

# CHAPTER 6:

## Water Programs

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The goal of the Water Programs is to protect the surface and groundwater resources for all purposes in Nebraska. This chapter describes the programs administered by the Water Divisions, including: petroleum remediation programs, surface water and groundwater monitoring and assessment programs, water quality planning, agriculture programs, wastewater permitting and certification programs, financial assistance programs, and drinking water programs.

### Petroleum Remediation Program

Activities regarding the Petroleum Remediation Program involve two interrelated areas:

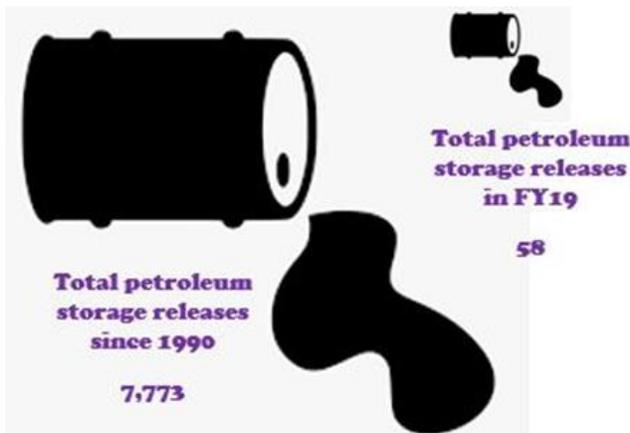
1. Overseeing the **investigation and cleanup** of petroleum contamination resulting from leaking above-ground and underground storage tanks as well as other sources such as pipeline leaks and transportation spills; and
2. Administering a **financial assistance program** for persons responsible for investigation and cleanup costs due to petroleum releases from tanks.



Diesel spill near Mead

### Investigation and Cleanup

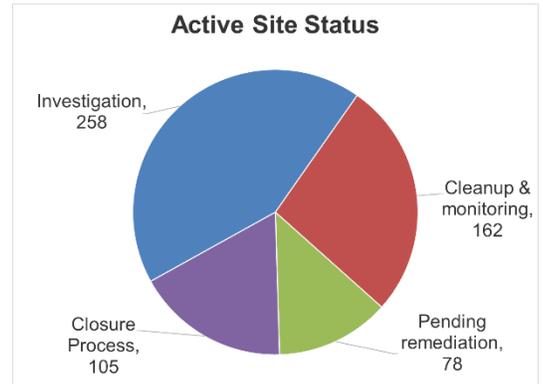
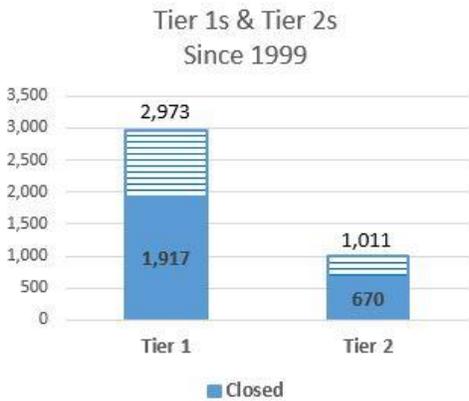
The first step in the Petroleum Remediation Program is the review of tank removal assessment reports or other documentation to determine whether contamination exists. If contamination is present, NDEE decides whether more investigation and cleanup are required. NDEE also determines whether parties who caused the contamination are available and financially capable of assuming responsibility.



In the event these reports indicate a threat to health, safety, or the environment, NDEE requires a detailed study of the affected groundwater and soil to discover the severity of the contamination, direction of groundwater flow, and potential water supplies or other points of exposure that may be impacted. Program staff review these reports to determine if cleanup is needed and issue a public notice of their decision. Staff review remedial actions throughout the project and determine when sufficient cleanup has been accomplished.

The program has incorporated Risk-Based Corrective Action (RBCA) procedures into regulations and accompanying guidance. The RBCA process allows for the evaluation of all petroleum release sites based on the risk they pose to human health and the environment. Those that pose no significant risk are closed; those that pose significant risk are prioritized for further work. Since 1999, the program has been collecting site-specific information needed for Tier 1, the

first step in the RBCA process. Sites that fail Tier 1 are activated for Tier 2, which is a more detailed investigation and the next step in the RBCA process. In FY19, 138 Tier 1 investigations and 21 Tier 2 investigations were initiated. If sites fail Tier 2, they are normally scheduled for cleanup.



**Financial Assistance – Petroleum Release Remedial Action Reimbursement Fund**

When contamination has been found at a site, and the NDEE has determined that more investigation and/or cleanup is required, NDEE will also determine the “responsible person.” This term refers primarily to those who owned or operated the tank or other source when the leak occurred. Those who are determined to be a responsible person may be eligible for reimbursement through the Petroleum Release Remedial Action Reimbursement Fund.



