# KXL HP14-001

Cindy Myers, RN

- SDCL 49-41 B-22 states: *The applicant* for a facility construction permit has the burden of proof to establish that:
- "The facility will not substantially impair the health, safety or welfare of the inhabitants."

- Health Impact Assessment
- Emergency Medical Response Plan
- Medical Facilities Unprepared for Dilbit Disasters
- Benzene – Potent Carcinogen
- Drinking Water Contamination
- Water Treatment Plants
- Dr Madden's testimony

# No Health Impact Assessment

- The Commission's 2010 permit relies on the federal EIS, prepared by the Department of State
- The Department of State's environmental study does not include a health impact assessment.

# Kalamazoo River Spill July, 2010

- The Michigan Dept. of Health identified 320 (58%) of 550 individuals with adverse health effects from four community surveys along the impacted waterways.

- **The “Draft” (Template) TransCanada-Keystone Emergency Response Plan in the FSEIS, Appendix Q does not indicate a specific emergency medical response plan.**

# “Oil Pipeline for Emergency Responders”

- Instructs to “Monitor for I-EL, H S and benzene if possible”.
- Do lay people know what that means?
- How available is equipment for benzene testing in air and water?
- Are first responders trained to protect themselves from inhaling benzene fumes?

# Kevin Schlosser

**Emergency Management Coordinator, Avera McKennan**

**(Assists Avera St. Mary's in Pierre, SD)**

- **"What are we dealing with? Give me a (M)SDS, to know the chemicals involved."**
- **"Time-frame, how fast is it moving, when will it reach water intakes"**
- **"Would want to know how to slow it down, contain it. I would like to ask industry experts how soon will it reach us. I have not seen any of that."**

# Kevin Schlosser

- **“If they would provide a (M)SDS, it would be kept in the Emergency Department to have readily available.”**
- **“Have not been given any information specific to tar sands oil product.”**
- **“I would rely on the County Emergency Manager, the Sheriff’s Dept., and also would rely on a (M)SDS for treatments.”**

# Kevin Schlosser

- Not aware of training to instruct health facilities how to respond to tar sands emergencies/disasters.
- For decontamination, would rely on the Safety Data Sheet for review and instructions.
- "I've checked with the person that does Emergency Preparedness for Avera St. Mary's (Pierre) and they have not seen a SDS to this point."

- **Sample MSDS in FSEIS: “These MSDS do not represent the actual product that would flow through the proposed Keystone XL pipeline”**

- **TransCanada: “TransCanada is not a medical provider and does not provide medical information. The local medical authority has jurisdiction during an incident or emergency.”**

- No communication with Indian Health Services or South Dakota health care facilities
- Staff education needed concerning tar sands oil product, KXL spill scenario drills, and treatment for benzene exposure.
- Treating benzene toxicity is not usual for most health professionals.

# FSEIS:

"…benzene was determined to dominate toxicity associated with potential crude oil spills."

4.13-25

## International Agency on Cancer Research (IACR)

# Benzene is a Group One Carcinogen

Dept of Health and Human Services and EPA have also determined benzene is carcinogenic.

# Exposure to Benzene

- **Ingestion** (Water and Food)
- **Inhalation of Vapors** (inhabitants in vicinity of spills, emergency workers)
- **Skin Contact** (emergency workers, bathing and washing clothes with contaminated water)
- **Eye Contact** (splashes)

- EPA has set 5 ppb as the maximum permissible level of benzene in drinking water.
- EPA has set a goal of 0 ppb for benzene in drinking water and in water such as rivers and lakes because benzene can cause leukemia.

## Brad Vann, EPA Environmental Scientist

**Benzene at 5 ppb~**

"you can't smell, taste or see it. It requires laboratory analysis to detect at these concentrations. Therefore, it would be possible to drink dilute Benzene above the MCL unknowingly."

# Dr. Arden Davis

"Because of benzene's solubility and its allowable limit of only 5 parts per billion in drinking water, a pipeline leak could contaminate a large volume of surface water or ground water...".

# Dr. Arden Davis

"Benzene is soluble in water and can be transported downgradient toward receptors such as public water-supply wells, private wells, and springs or seeps. In certain cases, benzene can be transported more than 500 or 1000 feet downgradient in aquifers."

# Dr. Arden Davis

"A crude-oil or diluted bitumen leak could have devastating effects on ground-water supplies, surface water, and environmental resources in South Dakota."

# Benzene Toxicity

- Brief exposure (5–10 minutes) to very high levels of benzene in air can result in death.

- Lower levels (air) can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness

Exhibit 6031, ATSDR

- Eating foods or drinking liquids containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, coma, and death.

ATSDR

- Leukemia
- Anemia
- Lowered Immunity
- May be harmful to the reproductive system
- Benzene can pass from the mother's blood to a fetus.

ATSDR

# Effects to Fetus?

- Animal studies have shown that benzene can cause low birth weight, delayed bone formation and bone marrow damage.

