

# Nebraska's Water Quality and Your Bottom Line



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***IN OUR GRIT, OUR GLORY™***



## **Today:**

- 1. Who Manages/Monitors Water in Nebraska**
- 2. Nebraska's Water Quality**
- 3. Managing Risk and Improving Your Bottom Line**



# Who Manages/Monitors/Makes Rules for Water in Nebraska?

# Who Manages Nebraska's Water?

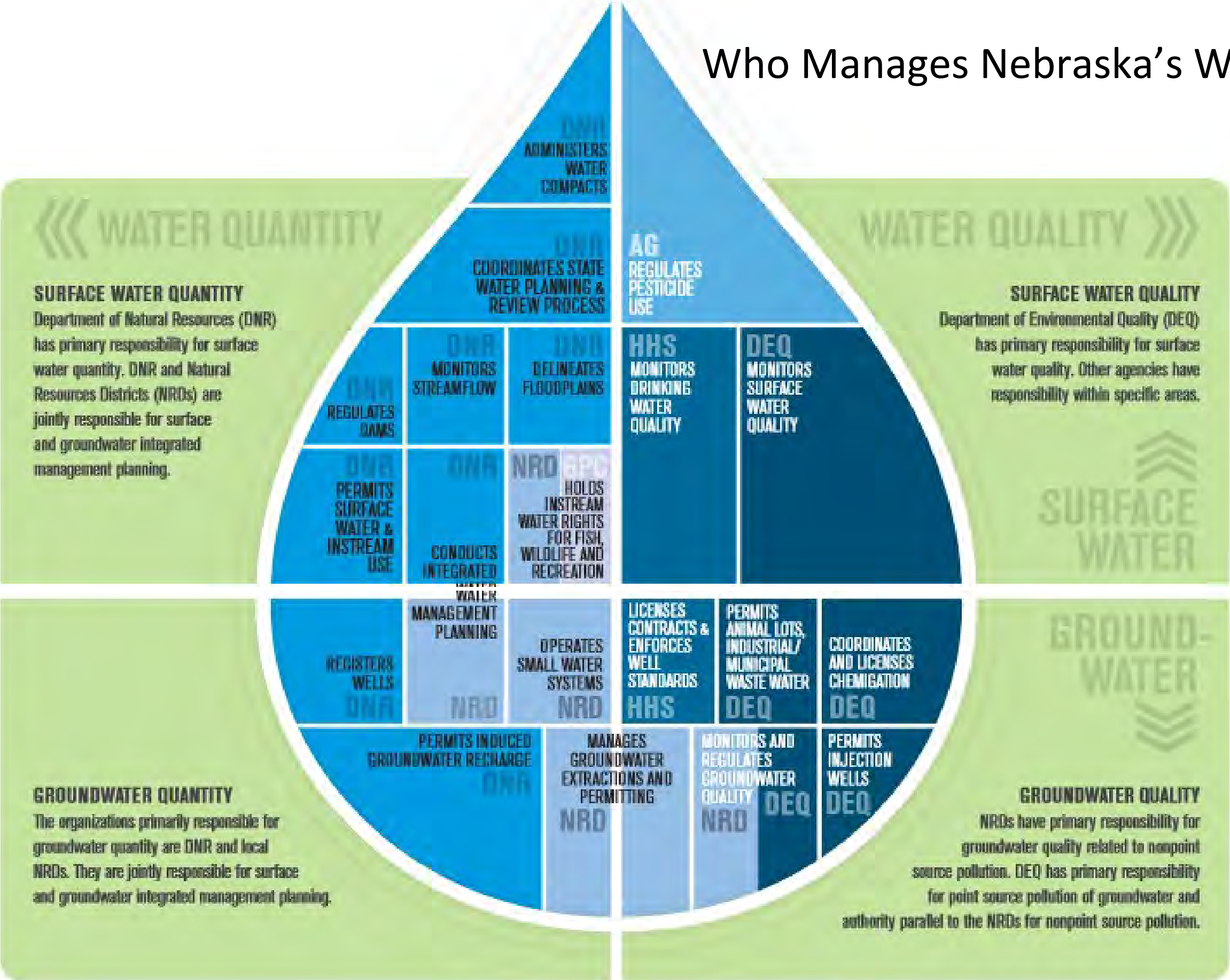


Image courtesy of Nebraska DNR



# Monitoring Surface Water Quality in Nebraska

Point Source



Nonpoint Source





## Ambient Stream Monitoring

- Monthly Monitoring at 100 sites
- Monthly Pesticides May-Sept
- Quarterly metals