Massive excavation in Superior

The Fund was created by the Legislature in order to help tank owners pay for the costs



associated with assessing and cleaning up any petroleum releases from tanks as well as meet the \$1 million financial responsibility requirement established for underground storage tanks. Costs for both underground and above-ground tank releases are eligible for reimbursement. The program’s

No. of Sites that have reached the \$1M statutory cap:  
**16**



activities in this area include receiving and processing applications for reimbursement from the fund and subsequently issuing reimbursements for eligible costs. To assist applicants, the program developed a guideline entitled "Reasonable Rates Schedule and Reimbursement Guidance Manual" which is available on the web site.

Revenue was just over \$12 million in FY19. During the year, NDEE reimbursed about \$3.2 million to responsible persons for work done at 168 different sites, and \$4.3 million was spent to clean up orphan sites. An additional \$1.2 million of revenue was

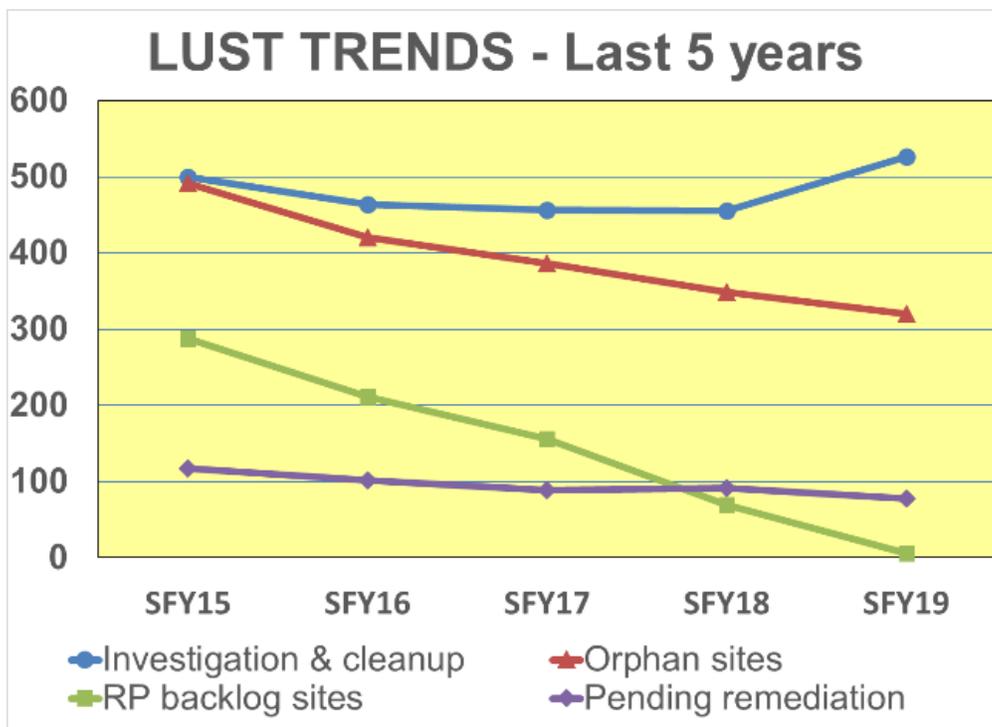
transferred to NDEE’s Superfund program according to legislation passed last year. As of June 30, 2019, over \$236 million has been disbursed since the program began.

**Responsible Person Sites**

For the last several years, there have been hundreds of sites where the responsible person is known, but NDEE did not require work to begin. These were lower priority sites, and there was not sufficient funding to reimburse potential costs under the Reimbursement Fund. The sites were placed on a waiting list (backlogged) until funding was available. NDEE has worked steadily in the last several years to bring that list to zero. By November 2018, there were no more responsible person sites waiting on NDEE to require and approve work. Now when new spills are reported, they are worked on immediately with no waiting required. This helps speed property transactions and redevelopment.



Active leak in Chadron



**“Orphan” Sites**

In situations involving "orphan" sites (sites where there is no viable responsible person), investigation and remediation costs are paid with federal and/or state funds. In FY2019, 48 orphan sites were activated for investigation and/or cleanup using State contractors. At the end of FY19, there were 320 orphan sites backlogged and not yet investigated.



Large orphan site excavation in Minatare

**Equipment Reuse**

As sites are undergoing cleanup, NDEE pays for the purchase of remediation equipment. When sites are cleaned up and closed, NDEE seeks to reuse that



Some of the inventory of remediation trailers waiting to be reused

equipment at other sites. Since June 2005, NDEE has reused hundreds of pieces of equipment, thus greatly reducing the need to buy new equipment. This reuse program has saved Nebraska taxpayers over \$5.5 million in new equipment costs and allowed that money to be used for cleanup of additional sites.