ATSDR

# Dr John Stansbury, UNL

There should have been a human health risk assessment that would have estimated the increased risk of cancer, but there isn't any such assessment. ***They simply indicate that there could be a significant, undetected release of benzene which could be consumed by human receptors*** and leave it at that.

# Condition #40 BTEX Concern

- BTEX (benzene, toluene, ethyl benzene, xylene)

- BTEX can permeate polyethylene water piping. TransCanada offers to replace it with more resistant piping within 500 feet of the Project.

# Iowa Department of Natural Resources Plastic Water Line Survey

- Have you had any known problems with petroleum permeation related to plastic water lines? If yes, what? Was the type of plastic water line known to be PVC or PE?

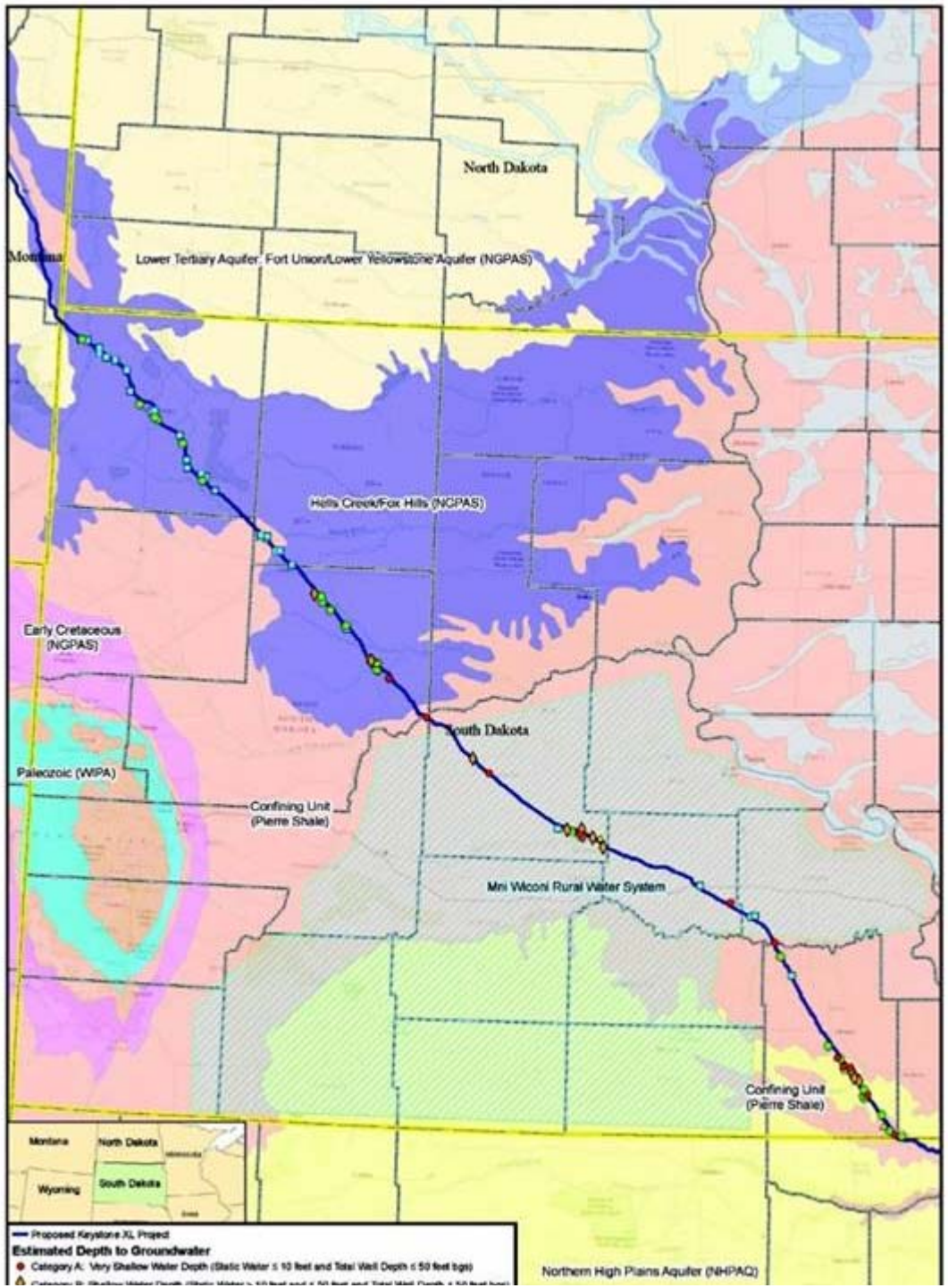
- Thirteen states have known problems with permeation of plastic pipe. Of those thirteen states, seven states have specifically had permeation incidents involving PVC.

# Mni Wiconi and KXL Cross at 471

- Mni Wiconi Water Pipe is PVC
- 6 feet apart
- Leaks at this location could saturate the water pipe with benzene, indefinitely if undetected pinhole leaks.