## Ambient Lake Monitoring

- Monthly May - Sept at 45 Sites

## Public Beach Monitoring

- Weekly Monitoring at 51 Beaches May-Sept

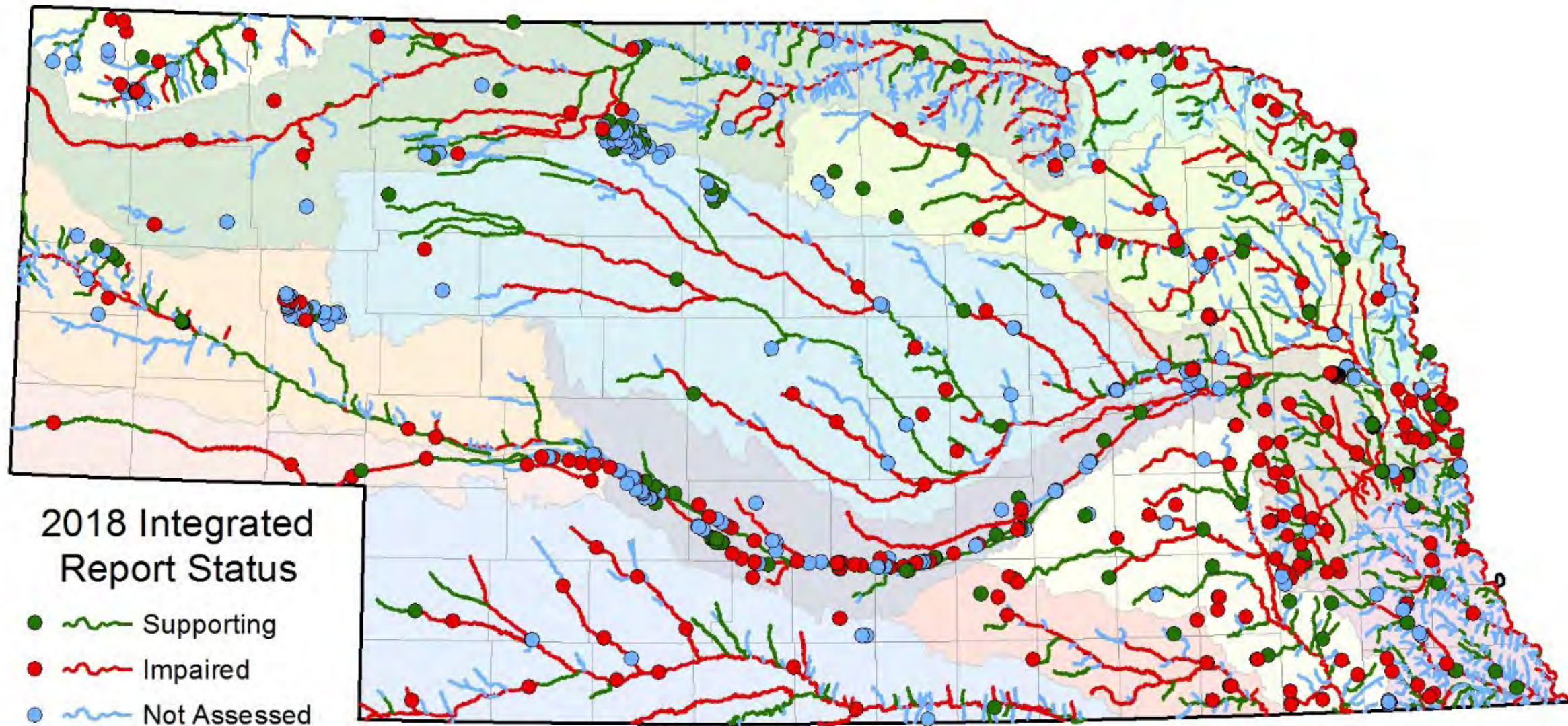


# Basin Rotation Monitoring





# Integrated Report 2018



The 2020 Integrated Report has been submitted to EPA and is pending approval.





