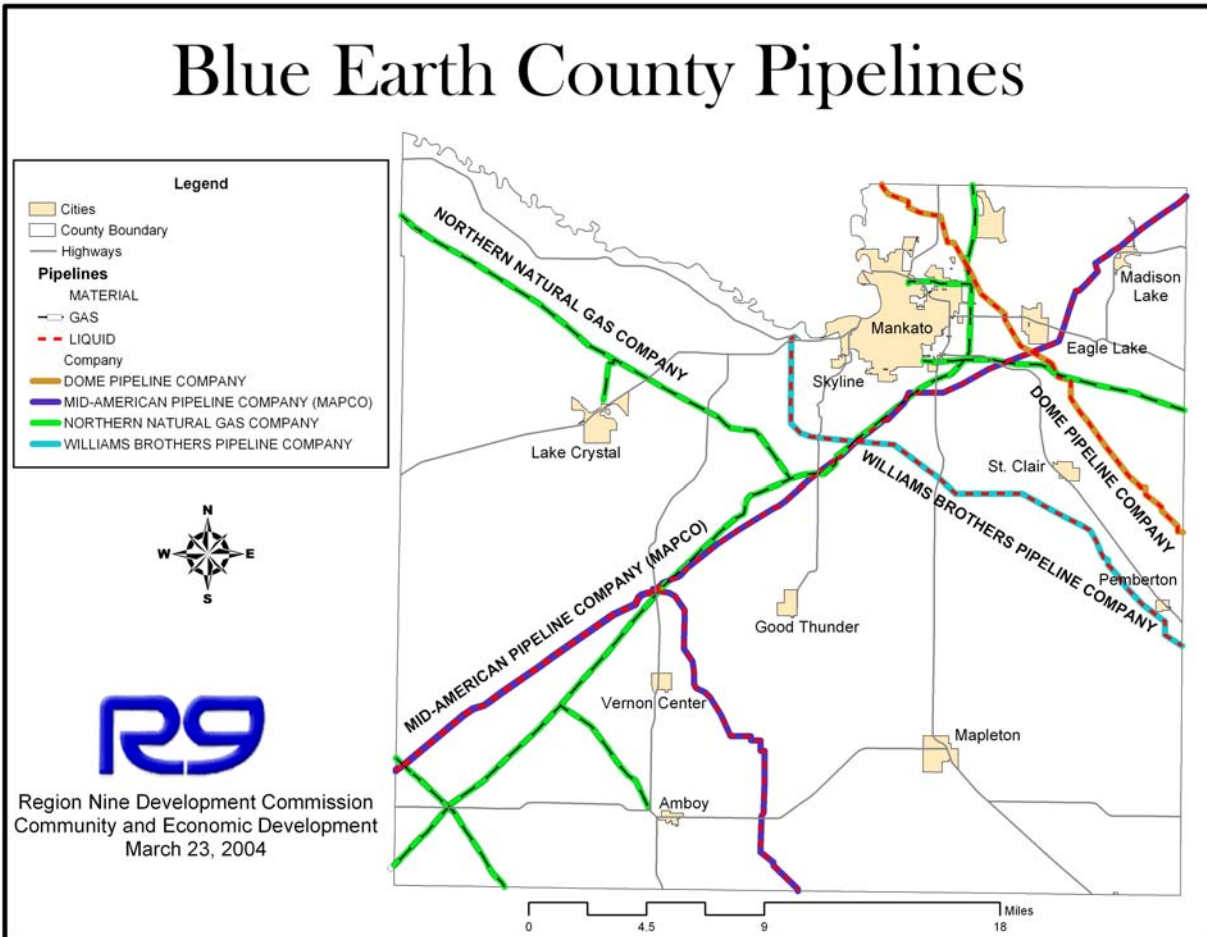


## Blue Earth County Pipeline Location Map

The map below is included as pipelines within Blue Earth County may present one avenue by which a hazardous material event could possibly occur or should a pipeline be ruptured by accident or on purpose with the intent of damage or injury (which is discussed more thoroughly in the later Terrorism section).



## History of Hazardous Materials

Blue Earth County has not experienced a major hazardous materials spill or accident to date. Minor incidents have occurred but these have had little or no impact on the community at large. The likelihood of a major event is considered to be marginal, but an isolated minor accident is a constant concern.