# Pinhole leaks can be difficult to detect and yet spill large volumes. Not all leaks will be detected

- ***A pinhole may create a medium to large spill*** due to the difficulties for SCADA or aerial surveillance to detect such a leak. The SCADA system, in conjunction with Computational Pipeline Monitoring or model-based leak detection systems, would detect leaks to a level of approximately 1.5 to 2 percent of the pipeline flow rate. **FSEIS 3.13.5.3**
- Large spills are defined as greater than 1,000 bbl (42,000 gallons) **FSEIS 3.13.5.3**
- Neither TransCanada nor SD will test for water contamination from potential spills not detected by the leak detection system, choosing only to do analyses “in the event of a release.”




- In SD, 105 known wells within 1 mile of the proposed project, including Colome's city wells.

Map 3.3-21

Info 4.3-17

# Condition #35

- "...in southern Tripp County, the High Plains Aquifer is present at or very near ground surface and is overlain by highly permeable sands permitting the uninhibited infiltration of contaminants."

# Tripp County

- "This aquifer serves as the water source for several domestic farm wells near the pipeline as well as public water supply system wells."

- Condition 35

# 17 drops

of benzene enough to contaminate Colome's 50,000 gallon water tower

Calculations reviewed by Dr. Arden Davis.

# Carol Moyer, Public Water Contact for Colome, SD

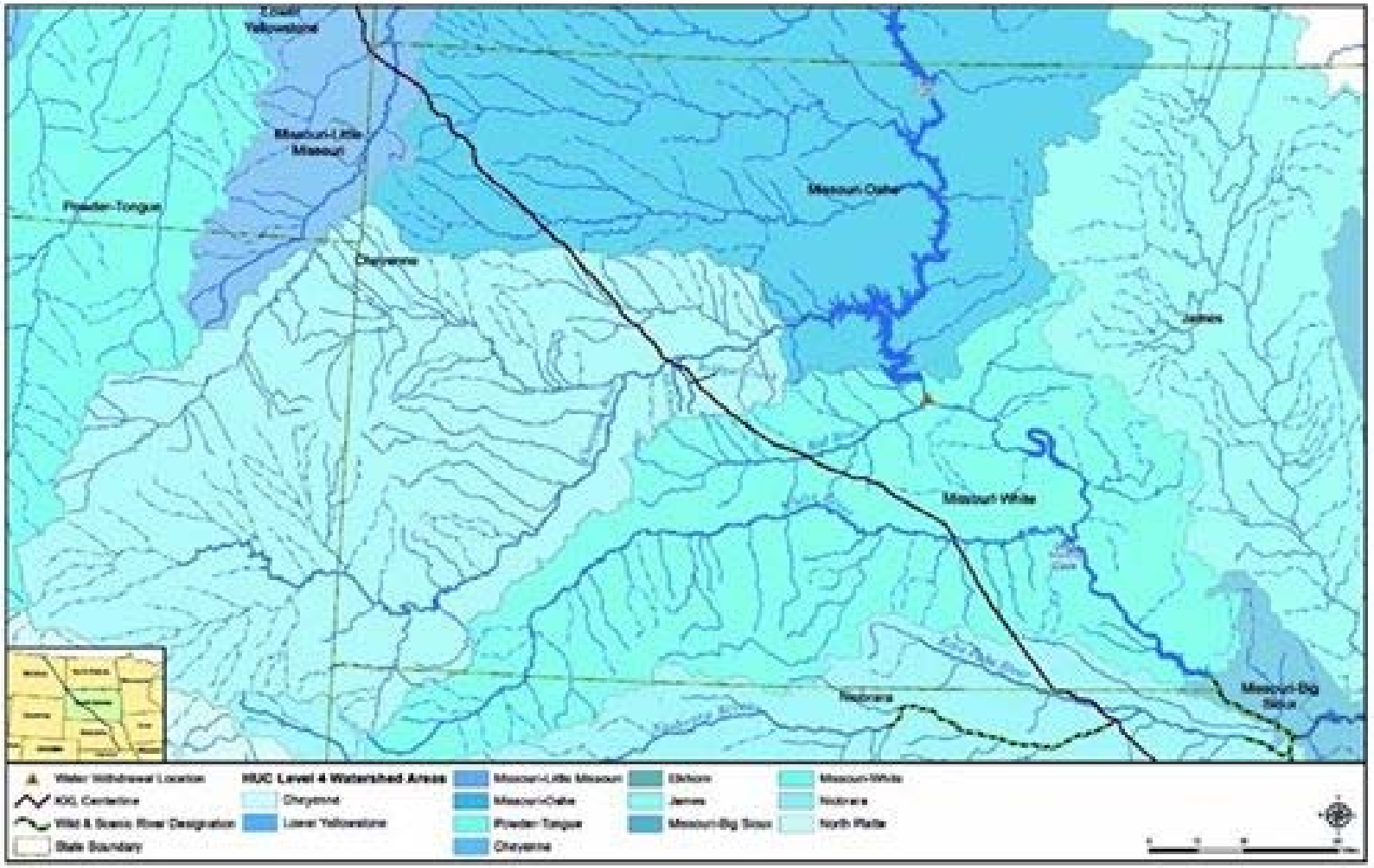
- The first route crossed directly through the 10 acres where Colome's two wells are located. The route was moved approximately 200 yards from the well acreage.
- "I do have concerns"
- "I don't think safety was a concern at all"
- "Moved it just far enough to get an easement"