Amount saved from reused equipment

**Voluntary Remedial Action**

Responsible persons are able to perform voluntary remedial action prior to NDEE's approval of their plans and still be eligible for reimbursement consideration in the future. This allows sites to move forward on their own initiative. To date, 234 suspended or backlogged leaking underground storage tank sites have been closed based on voluntary submittals.



Petroleum on ground water in tank excavation in Lincoln's developing Telegraph District

## Water Quality Monitoring and Assessment Programs

### Surface Water Assessment Programs

Staff working with the Surface Water Monitoring and Assessment programs collect physical, chemical, and biological water quality samples from streams and lakes, implement surface water improvement projects, and prepare surface water quality reports. Some monitoring programs collect stream and lake samples throughout the state; however, most monitoring is focused in one to three major river basins each year in conjunction with a rotating basin monitoring strategy. Monitoring data are used to document existing water quality conditions, assess the support of beneficial uses (such as aquatic life, recreation, and public drinking water supply), and prioritize water quality problems. Current monitoring partners include the Natural Resources Districts (NRDs), Nebraska Public Power District (NPPD), U.S. Army Corps of Engineers (USACE), Nebraska Game and Parks Commission (NGPC), University of Nebraska-Lincoln (UNL), Central District Health Department (CDHD), and United States Geological Survey (USGS).



Canoeing at Holmes Lake, Lincoln

Each year, surface water samples are collected at hundreds of locations across the state resulting in over 36,000 individual field measurements and laboratory analyses.

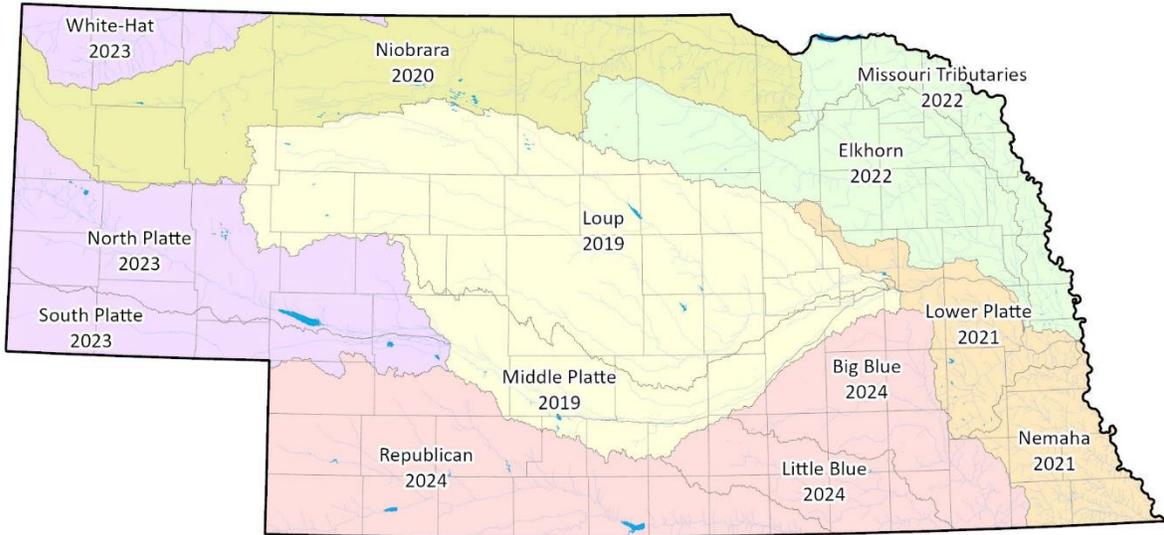
NDEE's surface water monitoring programs have different purposes. Brief descriptions of the basin monitoring strategy, as well as other water quality monitoring programs, are provided below. Additionally, a more detailed overview of the programs are provided in the Department's annual publication Water Quality Monitoring Report available online.



#### Basin Rotation Monitoring Program

- One to three river basins per year;
- Intensive monitoring of flowing waters (rivers and streams);
- In 2019, the Loup and Middle Platte River basins were sampled;
- Typically 30-45 sampling locations, weekly during the summer.