# Surface Water Quality - 2018 Most Common Nebraska Surface Water Impairments

## Most Common **LAKE** Impairments (Nebraska)

1. Nutrients
2. Fish Consumption
3. Chlorophyll a
4. High pH
5. Low Dissolved Oxygen
6. Bacteria

## Most Common **STREAM** Impairments (Nebraska)

1. Bacteria
2. Aquatic Community
3. Atrazine
4. Fish Consumption
5. Low Dissolved Oxygen



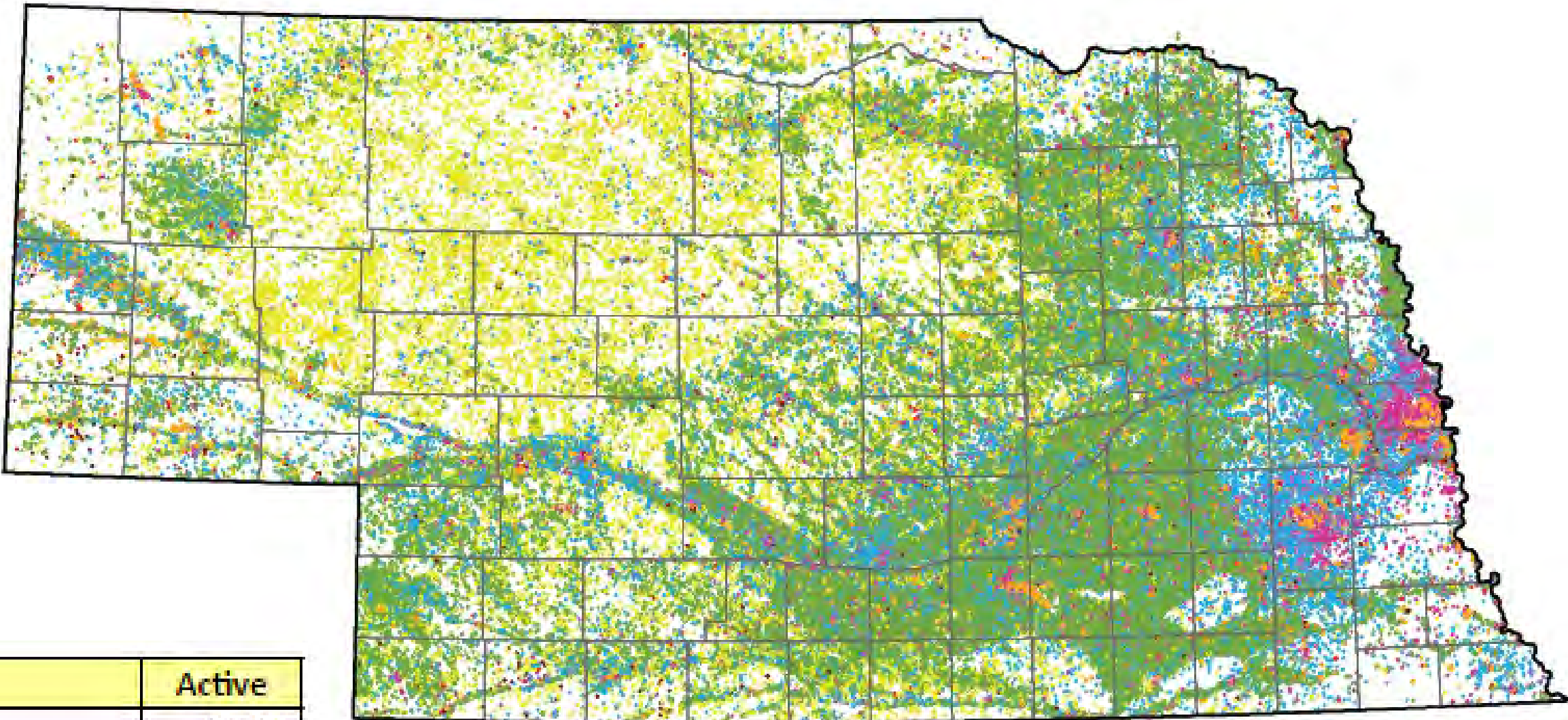


# Groundwater Quality in Nebraska





# Ground Water Quality



Water Use	Active
Irrigation	96,265
Domestic	31,661
Livestock	22,048
Monitoring (groundwater quality)	16,780
Public Water Supply	3,029
Commercial/Industrial	1,769
Other	14,103
<b>TOTAL</b>	<b>185,628</b>

Source: NDEE “2019 Nebraska Groundwater Quality Monitoring Report” Nov. 2019

## Who Monitors Groundwater in Nebraska?

- Natural Resources Districts (23)
- Nebraska Department of Agriculture
- Nebraska Department of Environment and Energy (formerly NDEE)
- Nebraska Department of Health and Human Services
- Public Water Suppliers
- University of Nebraska-Lincoln
- United States Geological Survey

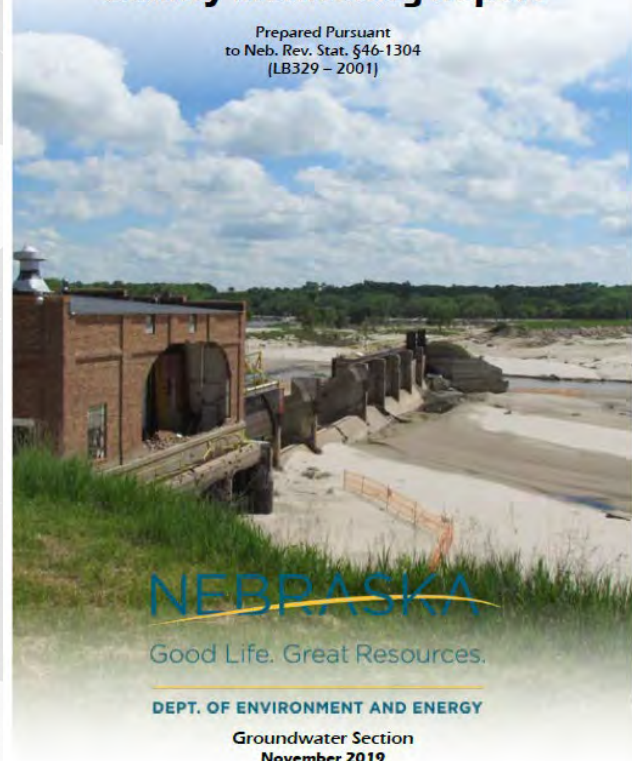




# Ground Water Quality – Quality- Assessed **Agrichemical** Contaminant **Database** for Nebraska Groundwater

## 2019 Nebraska Groundwater Quality Monitoring Report

Prepared Pursuant  
to Neb. Rev. Stat. §46-1304  
(LB329 – 2001)



Provides Groundwater Monitoring Results for Agricultural Compounds in Nebraska to the public.

Provides an indicator of the methodologies used in sampling and analysis for each of the results.