## Concerns of Hazardous Materials and Illegal Methamphetamine Labs

A clandestine drug lab (or clan lab) is a collection of materials and ingredients used to manufacture illegal drugs. Methamphetamine is the drug most commonly made in Minnesota labs. In addition to the dangers of active drug labs and possible harm caused by lab residues in uncleaned, former labs, methamphetamine use and manufacture is associated with:

- Increased crime, particularly property crimes, personal violence, child abuse and endangerment,
- Increased demand for medical and social services, including, foster- and short-term care, drug and psychiatric treatment, and various public health services
- Increased demands on jails and jail services, fire department and law enforcement agencies,
- Additional strain on educators, parents and communities

### **Vulnerability to Methamphetamine Labs**

The production of methamphetamine is a relatively simple process and can be carried out by individuals without special knowledge or expertise in chemistry. Most of these labs (75%) were located away from the largest Minnesota cities, in rural or semi-rural areas such as those in Blue Earth County.

### **History of Methamphetamine Labs**

Minnesota officials reported 475 methamphetamine labs and methamphetamine related events (dumps of methamphetamine chemicals, ammonia thefts, precursor chemical stashes and purchases) to MDH for 2003. Incidents of methamphetamine production have occurred in Blue Earth County.

### **Forms of Hazardous Material Exposure Associated with Clandestine Drug Labs**

**Toxic Gas** - The primary toxic gases generated during the manufacture of methamphetamine are hydriodic acid vapors and phosphine gas. Hydriodic acid vapors are present during primarily the first phase of d-methamphetamine production. Unlike more sophisticated methamphetamine manufacturers, some chemists typically do not use condenser tubes, which allow vapors to cool and condense product back into the reaction vessel. Instead, they allow hydriodic acid vapors to boil out of the reaction vessel. These vapors can also result from the simple presence of hydriodic acid. Similar to the fumes of ammonia, hydriodic acid vapors will emanate from moderate quantities of hydriodic acid. For example, hydriodic acid could remain in sink traps, open containers, or other materials or equipment, releasing toxic fumes that can cause nausea. Prolonged exposure to hydriodic acid vapors can cause internal chemical burns and permanent respiratory damage.

**Explosions and Chemical Fires** - In addition to the unstable properties of phosphine gas, some of the precursors used in d-methamphetamine production are flammable or reactive and can also cause explosions and chemical fires. For example, friction can ignite deposits of red phosphorous left on equipment or the surrounding area. If individuals dismantle equipment, the red phosphorous residue may not only spark but also ignite gases remaining in the reaction vessel, intensifying the problem. Explosions can result because of mislabeling or the purchase of the wrong chemicals. There is a reported case in which d-methamphetamine clandestine lab cooks were sold potassium chlorate instead of ephedrine. Since both substances are white powders and appear similar, the cooks treated the powder as if it was ephedrine. When the potassium chlorate was combined with red phosphorus the results were a violent chemical reaction that exploded. These explosions often result in chemical fires and have the potential to initiate a chain reaction of explosions and additional fires due to the proximity of precursor chemicals and other flammable materials stored at the clandestine lab site.

**Dump Sites** - After completion of the final d-methamphetamine production phase, clandestine lab workers are left with large quantities of hazardous waste. Five to six pounds of hazardous waste are generated for each pound of finished product.

The location of the discarded waste is referred to as a "dumpsite," which can vary from an open pit in a farm field, to a deep shaft underneath a basement, or to storage in a garage. However, many of these dumpsites have similar contents.

#### **Waste Commonly Found at Dump Sites**

- Compressed Gas Cylinders - 20-pound propane cylinders are used to transport anhydrous ammonia, ether or other pressurized bottles.
- Discarded Clothing, Shoes, Gloves - lab workers frequently discard gloves and other clothing because contaminated clothing can be used as evidence to substantiate their involvement.
- Dust Masks
- Household Products - Automobile products that contain methanol or ether, containers of alcohol, Coleman fuel, drain cleaner, lye, acetone, toluene, batteries, gun scrubber, salt, iodine.
- Coffee Filters - Used to strain out tablet residue, red phosphorous, iodine crystals and other material in the manufacturing process.
- Freon Cans and Containers - sodium hydroxide makes up the bulk of the waste at the dumpsites. Whether the liquid waste is left in containers that corrode and leak over time or simply dumped onto the ground, this contaminating liquid can both sterilize the ground soil and contaminate local water tables.
- In addition, sealed cans containing residual Freon and other hazardous fluids are commonly found at dumpsites. Freon cans often expand when temperatures exceed Freon's 73° F boiling point, becoming an explosive hazard due to internal pressure.