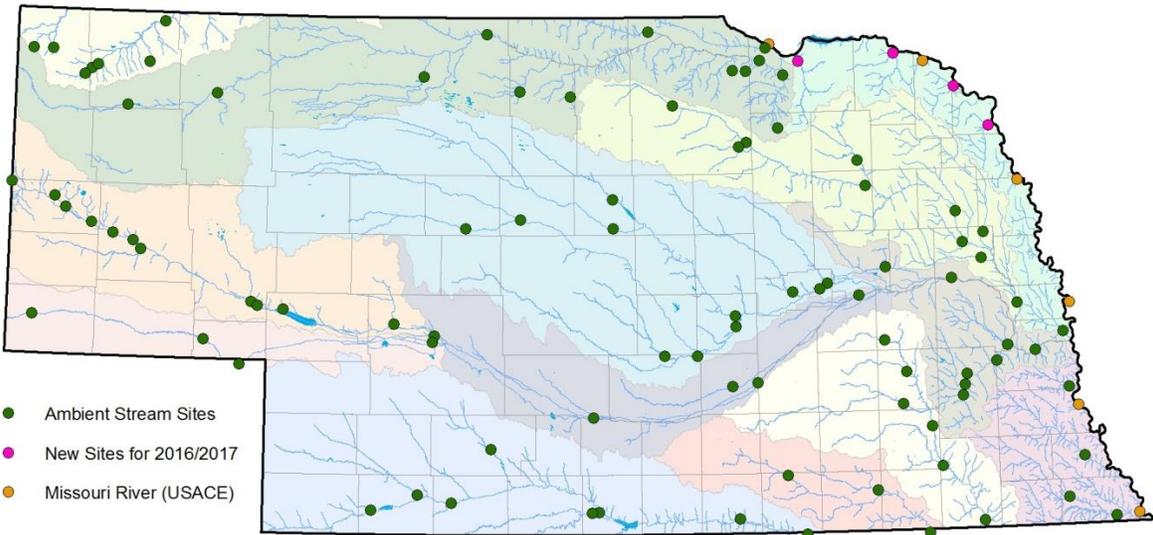
**Six-year basin rotation monitoring schedule**



**Ambient Stream Monitoring Program**

- Network of 101 fixed stations;
- Main stem and tributary streams;
- Thirty-four parameters analyzed at each network location during each sampling event;
- Collected monthly, year round.

**Locations of NDEQ Ambient Stream Monitoring Program sites**



**Public Beach Monitoring Program —**

- Nebraska is on the forefront of national sampling and public notification for Harmful Algal Bloom (HAB) events;
- Also known as blue-green algae;
- Up to 54 public beaches sampled weekly during the summer months;
- Samples analyzed for *E. coli* bacteria and the microcystin toxin;
- Risks to humans come from external exposure (prolonged contact with skin) and from swallowing the water;
- Symptoms from ingestion can include headaches, nausea, muscular pains, central abdominal pain, diarrhea and vomiting. Severe cases could include seizures, liver failure and respiratory arrest. The severity of the illness is related to the amount of water ingested, and the concentrations of the toxins;
- Children, because of their smaller body size, are at risk for more intensive symptoms;
- Results and beach alerts are issued each week during the summer on a Listserve and NDEE's web site. Signs are posted at affected beaches



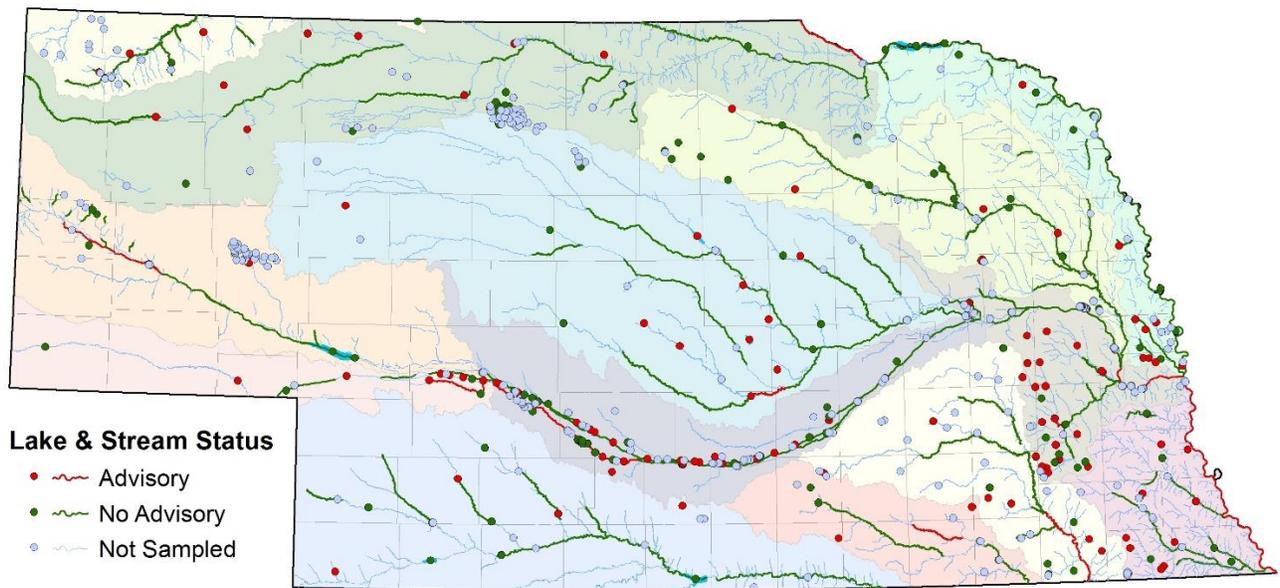
Harmful Algal Bloom (HAB) at Willow Creek Reservoir, Pierce County

**Fish Tissue Monitoring Program**

- Assess fish tissue for toxins, such as mercury and polychlorinated biphenyl compounds (PCBs);
- Current fish tissue consumption advisories at 139 locations;
- Most recent report on-line.