phone visit 05-13-15

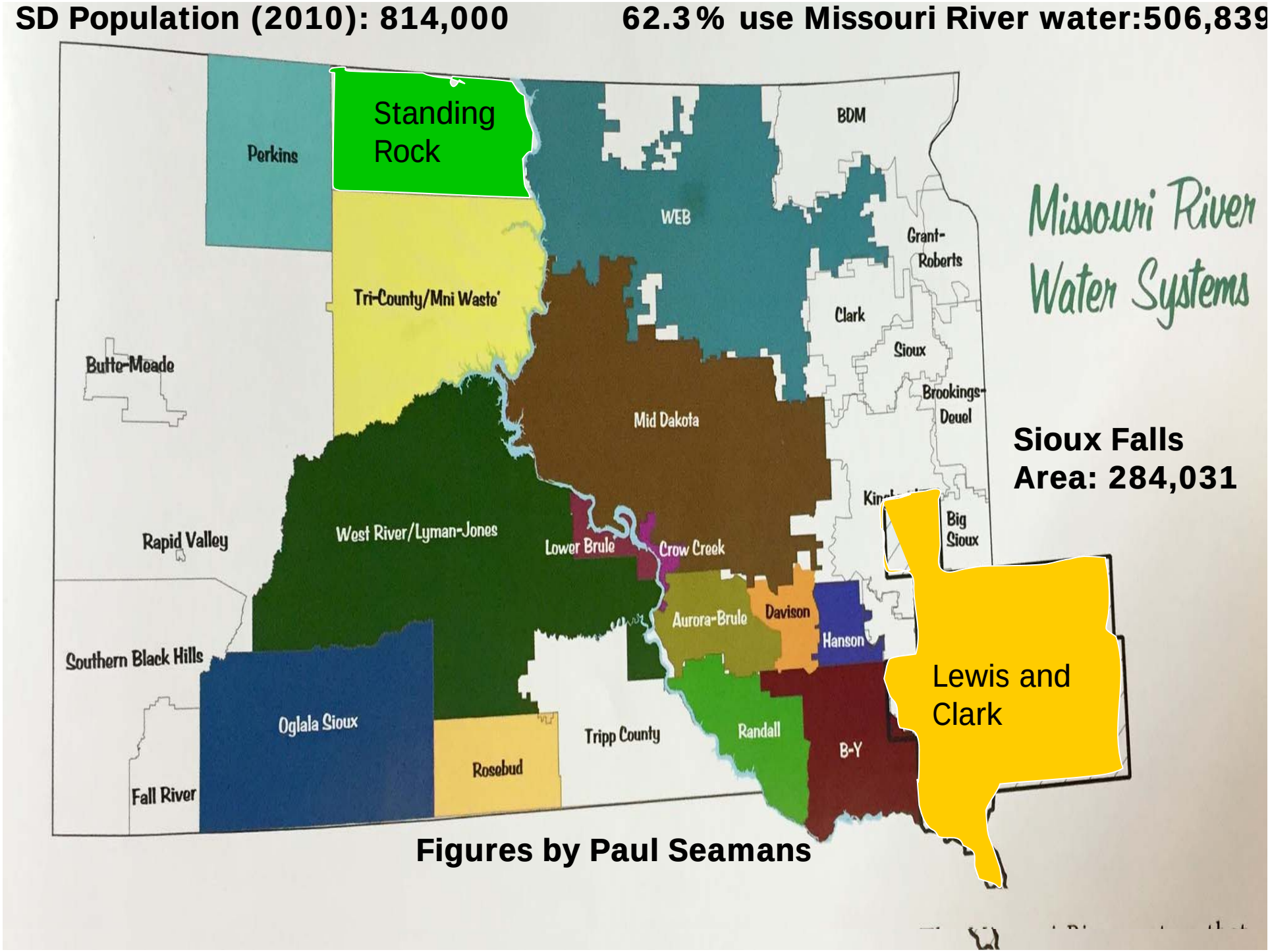
# FSEIS, Chapter 4

- A large municipal supply well or intake could potentially draw affected water to the well or intake since it would draw from a larger area of groundwater.