#### **Potential Impacts and Cascading Effects**

Hazardous materials can have a large variety of potential impacts, including the loss of human and animal life as well as injuries. There may also be the associated issues of necessary evacuation and/or containment of the affected area, loss of life (human and animal), and loss of property due to contamination or fire/explosion. There is also significant vulnerability of city water and sewer systems to hazardous material impacts should such materials be introduced into the systems, as well as the lowering of property values in areas either directly affected by or nearby to hazardous materials. In any event where exposure to hazardous materials occurs, the impacts will largely be determined by many variables, including: the amount of exposure, the type of hazardous materials involved and its particular qualities (whether it is a solid, liquid, or gas, if it is combustible, etc), the location of the event (i.e. proximity to people, water sources, etc.), temperature, wind speed, weather conditions, etc.

#### **Hazardous Materials Gaps and Deficiencies**

- Many cities have no containment plan in place in the event of a hazardous waste spill, and cities have little or no control over potential highway and railway accidents. As for methamphetamine labs, abandoned barns and structures throughout the county are inviting to individuals seeking to create illegal drugs.

- Methamphetamine labs are a high priority for the City of Pemberton. Fire department has learned to contact correct departments for clean up.

### **ACTIONABLE MITIGATION STEPS:**

**Actionable Mitigation Steps are more elaborately explained with project, timeframe, responsible jurisdictions/staff, possible funding sources, and priority level in the Action Plan section of this document. Suggested areas of focus are denoted in parentheses.**

1. Education and Information About Methamphetamine Abuse (Countywide) - City emergency responders will be provided with educational material from the State, non-profits, and other safety units to distribute to youth, communities at risk, and vulnerable people. Distribution material will be in print primarily, while city staff will be updated by video tapes and presentation. Currently, regional emergency management provides verbal presentations for emergency responders, youth groups, and elected officials.
2. Legislative Actions (Countywide) - Monitor new legislative actions that provide resources to mitigate the damage of methamphetamine labs. Jurisdictions will need to determine methods of paying for clean-up costs (i.e. public or private property owners). The County will have a primary role in learning of such policy changes or adoptions. In addition, Region Nine can assist local units of government in monitoring legislation.
3. Drug Prevention (Countywide) – The cities will work with their local Healthy Communities Network Coalition (13 coalitions throughout the region) to continue working with youth in the city regarding drug prevention programming. Puppet shows are performed by high school students for junior high school students to demonstrate the dangers of taking drugs. Other strategies include literature dissemination provided by the federal and state Public Safety and Health departments. The county sheriff and city police departments will work with schools in conducting educational programs on drug prevention.
4. Regulate the Labeling of Hazardous Materials. (County, Lake Crystal) – The city public works department will work to ensure labels are placed on all hazardous materials. Hazardous material may exist in other departments; therefore the public works staff will educate and assist other departments with labeling hazardous material. In addition, measures can be made to adopt a containment and proper storage plan for all hazardous material.
5. Cooperation with State Agencies (Countywide) – Blue Earth County will work directly with appropriate state agencies to address the needs for responding to and mitigating the impacts of a hazardous material release event.
6. Utilization of Emergency Broadcast System (Countywide) – Local radio and television stations provide Emergency Broadcast System messages. Such messages could be used if the need to warn residents of a major or dangerous hazardous material event arises.
7. Ensure Proper Storage of Hazardous Materials Throughout Blue Earth County (Countywide) - Proper storage, labeling, and securing of all possible hazardous materials will help to maintain safety and prohibit exposure to the materials.

## **WASTEWATER TREATMENT FAILURE/ WATER SUPPLY CONTAMINATION**

### **Definitions**

**Wastewater Treatment Failure** - Wastewater treatment uses microbes to decompose organic matter in sewage. If too much untreated sewage or other organic matter is added to a lake or stream, dissolved oxygen levels will drop too low to support sensitive species of fish and other aquatic life. Wastewater treatment systems are designed to digest much of the organic matter before the wastewater is released so that this will not occur.