**Lake and Stream Fish Consumption Advisory Locations in Nebraska Through 2018**



**Stream Biological Monitoring Program**

- Stream sites assessed for the overall health of the streams;
- Diversity and numbers of resident aquatic macroinvertebrate and fish communities evaluated;
- Sites chosen with a probabilistic sampling design;
- Typically ~30 sites in the basin being monitored in the Basin Rotation Monitoring Program'



**Ambient Lake Monitoring Program**

- Twenty-six lakes and reservoirs sampled monthly during summer months;
- Evaluate water quality suitability for fish and aquatic organisms to survive and reproduce;
- Long-term effects can be assessed.



**Fish Kill and Citizen Complaint Investigations**

- Dead fish and other surface water concerns are relayed to NDEE throughout the year;
- On-site investigations and water quality sampling performed at many of the complaints;
- Four fish kills investigated (July 1, 2018 to June 30, 2019): two were from low dissolved oxygen levels and two resulted from disease;
- Eighty complaints were taken by the Surface Water Unit in the last year, many were forwarded to other NDEE programs or other agencies.

**Stream Nutrient Assessment Pilot Study**

- Patterned after a similar program at the State of Ohio’s Stream Nutrient Assessment Protocol (SNAP);
- Assess the impacts of nutrients on the biology of Nebraska's streams, and determine if local degradation occurs due to elevated nutrient loads;
- Streams chosen are also sampled as part of the Basin Rotation Monitoring Program;
- Typically, 7-10 streams are sampled in the same basin as the Basin Rotation Monitoring Program;

**National Rivers and Streams Assessment**

- An EPA grant was received in 2018 to assist in the National Rivers and Streams Assessment (NRSA);
- National program designed to determine the extent to which rivers and streams support a healthy biological condition and extend of stressors that affect them;
- Thirty-four waterbodies sampled in 2019;
- Monitoring included collections of water, fish, benthic macroinvertebrates, and observations of habitat, vegetation, and disturbance.



**Integrated Report** —States are required by the federal Clean Water Act to prepare a biennial water quality report called the Integrated Report, The Integrated Report provides a comprehensive summary of the status and trends of surface water quality in Nebraska and includes a list of impaired surface waters that do not support their assigned beneficial uses. The 2018 Water Quality Integrated Report, which was approved by the EPA in April 2018, is available on NDEE's web site <http://deq.ne.gov>. The report's direct URL is: <http://deq.ne.gov/Publica.nsf/Pages/WAT234>



Antelope Creek Lincoln

**Groundwater Assessment Programs**

**Groundwater Quality Monitoring Report**

The Groundwater Quality Monitoring Report summarizes the water quality monitoring efforts of the Natural Resources Districts, NDEE, and other state, local and federal agencies. This year the reports were only presented in an electronic format, and can be found on NDEE’s web site, <http://dee.ne.gov>. (Select Publications & Forms, then select Groundwater Program, then select Annual Reports.) The direct URL to the 2018 Groundwater Quality Monitoring Report is:

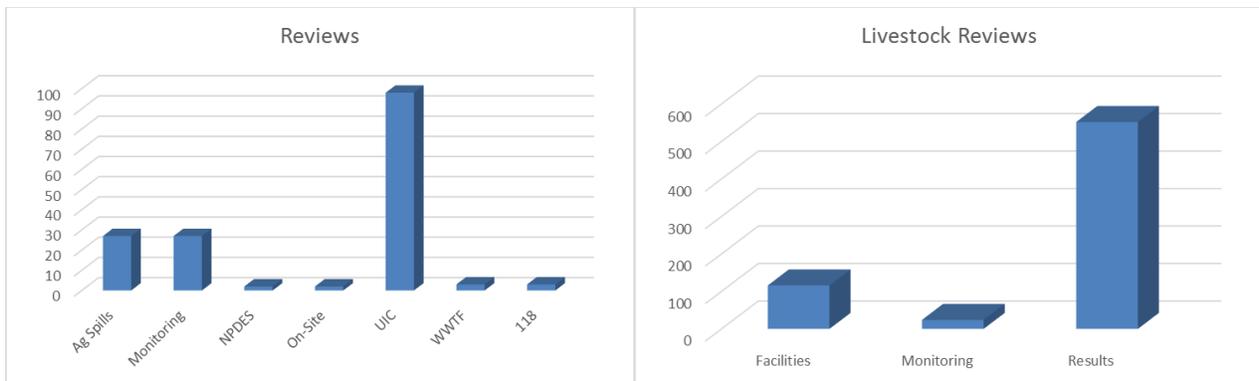
<http://deq.ne.gov/publica.nsf/PubsForm.xsp?documentId=B8F8D47840E9665886258360005B61CF&action=openDocument>. Statistics and maps showing nitrate-nitrogen groundwater monitoring results as well as statistics for three of the 241 agricultural chemicals detected in the state are presented. The report uses data from the Quality-Assessed Agrichemical Contaminant Database for Nebraska Groundwater, developed cooperatively by the Nebraska Department of Agriculture, University of Nebraska-Lincoln, and NDEE. These data are accessible to the public on the Nebraska Department of Natural Resources web site, <https://dnr.nebraska.gov>.