"The proposed Project route would cross several tributaries to the Missouri River with the potential to affect the Missouri River" 3.3-3.39

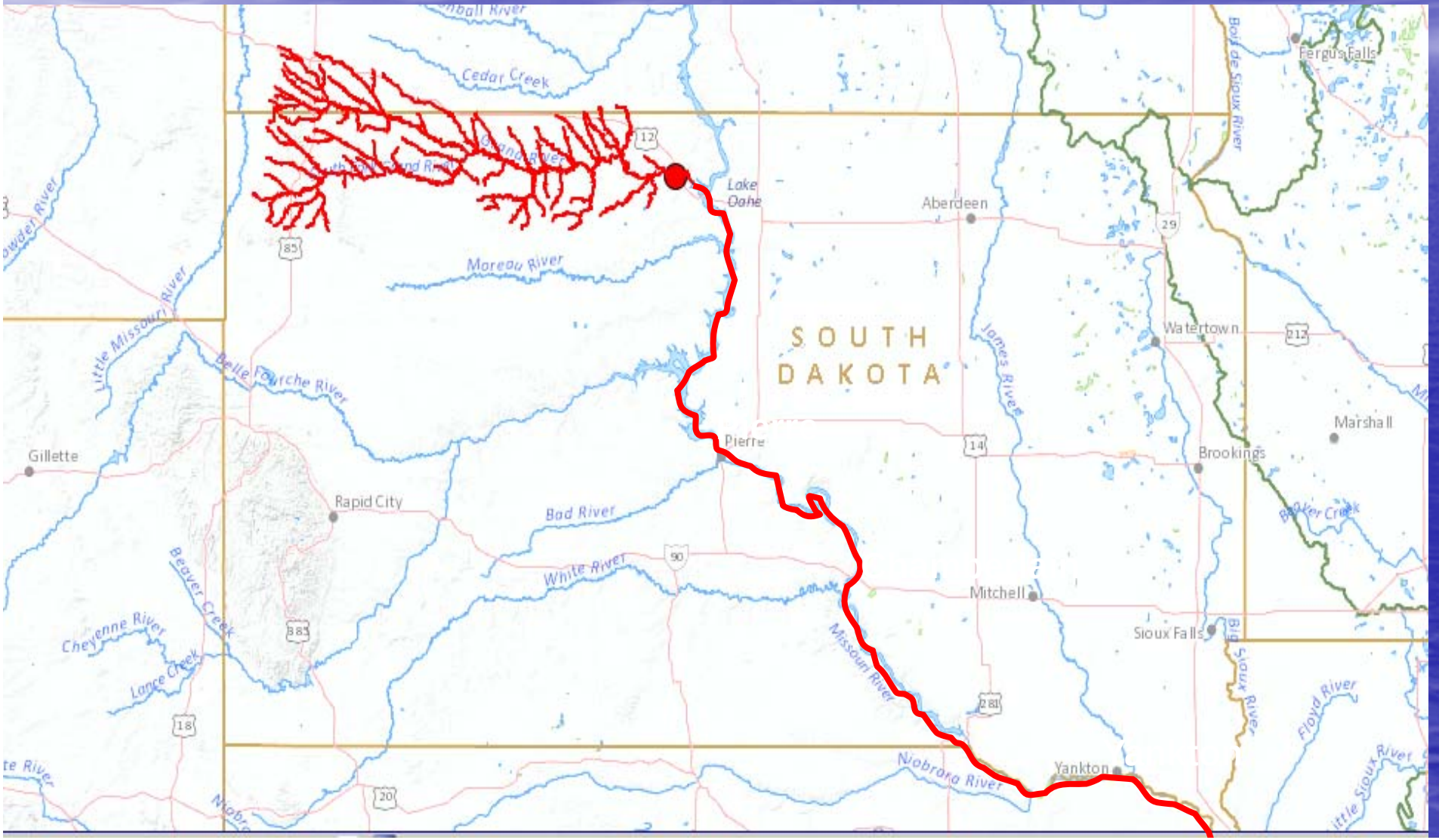


**SD Population (2010): 814,000** **62.3% use Missouri River water:506,839**

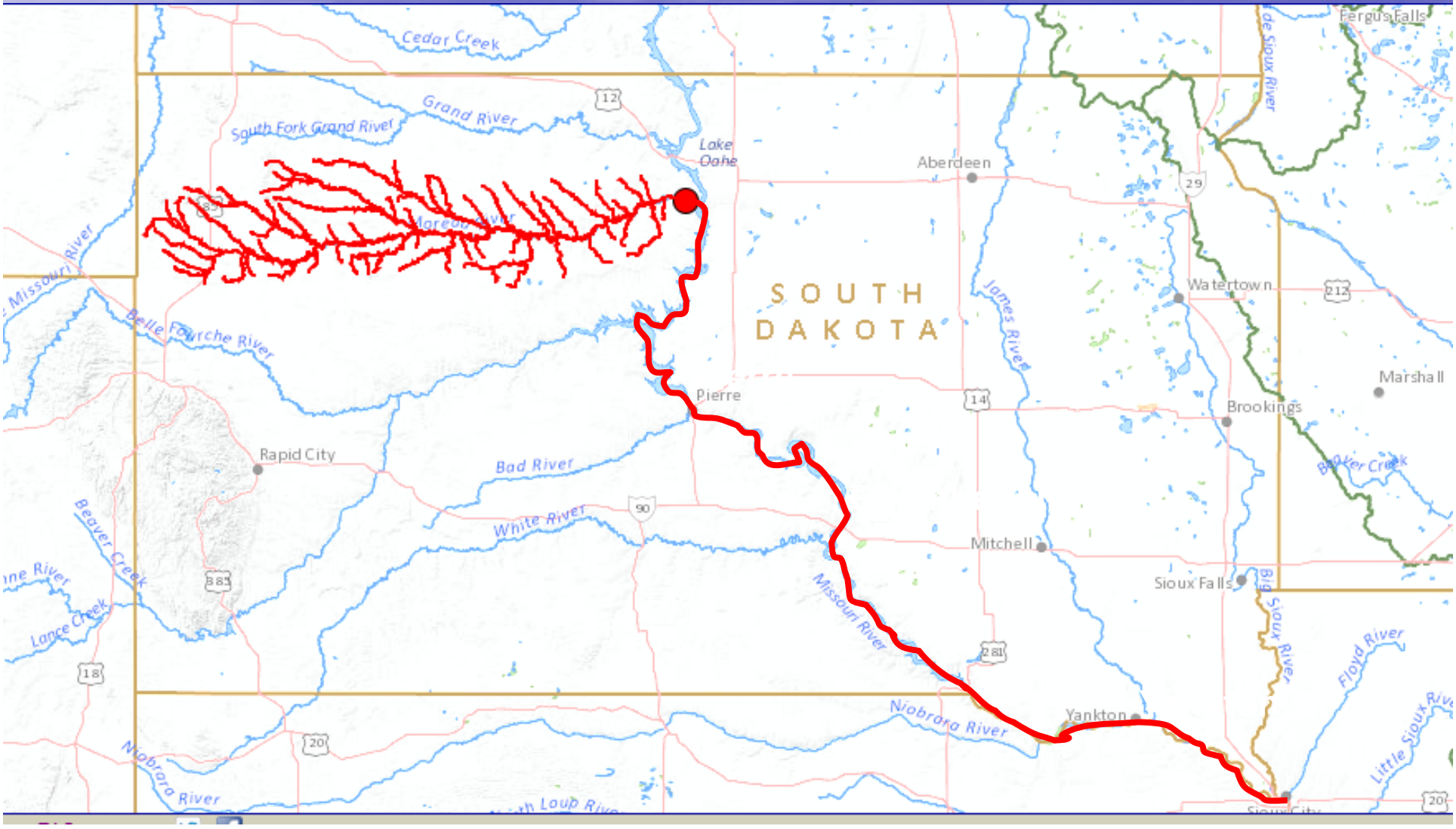



**Figures by Paul Seamans**

# Grand River Drainage Basin

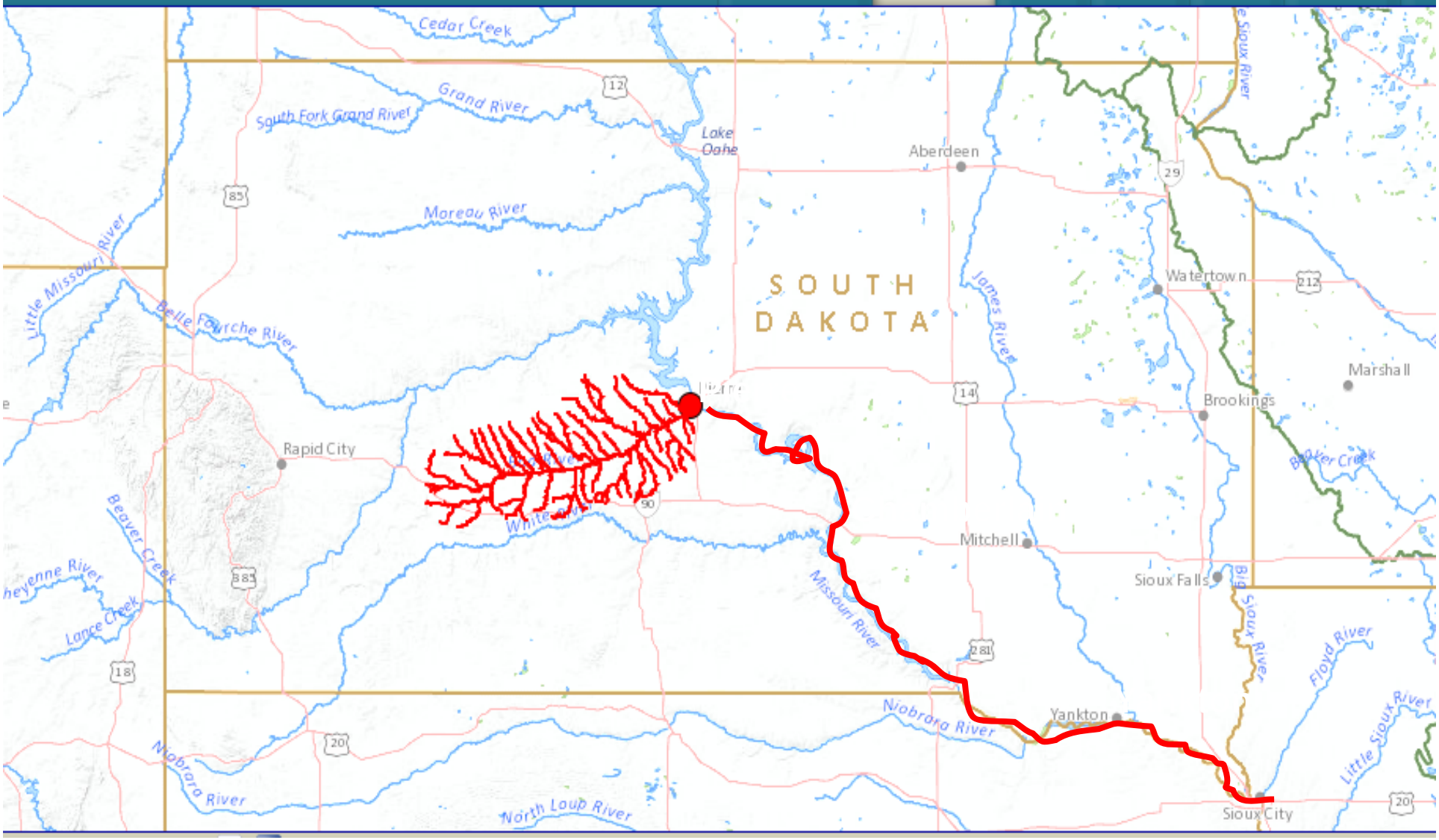


# Moreau River Drainage Basin

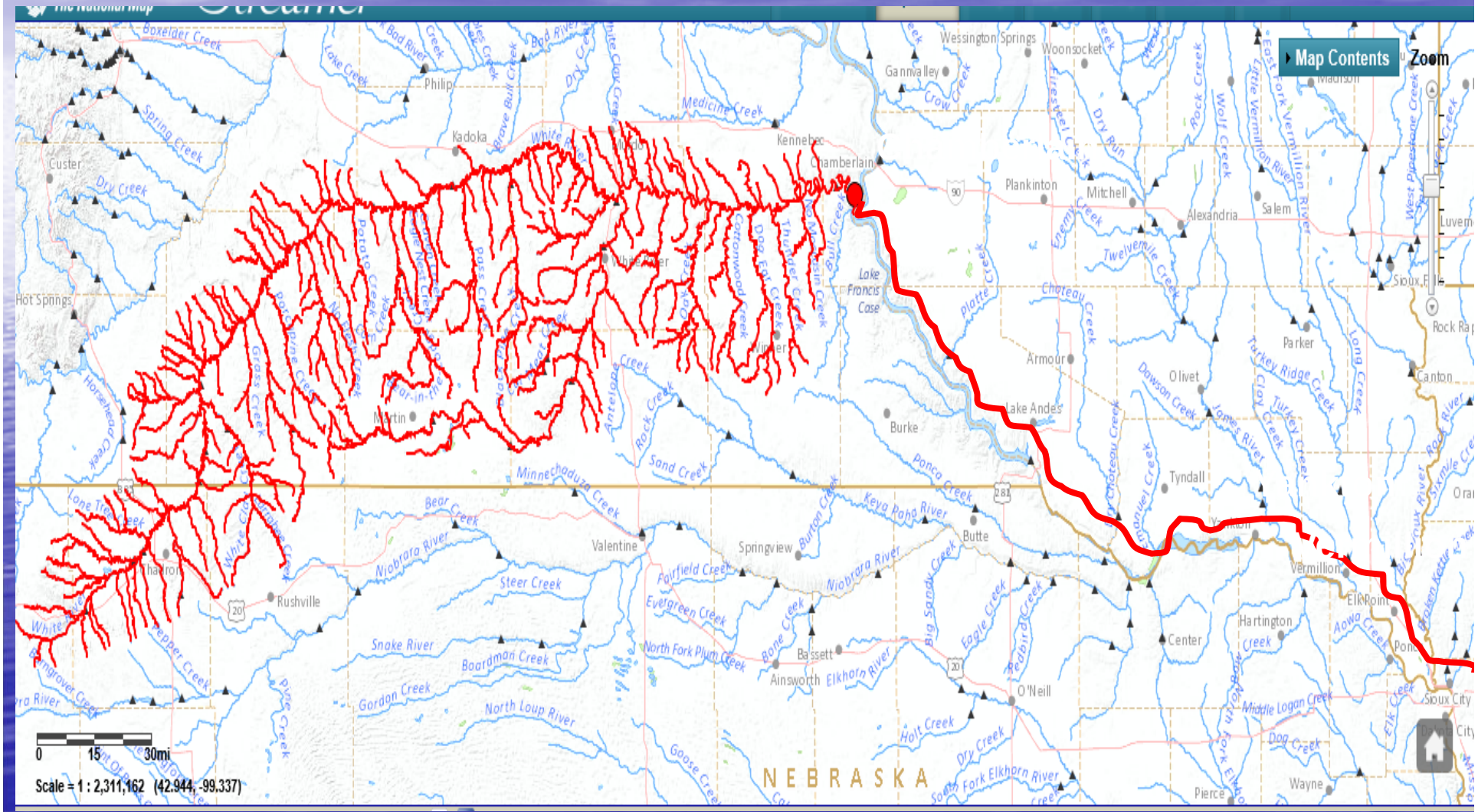


# Cheyenne River Drainage Basin

# Bad River Drainage Basin



# White River Drainage Basin



# Dr Arden Davis

"At these river crossings and downstream, the proposed pipeline poses serious risks and could have devastating effects on surface water and associated environmental resources, potentially affecting water supplies and surface-water users."

# Dr Arden Davis

- Cheyenne River
- “If a release occurred at this crossing and it could not be controlled or went undetected for 12 to 24 hours, petroleum contaminants could reach the Missouri River, potentially affecting water supplies and surface-water users…”