# Types of Wells Sampled



Well Type	Number of Analyses
Monitoring	257,035
Irrigation	118,557
Domestic	76,874
Public Water Supply	38,244
Commercial/Industrial	2,514
Livestock/Other	2,065
Heat Pump (GW Source)	8
Total	495,297



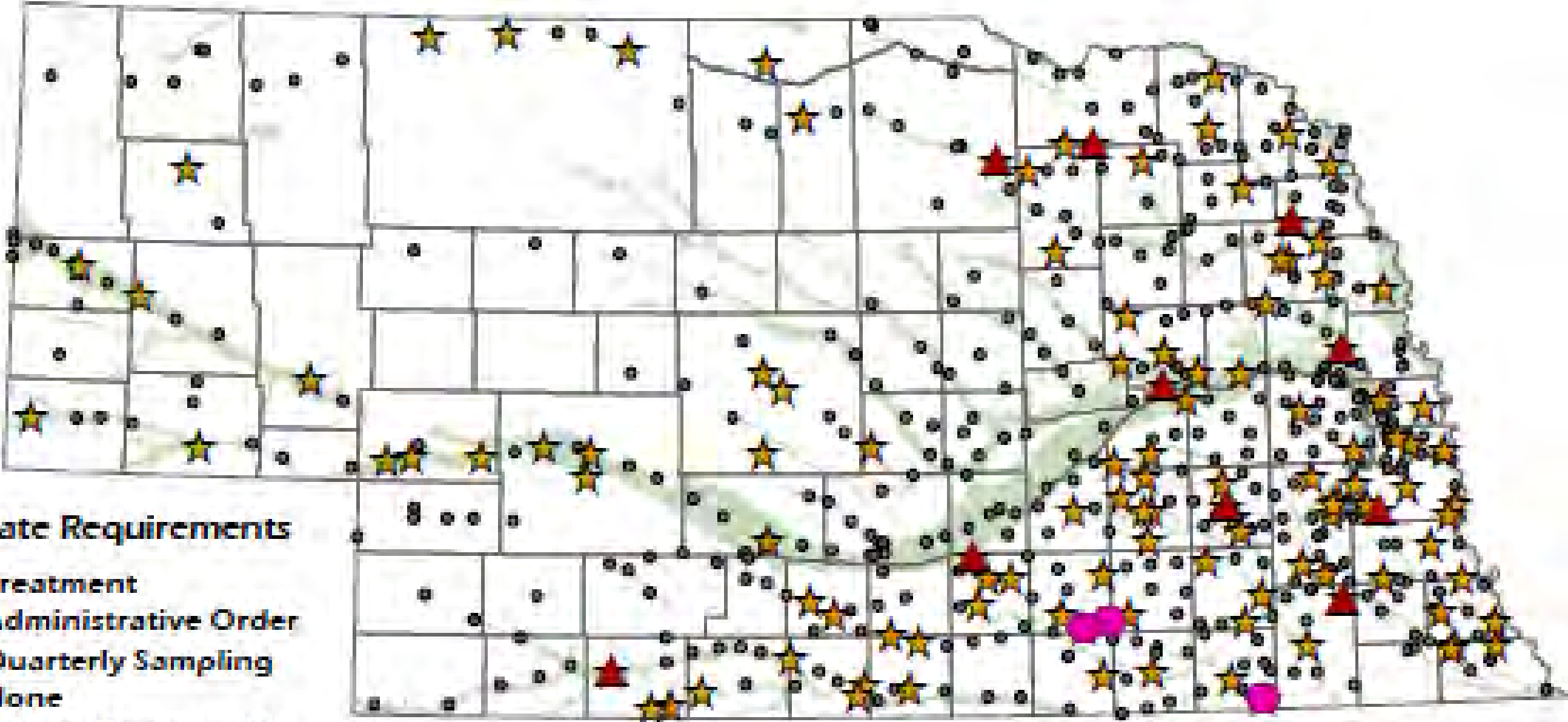


## Ground Water Quality

Compound	Total Samples Collected	Number of Samples that exceed the Reporting Limit	Percent of Samples that exceed the Reporting Limit
nitrate-N	126,645	116,441	91.94%
alachlor ethane sulfonic acid	136	71	52.21%
deethylatrazine	5,847	1,571	26.87%
atrazine	10,768	2,291	21.28%
metolachlor	9,838	1,065	10.83%
deisopropylatrazine	5,159	381	7.39%
cyanazine	10,300	422	4.10%
alachlor	10,338	305	2.95%
propazine	5,741	119	2.07%
simazine	6,309	125	1.98%
prometon	6,095	55	0.90%
metribuzin	10,194	59	0.58%



# Community Public Water Supply Systems with requirements for Nitrate



### Nitrate Requirements

- ▲ Treatment
- Administrative Order
- ★ Quarterly Sampling
- None
- Valleys Topographic Region



