Designed to Discharge

• Septic tanks
• Injection wells
• Dry wells
• Non-hazardous waste
• Cooling waters
• Stormwater runoff
• Hazardous waste
• Agricultural drainage
• Automobile service station disposal
• Industrial process water
• Land application
• Wastewater (spray irrigation) & wastewater (sludge) hazardous waste & non-hazardous waste petroleum refining waste.</td>
<td>Designed to Store Treat and/or Dispose (Discharge through unplanned release)

• Landfills – Industrial hazardous and non-hazardous; municipal sanitary
• Open dumps
• Surface Impoundments – hazardous, non-hazardous; animal waste lagoons
• Waste tailings and piles, hazardous and non-hazardous.
• Materials stockpiles; hazardous and non-hazardous waste, non-waste
• Under and Above-ground storage tanks – hazardous, non-hazardous & non-waste
• Containers (drums) – hazardous, non-hazardous, & non-waste
• Open burning sites, detonation sites
• Radioactive disposal sites</td>
</tr>
<tr>
<td>Designed to Retain Substances during Transport or Transmission

• Pipelines hazardous, non-hazardous, & non-waste; sewers
• Materials transport and transfer operations hazardous and non-hazardous</td>
<td rowspan="2">Discharging as Consequences of Other Activities

• Irrigation practice
• Application – Pesticide, Fertilizer & De-icing salts
• Animal feedlot operations
• Urban runoff
• Mining and mine drainage
• Cemeteries
• Spills and leaks from manufacturing operations</td>
</tr>
<tr>
<td>Providing Conduit or Inducing Discharge through Altered Flow Patterns

• Modified sinkholes
• Production wells
• Oil and gas
• Geothermal/heat pump
• Recovery
• Water Supply – drinking, commercial or industrial</td>
</tr>
</table>

Table 2 – Potentially Harmful Components of Common (Household) Products

Product	Toxic or Hazardous Components
Antifreeze (gasoline or coolant systems)	Methanol, ethylene glycol
Automatic transmission fluid	Petroleum distillates, xylene
Battery acid (electrolyte)	Sulfuric acid
Degreasers for driveways and garages	Petroleum solvents alcohols, glycol ether
Degreasers for engines and metal	Chlorinated hydrocarbons, toluene, phenols, dichloroperchloroethylene
Engine and radiator flushes	Petroleum solvents, ketones, butanol, glycol ether
Hydraulic fluid (brake fluid)	Hydrocarbons, fluorocarbons
Motor oils and waste oils	Hydrocarbons
Gasoline and jet fuels	Hydrocarbons
Diesel fuel, kerosene, #2 heating oil	Hydrocarbons
Grease, lubes	Hydrocarbons
Rustproofers	Phenols, heavy metals
Car wash detergents	Alkyl benzene sulfonates
Car waxes and polishes	Petroleum distillates, hydrocarbons
Asphalt and roofing tar	Hydrocarbons
Paints, varnishes, stains and dyes	Heavy metals, toluene
Paint and lacquer thinner	Acetone, benzene, toluene, butyl acetate, methyl ketones
Paint and varnish remover, deglossers	Methylene chloride, toluene, acetone, xylene, ethanol, benzene, methanol
Paint brush cleaners	Hydrocarbons, toluene, acetone, methanol, glycol ethers, methyl ethyl ketones
Floor and furniture strippers	Xylene
Metal polishes	Petroleum distillates, isopropanol, petroleum naptha
Laundry soil and stain removers	Hydrocarbons, benzene, trichloroethylene, 1,1,1-trichloroethane
Other solvents	Acetone, benzene
Rock salt	Sodium concentration
Refrigerants	1,1,2-trichloro-1,2,2-trifluoroethane
Bug and tar removers	Xylene, petroleum distillates
House cleaners, oven cleaners	Xylenols, glycol ethers, isopropanol
Drain cleaners	1,1,1-trichloroethane
Toilet cleaners	Xylene, sulfonates, chlorinated phenols
Cesspool cleaners	Tetrachloroethylene, dichlorobenzene, methylene chloride
Disinfectants	Cresol, xylenols
Pesticides (all types)	Naphthalene, phosphorous, xylene, chloroform, heavy metals, chlorinated hydrocarbons
Photochemicals	Phenols, sodium sulfite, cyanide, halide, potassium bromide
Printing ink	Heavy metals, phenol-form aldehyde
Wood preservatives (creosote)	Pentachlorophenols
Swimming pool chlorine	Sodium hypochlorite
Lye or caustic soda	Sodium hydroxide
Jewelry cleaners	Sodium cyanide