# Dr Arden Davis

- A spill “could potentially be transported about 60 miles downstream in 12 hours. If a leak cannot be controlled or is undetected for 24 hours, it could be transported about 120 miles downstream.”

# FSEIS 3.3-42

- “Spills or releases into surface waters could travel through these tributary systems and could potentially result in impacts to affect the Missouri River, aquatic habitats, as well as the MWRWSS.”

# MT DEQ

- Oil noted 70 miles downstream in Yellowstone River after silvertip pipeline spill July 2011

# BREACH IN PIPELINE FOUND; CANCER-CAUSING AGENT DETECTED IN WATER

~ Billings Gazette January 20, 2015

# Glendive, MT Jan. 2015

- 50,000 gallons spilled from a 12 inch pipe near Glendive. (KXL is 36 inches)
- Benzene up to triple the mcl in the Glendive public water system.
- Intake from Missouri River was 14 feet below the surface.
- Officials did not warn residents until two days later.
- Did not have equipment on hand right away to pick up contamination.

# Current Water Treatment Systems Do Not Remove Benzene

# SD Public Water Intakes

- I visited with three SD water treatment plants using water from the Missouri River. Two water treatment plants were unaware of response planning to an oil spill affecting the Missouri River, the third did say a spill kit (for water analysis) is available for emergencies.