**Hydrogeologic Studies and Reviews**

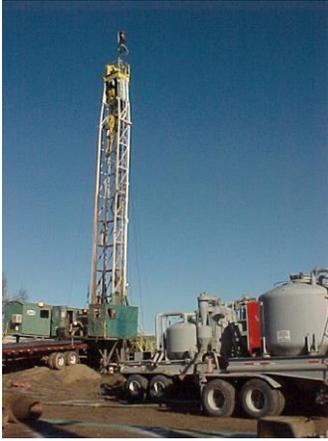
The Groundwater Unit is responsible for hydrogeologic review of various NDEE projects and programs to determine possible effects on groundwater quality and to recommend possible courses of action. Programs for which this review is performed include leaking underground storage tanks, surface spills, underground injection control, wastewater treatment facilities, septic systems, NPDES permits, livestock waste control facilities, the Natural Resources Districts' Groundwater Management Plans, and others.

In addition, the Groundwater Unit performs reviews and oversees remediation if a situation does not fall under another agency program and is of environmental significance. Unit personnel continue to take responsibility under Title 118 — Groundwater Quality Standards and Use Classification for many site investigations, and have sampled and supervised site cleanups.



**Underground Injection Control (UIC)**

The Underground Injection Control (UIC) program reviews and issues permits, conducts inspections, and performs compliance reviews for wells used to inject fluids into the subsurface. There are six classes of injection wells:



- Class I injection wells are for the injection of wastewater below the lowermost underground source of drinking water.
- Class II wells are associated with oil and gas production, and are regulated by the Nebraska Oil and Gas Conservation Commission.
- Class III wells are used to inject fluids for the purpose of extracting minerals.
- Class IV wells are associated with the injection of hazardous waste, are illegal, and have never been allowed in Nebraska.
- Injection wells not included in the other specific classes are considered to be Class V wells. Common examples of Class V wells include: open-loop heat pump systems, large capacity septic systems, and sub-surface drip irrigation systems
- Class VI wells are associated with the injection of carbon dioxide for permanent disposal. This class of wells is currently regulated by the EPA.

Currently the State of Nebraska has four permitted Class I wells. Two of these are issued to Crow Butte Resources, Inc. (near Crawford, NE). The other two are issued to the City of McCook, NE and Kugler Oil Company (Culbertson, NE). The only Class III wells in the state are at the Crow Butte Resources, Inc. uranium facility near Crawford. Class V wells are located throughout the state and make up the majority of Nebraska UIC wells.

### Mineral Exploration Program

The Mineral Exploration program issues and reviews permits, conducts inspections, and performs compliance reviews for holes drilled, driven, bored, or dug for the purpose of mineral exploration. These permits are issued to persons exploring for potential mineral resources such as consolidated rock; sand and gravel; or material commingled, in solution, or otherwise occurring beneath the surface or in waters of the State, and are regulated under Title 135 – Rules and Regulations for Mineral Exploration Holes. This type of exploration specifically excludes oil and gas exploration, which is regulated by the Nebraska Oil and Gas Conservation Commission.

### Wellhead Protection

The State Wellhead Protection program is a voluntary program, which assists communities and other public water suppliers in preventing contamination of their water supplies. State Wellhead Protection Program activities include delineating the zones of influence which may impact public supply wells, training communities on how to inventory all potential sources of pollution within these vulnerable zones, working with the local officials to identify options to manage these potential pollution sources, working on monitoring plans, and helping develop contingency plans to provide alternate water supplies and site new wells. One hundred eighteen community water supplies have approved Wellhead Protection plans as of June 30, 2019.

In 2018, NDEE began using the Groundwater Evaluation Tool (GET) to model WHP areas for Nebraska's Community Drinking Water Systems. GET is a web based subscription service which utilizes seven regional numeric groundwater models to run reverse particle tracking which creates time-of-travel capture zones. Statewide models cover 511 of the 522 community groundwater PWS that produce their own water.