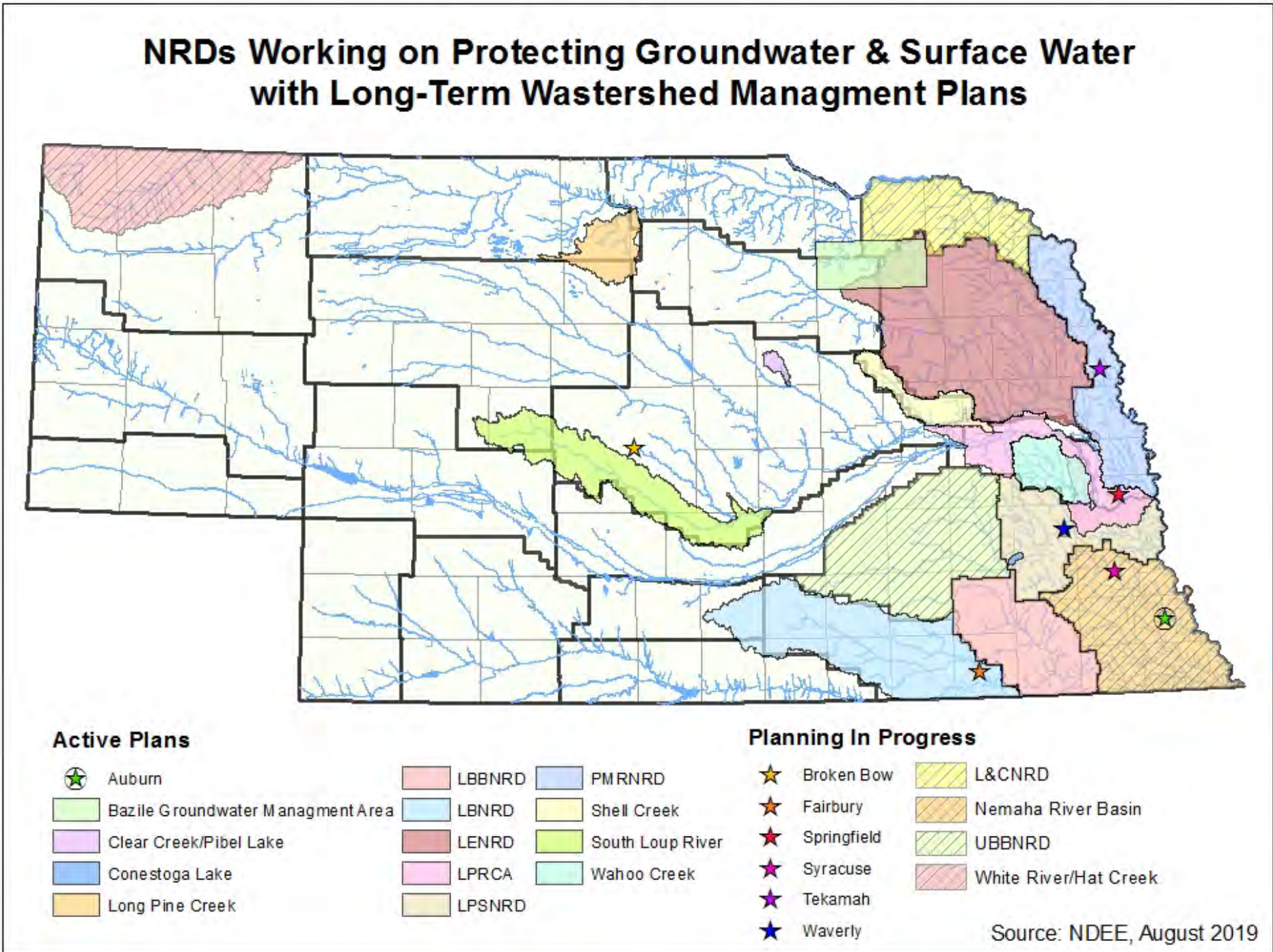




**What ACTIONS are taken in Nebraska to improve Water Quality?**

# Actions to Solve Surface Water Quality Problems

**TMDL – Total  
Permit update  
Watershed (B**



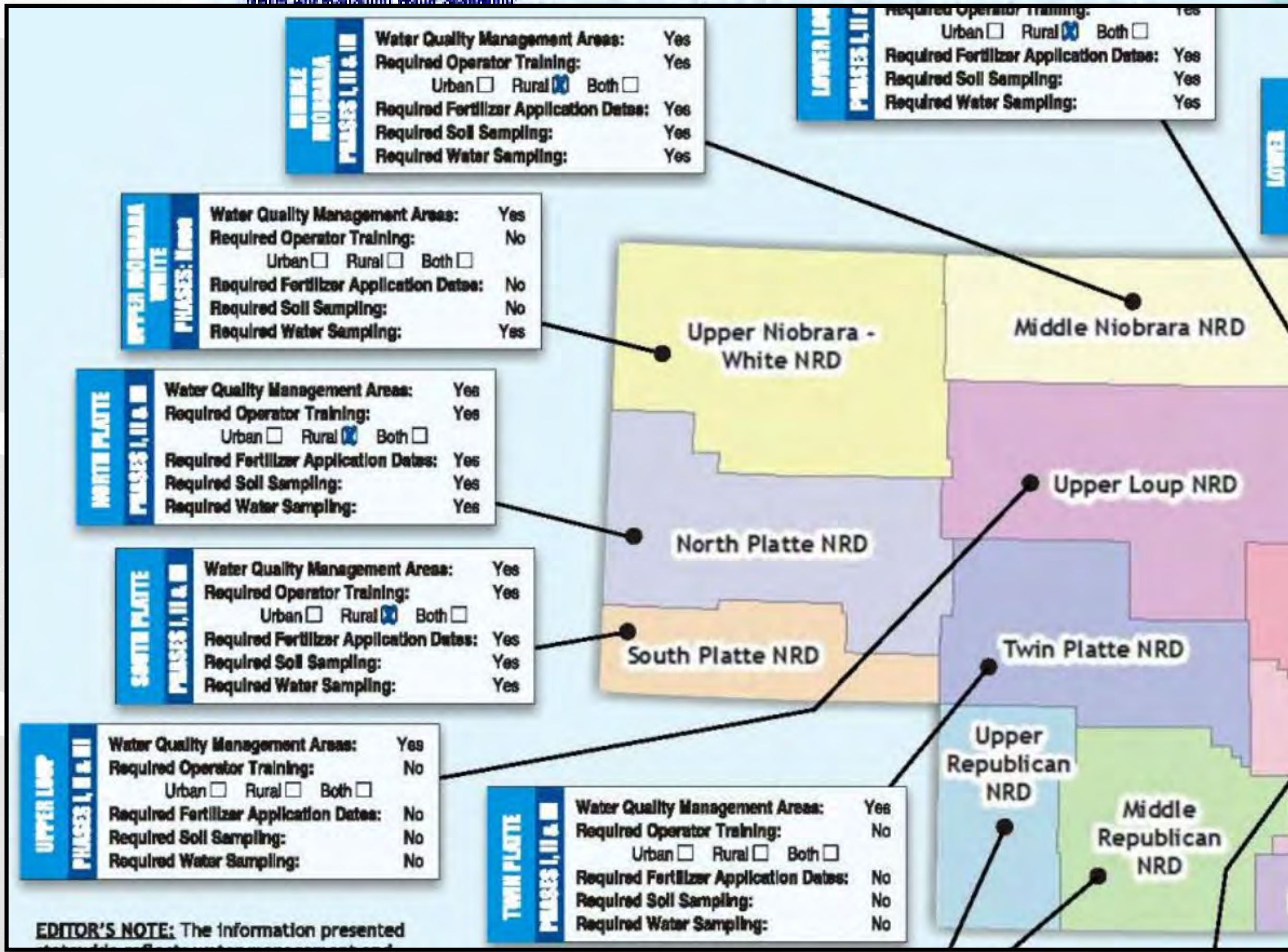


## **Groundwater Management Plans**

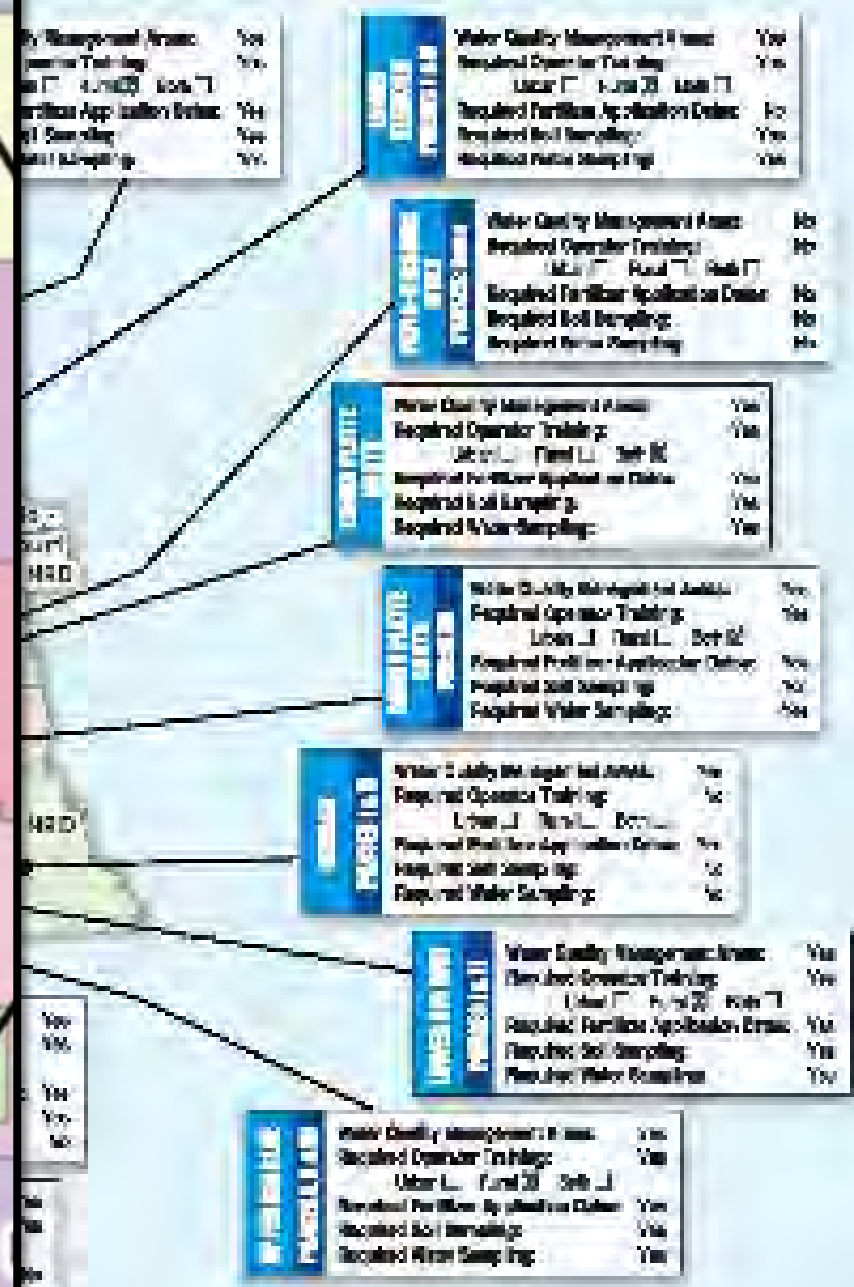
## **Wellhead Protection Areas and Drinking Water Protection Plans**







reference to Phase I, II, III and IV areas. NRDs utilize trigger points notifying specific levels of nitrate in groundwater through nitrating well testing. These triggers are put in place to protect drinking water supply. Trigger points may vary within the individual NRD boundary, but are relative to the safe drinking water standards mandated federally. A district may have all, none, or part of its districts designated as Phase I, II, III and IV areas, or any combination. The higher the Phase, the more implementation of management efforts for protection is required. It is best to consult with your local NRD to identify with their programs. The phases listed here are only the phases currently triggered.