**Water Supply Contamination** - Water supply contamination is the introduction of point and non-point source pollutants into public ground water and/or surface water supplies. Although minimal, water supply contamination does pose a threat in the county. Microbiological and chemical contaminants can enter water supplies. Chemicals can leach through soils from leaking underground storage tanks, feedlots and waste disposal sites. Human wastes and pesticides can also be carried to lakes and streams during heavy rains or snow melt.

### **Blue Earth County Wastewater Treatment Plant Failure/Water Supply Contamination Risk Assessment**

<b>Hazard:</b>	<b>Wastewater Treatment Plant Failure/Water Supply Contamination</b>
<b>Location</b>	Countywide, individual cities, point and non-point sources
<b>Historic Events</b>	None on record
<b>Likely to happen now?</b>	Unlikely
<b>How often?</b>	Infrequently
<b>Where would event occur?</b>	Any county community/municipality that utilizes such facilities
<b>Severity of event?</b>	Water supply of large population of people could be contaminated and rendered unsafe for use/drinking
<b>When would hazard likely occur?</b>	Any time of year
<b>What other hazards could occur at the same time?</b>	Infectious diseases, terrorist attack
<b>Economic impacts</b>	Expense incurred for repair or replacement of systems and provision of safe drinking water during the interim
<b>Loss of life impacts</b>	Depending on amount and type of contamination, could be life-threatening
<b>Risk Level</b> VH – Very High H – High L – Limited M – Minimal	Citizens/People: L Animals/Livestock: L Housing: M Critical Structures: L Infrastructure: L <b>Total: L</b>
<b>Risk Assessment</b>	
Unlikely – 1 Occasional – 2 Likely – 3 Highly Likely – 4	<b><u>Frequency of Occurrence</u></b> 1
More than 12 hours – 1	<b><u>Warning Time</u></b>

6-12 hours – 2 3-6 hours – 3 Minimal-None – 4	4
Limited – 1 Minor – 2 Substantial – 3 Major – 4	<b>Potential Severity</b> 2
Minimal – 1 Limited – 2 High – 3 Very High – 4	<b>Risk Level</b> 1
(Total divided by 4) Very Low – 1 Low – 2 Moderate – 3 High – 4	<b>Overall Priority</b> 2 Low

### Vulnerabilities to Water Treatment Failure

Problems impacting Blue Earth County water systems could possibly include (but are not limited to) the following:

**Inadequate collection systems** -- Even though they are designed to accommodate additional influx of wastewater - sometimes-existing systems cannot handle the extra flow. Groundwater, for example, can enter the sewer system through leaking manhole walls, defective piping or sewer connections. Or water runoff from roofs, cellars, parking area drains; cooling water discharges from the plant itself can make the inflow too great for the treatment facility to handle.

**Sludge disposal** -- The end result of a well-designed and operated wastewater treatment facility is both treated wastewater and a waste sludge. Waste sludge goes through a number of steps - including disinfecting -- prior to disposal in landfills, incinerators, or for re-use (such as composting).

**Storage, transporting, and handling hazardous chemicals** -- The disinfecting process for sludge disposal involves the use of many highly toxic and explosive chemicals such as chlorine, sulfur dioxide, and bromine chlorides. Safety measures are critical for wastewater treatment plants.

**Storage tanks** -- Wastewater treatment plants typically maintain gasoline or fuel oil onsite that is stored in aboveground or underground storage tanks. Pumping stations often use drums, aboveground storage tanks and underground storage tanks for chemical storage.

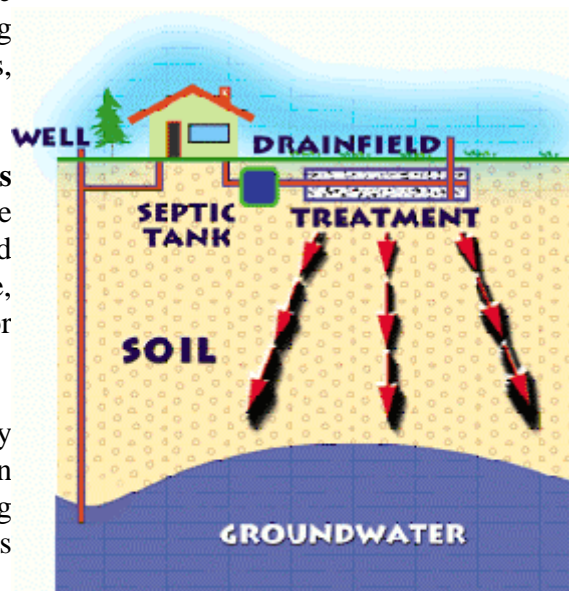


Image courtesy of the US EPA  
[www.epa.gov/safewater/dwa/electronic/swp.septic.pdf](http://www.epa.gov/safewater/dwa/electronic/swp.septic.pdf)