This tool has allowed NDEE to become more efficient in updating WHP areas throughout the state while increasing the quality of models and reports it produces for Nebraska communities. GET can



also be used to assist communities in understanding the water quality in areas where new wells may be placed.

### Source Water Assessment and Protection

Source Water Protection funds have been distributed to complete 100 separate Source Water Protection projects throughout the state since 2004. In SFY2019, Source Water Protection funds were distributed to the following public water systems: Gordon, Syracuse, and Wilber. The total amount available to award was \$150,000.

NDEE is coordinating with our CWA 319 program to engage Nebraska's communities and producers and develop Drinking Water Protection Management Plans (DWPMP) that proactively address nonpoint source contamination. SWP grant funds are used to develop the plans, encourage community involvement through stakeholder groups and put on public meetings to promote the projects. The plans are alternative 9-element watershed management plans that, when accepted by EPA, make communities eligible for CWA 319 funding. This funding pool provides more funding and longer term grants (5 years) that the Source Water Protection Grants are not able to do. These plans bring together NRDs, NRCS, and local stakeholders to increase on-the-ground agricultural best management practices and increase outreach and education efforts in Nebraska's communities. The first Drinking Water Protection Management Plan in the nation, was accepted by EPA in the summer of 2018 for the Bazile Creek area in northeastern Nebraska. One additional plan has been accepted and six are in various states of development.



The 2018 Farm Bill has dedicated 10% of total funds available for conservation programs (with the exception of Conservation Reserve Funds) each year, to be used for source water protection. NDEE is working with NRCS to develop the priority areas in Nebraska where funds will be focused. This effort is meant to address excessive nutrients, and other impairments of drinking water. For Nebraska, this effort will primarily focus on groundwater as it is the predominant source for drinking water in the state. The highest priority areas include community public water systems WHP areas and phase 2, 3, and 4 groundwater management areas that include WHP areas. Best management practices incentive payments will go to the NRCS - EQIP eligible owner/operators of agricultural land who install conservation practices relating to water quality and quantity. The importance of this change in the farm bill cannot be understated. Many Nebraska communities don't have the staff, time, or money to do the above mentioned Drinking Water Protection Management Plans and the new priority in funding from NRCS may ensure that all community public water systems have on-the-ground practices that work to reduce nitrates in source water protection areas.

### Testing Ag Performance Solutions (TAPS)

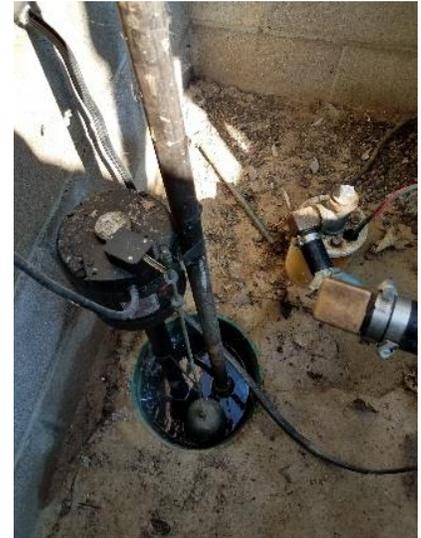


Several DEE employees formed the "Grow Corn Grow" team and participated in the University of Nebraska – Lincoln TAPS competition for the 2018 growing season. The goal of TAPS is to promote efficiency and profitability while providing interaction among all those involved in the production and/or the business of agriculture production. The team made decisions about a 0.4-acre area, which is then extrapolated to a 3,000-acre corn farm in Lincoln County, Nebraska. In reality, UNL-West

Central Research and Extension Center does all the farming and the hard work. A multitude of high-tech instruments and services are available to teams to help make decisions. Each team makes cost and timing decisions on: • Insurance • Nitrogen Management • Corn Hybrid Selection • Seeding Rate • Irrigation Management • Grain Marketing. The DEE team place first in the “Most Profitable Farm” category and second in the “Highest Input Use Efficiency” category.

### **Water Well Standards and Contractors’ Licensing Program**

In July 2018 the Water Well Standards program was brought to the NDEE through a Memorandum of Agreement with the Nebraska Department of Health and Human Services. Program personnel include three inspectors and one administrative assistant. This program is tasked with inspecting all domestic wells and 25 percent of all other wells drilled in the previous calendar year. The program is also responsible for licensing and regulating over 800 licensed water well professionals which includes administering examinations on a quarterly basis. In addition, the program answers various questions and complaints from both the public and the regulated community. The program also has a 10 member board which meets quarterly.



## Water Quality Planning

### Surface Water Quality Standards

NDEE develops surface water quality standards which are found in Title 117 – Nebraska Surface Water Quality Standards. The state’s waterbodies have been assigned beneficial uses in one of the following categories:

- Public water supply,
- Aquatic life,
- Agriculture,
- Industry,
- Recreation, and
- Aesthetics.