EDITOR'S NOTE: The information presented





# Minimizing Risk and Improving the Bottom Line

## Awareness and Water Quality Testing

- Livestock
- Irrigation Systems
- Cropping Systems
- Health



# Financial and Technical Support

- NRCS EQIP
  - Sourcewater focus
- NWQI (through NRCS)
- Local NRD
- Watershed Management Plan
- Wellhead Protection Area
- Drinking Water Protection Plans
- Pheasants Forever
- Individual Municipality





Organization/Program	Acronym	Technical Assistance	Funding Assistance	Research	Communication	Compliance	Planning	Monitoring
Federal Highway Administration (FHWA) <a href="http://www.fhwa.dot.gov/">www.fhwa.dot.gov/</a>								

Transportation Equity Act for the Twenty-first Century  
US Army

Dredge and Fill Permits  
Aquatic Habitat Improvement

US

Land Resources Management Program  
Soil Moisture and Conservation Program  
Rehabilitation and Betterment Program

US Env

Conservation Reserve Program  
Conservation Reserve Enhancement Program  
Highly Erodible Lands and Wetlands Program

Forest Stewardship Program  
Center for Semiarid Agroforestry

US

Agricultural Conservation Easement Program  
Conservation Innovation Grants  
Conservation Stewardship Program  
Healthy Forests Reserve Program

Environmental Quality Incentives Program  
Regional Conservation Partnerships Program  
Small Watershed Rehabilitation Program  
Highly Erodible Lands and Wetlands Program  
Voluntary Public Access and Habitat Incentives Program

National Ambient Water Quality Assessment Program  
Cooperative Water Quality Monitoring and Assessment Program

Organization/Program

Conservation Reserve Program  
Conservation Reserve Enhancement Program  
Highly Erodible Lands and Wetlands Program

Forest Stewardship Program  
Center for Semiarid Agroforestry

Agricultural Conservation Easement Program  
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Voluntary Public Access and Habitat Incentives Program

Information and Education  
Pesticide Applicator Training  
Pesticide Collection Program  
Nebraska Pesticide Act  
Nebraska State Buffer Strips

Nonpoint Source Pollution  
Community Lakes Enhancement  
Total Maximum Daily Load  
Water Quality Certification  
Surface Water Quality Standards  
Livestock Waste Control Program  
Water Quality Monitoring

Erosion and Sediment Control Program  
Chemigation Permitting Program  
Technical Assistance and Land Treatment  
Water Quality Monitoring Program  
Nutrient and Irrigation Certification

Agricultural Chemical Security  
Combined Sewer Overflow  
Integrated Solid Waste Program  
National Pollutant Discharge Elimination Act  
Stormwater Management

Underground Storage Tank

Organization/Program

Technical Assistance  
Funding Assistance  
Research  
Communication  
Compliance  
Planning  
Monitoring

Organization/Program

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Organization/Program	Acronym	Technical Assistance	Funding Assistance	Research	Communication	Compliance	Planning	Monitoring
NDEQ (Continued)								
Underground Injection Control Program	UIC					X		X
Resource Conservation and Recovery Act	RCRA					X		
On-site Wastewater Treatment Program	--				X	X		
Source Water Protection Program	--				X	X		X
Wastewater Pre-treatment Program	--					X		X
Wastewater Treatment Sludge Disposal Program	--					X		
Clean Water State Revolving Fund Program	--		X					
Drinking Water State Revolving Fund Program	--		X					

Organization/Program	Acronym	Technical Assistance	Funding Assistance	Research	Communication	Compliance	Planning	Monitoring
Nebraska Department of Health and Human Services (NDHHS) <a href="http://dhhs.ne.gov">dhhs.ne.gov</a>								
Septic Tank Inspection Program	--	X	X			X		
Well Licensing and Construction Program	--					X		

Organization/Program	Acronym	Technical Assistance	Funding Assistance	Research	Communication	Compliance	Planning	Monitoring
Nebraska Department of Natural Resources (NDNR) <a href="http://www.dnr.ne.gov/">www.dnr.ne.gov/</a>								
Soil and Water Conservation Fund	--		X					
Natural Resources Development Fund	--		X					
Water Well Decommissioning Program	--	X	X					

Organization/Program	Acronym	Technical Assistance	Funding Assistance	Research	Communication	Compliance	Planning	Monitoring
Nebraska Department of Roads (NDOR) <a href="http://www.transportation.nebraska.gov/">www.transportation.nebraska.gov/</a>								
Transportation Enhancement Program	--	X	X					
Wetland Compliance Evaluation Program	--					X		

Organization/Program	Acronym	Technical Assistance	Funding Assistance	Research	Communication	Compliance	Planning	Monitoring
Nebraska Environmental Trust (NET) <a href="http://www.environmentaltrust.org/">www.environmentaltrust.org/</a>								
Nebraska Environmental Trust Fund	NETF		X					