- "DNR usually sends out information, but "haven't heard a word from them" when asked what he knew about tar sands spillage into water.
- The Bureau of Reclamation would notify them if an oil spill threatened the water supply.
- One plant thought benzene analysis was done quarterly and another plant thought benzene analysis was done yearly.

# FSEIS Appendix P

- “Most spills that enter a waterbody could result in exceedence of the national MCL for benzene.”
- “...analysis indicates the need for rapid notification of managers of municipal water intakes downstream of a spill so that any potentially affected drinking water intakes could be closed to bypass river water containing crude oil.”

| **Waterway Crossed by KXL** | **KXL to Water Intake** (estimated) | **Public Water Intake** |
|---|---|---|
| Cheyenne River | 50-60 miles | Cheyenne Reservation |
| Cheynne River | 89.5miles | MWRWSS |
| Cheyenne River | 156 miles | Chamberlain |
| White River | 222 miles | Yankton |
| White River | 222 miles, + | Sioux Falls |

# FSEIS

- “A notable difference between dilbit and other forms of crude is its capacity to precipitate out in water.”
- “Due to the capacity for dilbit to precipitate out in water and its resistance to biodegration, in the event of a release to a waterbody, more difficult cleanup scenarios (dredging) may be expected...”

3.13-10

# Socio-Economic Factor 107

Testimonial analysis by Dr. Madden is inadequate to meet SDCL 49-41 B-22. which requires the project must protect the health, safety and welfare of SD residents. He is not a medical doctor, but an economist.

Exhibit 6007

| | SOURCE OF ECONOMIC IMPACTS | DIRECTION OF IMPACT | NET IMPACT |
|---|---|---|---|
| HEALTH | Revenue | Positive | Positive |
| | Labor Costs | None Significant | |
| | Displacement of Traditional Users | None | |

- I firmly believe the risks to drinking water is clearly stated in the FSEIS and testimony by Arden Davis

- The ATSDR, one of the highest authorities concerning toxins, clearly indicates benzene is a serious health threat.

- **This project poses a public health threat, particularly to drinking water sources.**

- **The project could substantially impair the health, safety and welfare of South Dakotans.**


Sicangu Mni Wiconi
"Water is Life"
Rosebud Rural Water System