**On-Site Individual Sewage Treatment Systems** -- Residents in the cities of Lake Crystal, Good Thunder, Mankato, Madison Lake, Eagle Lake, St. Clair, Pemberton, Mapleton, Amboy and Vernon Center are served by centralized wastewater treatment facilities. Homeowners living in

unincorporated Blue Earth County without access to municipal water treatment systems must rely on their own "mini treatment plant" to meet wastewater disposal needs. When properly constructed and maintained, on-site wastewater treatment systems can provide years of safe, reliable service for rural homeowners.

### Vulnerability to Water Supply Contamination

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

#### Contaminants that may be present in source water include:

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

**Inorganic Contaminants** such as salts and metals, which can be naturally occurring or as a result from urban stormwater run-off, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

**Organic Chemical Contaminants** including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and may come from gas stations, urban stormwater run-off or septic systems.

**Pesticides and Herbicides**, which may come from a variety of sources such as agriculture, urban stormwater run-off or residential uses.

Some people are 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 transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections.

### Water-Related Concerns

The chart below summarizes the concern for water-related hazard concerns, as reported by returned city questionnaires conducted as part of this planning process.

Jurisdiction	Risk Assessment (Probability)	Impact Assessment	Top Three Priority?
Eagle Lake	High	High	No
Good Thunder	High	Medium	Yes
Madison Lake	High	High	Yes
Mapleton	Medium	Medium	Yes
Skyline	Medium	High	Yes
St. Clair	High	Low	Yes
<b>Blue Earth County</b>	<b>Medium to High</b>	<b>Low to High</b>	<b>Yes</b>

*Probability: High – Annually to 2yrs, Medium - 5yrs, Low – 10yrs*

*Impact: High – Loss of life and \$500,000 plus property damage, Medium – bodily injuries and \$250,000 property damage, and Low – bodily discomfort and less than \$100,000 in property damage*

## Potential Impacts and Cascading Materials

Potential impacts of wastewater treatment facility failure or contamination include the loss of water supply or a reduced water supply capacity, and the possible loss of life or sickness caused by contaminated water. Sanitary sewer systems may also backup, and physical damage may occur to treatment facilities and water towers, possibly necessitating repair or replacement and forcing the jurisdiction to absorb these associated costs.

## Water-Related Gaps and Deficiencies

- Many Blue Earth County communities report that their existing water towers may not be able to contain an adequate amount of water, which could lead to problems in times of increased water demands, such as a fire in the community.
- Several Blue Earth County cities report unprotected city wells exist in the communities, creating the possibility of contamination by vandals or by accident.

### **ACTIONABLE MITIGATION STEPS:**

**Actionable Mitigation Steps are more elaborately explained with project, timeframe, responsible jurisdictions/staff, possible funding sources, and priority level in the Action Plan section of this document. Suggested areas of focus are denoted in parentheses.**

1. Secure Water Systems. (Good Thunder) – City public works department shall work with police and water treatment staff to secure all aspects of the system. Regular security checks shall be made and documented. Any irregularities or deficiencies shall be noted and addressed.
2. Build Newer and Safer Water Towers, Wells, and Treatment Systems to Replace Existing Low Capacity Facilities (Madison Lake, St. Clair) – During the bidding process city administration will request measures to address hazard mitigation steps be included in the business response. Staff (police, public works, administration and fire) shall work with constructors to mitigate potential hazards.
3. Add a Force Main to Take More Water to Treatment Plant (Mapleton) – The city increased the capacity of the capacity to serve and protect citizens. Public works will regularly test the capacity and flush the system to ensure health. While the fire department will determine the water capacity to respond to fires. All residential development will have a water service capacity check before plans are approved by the City Council.
4. Require Certified Operators and Inspections (Countywide) – The Minnesota Pollution Control Agency (MPCA) requires routine inspection of all public wastewater systems. Operators of such systems are required to have state training to maintain their certified operator status. All jurisdictions should monitor their facilities to ensure these requirements are being met.