## Programs

- **NRCS Local Workgroup**
  - Influences what types of projects are prioritized
- **Local Watershed Group**
- **NRD Board**
- **Watershed Management Plan**
- **Nitrate Working Group**
- **WHPA Advisory Group / Groundwater Guardians**





## Take Home

- Test Your Water Quality
- Know What's Happening in your area
- Be proactive – shoot for your dream farm





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## Ambient Stream Monitoring

- **100 sites monitored monthly (12 per/yr)**  
TSS, chloride, ammonia, nitrate+nitrite, kjeldahl nitrogen, total phosphorus, water temperature, dissolved oxygen(DO), pH, conductivity, turbidity, stream discharge
- **monthly pesticides, May-Sept.**  
Atrazine, acetochlor, metolachlor
- **quarterly metals, Jan, Apr, July, Oct**  
Se, Hg, Na, Mg, Ca As, Ca, Cr, Cu, Pb, Ni, Ag, Zn



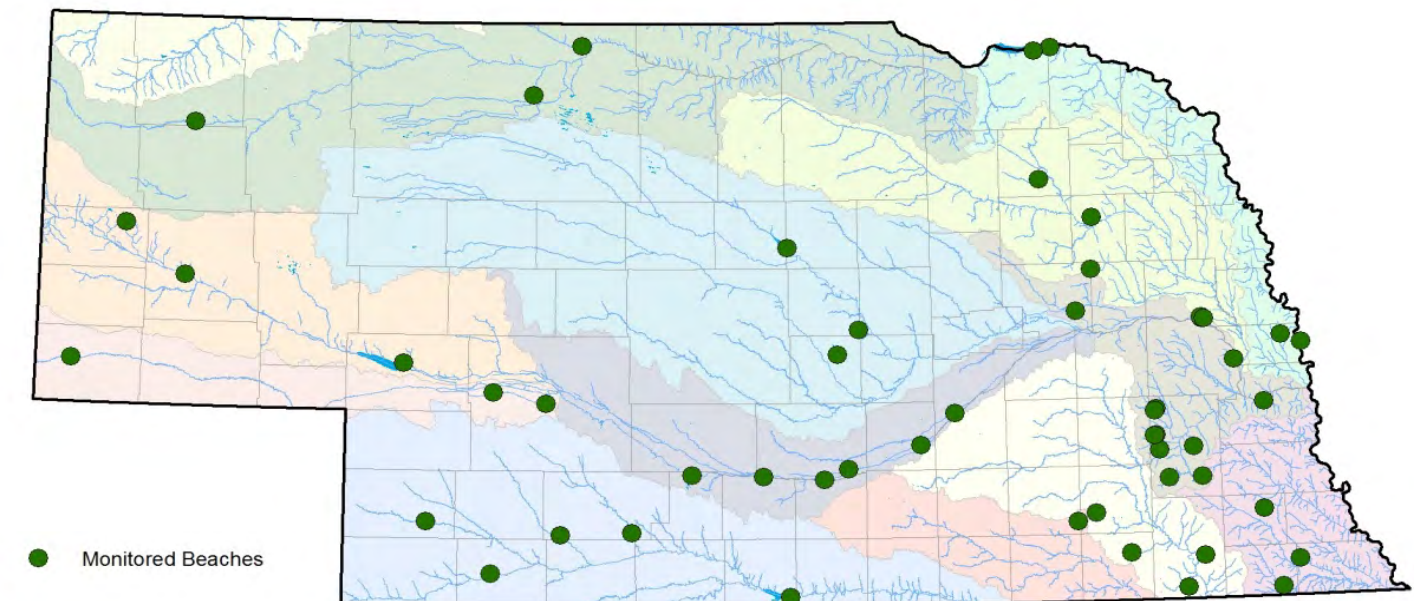
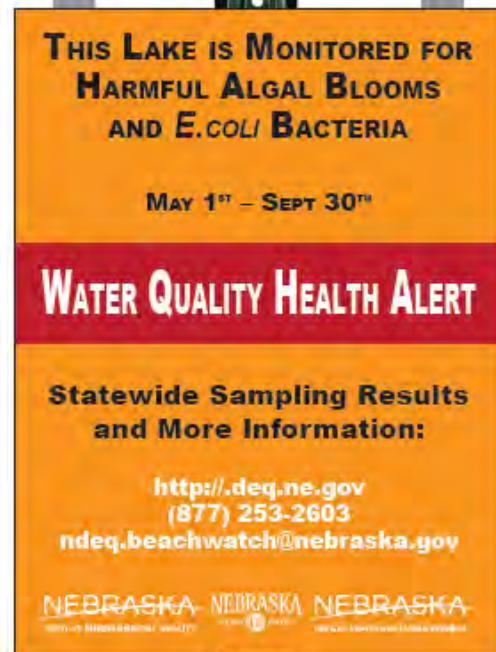
# Basin Rotation Monitoring





## Public Beach Monitoring

- Public Beaches – 51 sites
- Weekly, May 1 – Sept. 30 (22 weeks)
- Bacteria, microcystin
- Weekly results posted <http://dee.ne.gov>





## Other Monitoring

- **Ambient Lake**
  - 45 lakes
  - Monthly, May – Sept.
- **Fish Tissue**
  - 30-60 lakes and streams
  - typically 50-120 fish samples
  - Basis of fish consumption warnings
- **Stream Biological ~ 30-40 sites**
  - Habitat assessment
  - Bugs, fish
  - Field parameters