Each beneficial use has water quality criteria for chemical and physical parameters that are developed to be protective of that use. For example, criteria for nitrogen are different for waters assigned to public water supply use than those which have an industrial beneficial use. These criteria form the basis of water quality protection for all surface water quality programs conducted by NDEE. The federal Clean Water Act (CWA) specifies that states review their water quality standards and revise where appropriate once every three years (triennial review).

Nebraska’s triennial review was formally initiated with a public hearing to take testimony from any interested party regarding changes sought for Title 117. A list of potential changes was formed and draft mark-up was prepared for Departmental and Administration consideration. Title 117 was signed by the Governor on June 24, 2019 and approved by EPA on September 5, 2019.

The updated standards are available on NDEE's website. In addition to developing the standards, staff develop and implement procedures for applying the standards to surface water quality programs, such as NPDES permits.

### Section 401 Water Quality Certification

The Water Division CWA404 Section administers the Water Quality Certification Program in accordance with Section 401 of the CWA. This program evaluates applications for federal permits and licenses that involve a discharge to Waters of the U.S. and determines whether the proposed activity complies with Nebraska Surface Water Quality Standards. If the activity is likely to violate the standards, conditions for complying with the standards will be issued with the certification, or certification will be denied. The U.S. Army Corps of Engineers Section 404 Dredge and Fill Permits and Federal Energy Regulatory Commission licenses are examples of federal regulatory programs that require State Water Quality Certification before federal permits or licenses can be issued. NDEE reviews approximately 400 Section 404 permit applications annually.

### Impaired Waters and Total Maximum Daily Loads (TMDLs)

The Federal CWA, Section 303(d), requires states to prepare a list of impaired surface waters – waters that do not support the assigned beneficial uses as listed in Title 117 - Nebraska Surface Water Quality Standards. From this list, states are to prepare TMDLs that include the pollution control goals and strategies necessary to improve the quality of these waters and remove the identified impairments so these waters may meet their assigned beneficial uses.

As in previous years, NDEE has opted to combine the required CWA Section 303(d) list with the Section 305(b) report on the general status of water quality in the state. This combination is referred to as the Integrated Report. The 2018 Integrated Report was approved by EPA in April 2018 and is available on NDEE’s web site. Work on the 2020 Integrated Report is underway.

The following table summarizes NDEQ’s work in this area.

| TMDL Category | TMDL Name                  | # of Waterbodies | Pollutant     | Status                  |
|---------------|----------------------------|------------------|---------------|-------------------------|
| <b>4a</b>     |                            |                  |               |                         |
|               | Republican River Basin     | 26               | <i>E.coli</i> | NDEQ Developing Draft   |
| <b>5-alt</b>  |                            |                  |               |                         |
|               | Elkhorn River Basin WMP    | 9                | <i>E.coli</i> | LENRD Developing Draft  |
|               | Nemaha River Basin WMP     | 7                | <i>E.coli</i> | NNRD Developing Draft   |
|               | White River Basin WMP      | 5                | <i>E.coli</i> | UNWNRD Developing Draft |
|               | Lewis and Clark NRD WMP    | 7                | <i>E.coli</i> | LCNRD Developing Draft  |
|               | Lower Platte South NRD WMP | 10               | <i>E.coli</i> | LPSNRD Developing Draft |

This table includes updated Phase II TMDLs and Protection TMDLs on waterbodies without the Recreation Use to protect downstream uses. (LENRD = Lower Elkhorn NRD; NNRD = Nemaha NRD; UNWNRD = Upper Niobrara White NRD; LPSNRD = Lower Platte South NRD; LCNRD = Lewis & Clark NRD)

**Nonpoint Source Management Program**

The goal of the Nebraska Nonpoint Source Management Program is to protect and improve water quality impacted by nonpoint source pollution through an integrated statewide effort. The program is of particular significance because nonpoint source pollution is the most prevalent, widespread cause of water quality degradation in Nebraska and is associated with runoff and percolation from agricultural and urban areas. The program is largely funded by the Environmental Protection Agency (EPA) through Section 319 of the federal CWA and involves key federal, state and local partners.



State nonpoint source problems and priorities are defined in the Nonpoint Source Management Program: "Strategic Plan and Guidance for Implementing the Nebraska Nonpoint Source Management Program 2015-2030," available online. The program emphasizes watershed and groundwater management area planning, targeting of 303(d)-listed impaired waters, and community participation in water quality management plan development.



Storm water infrastructure tour, Omaha

Projects emphasize implementation of 9-Element watershed management plans or Alternative to 9-Element plans in the case of groundwater quality plans.

Included in the major program highlights this year is the acceptance by EPA of three 9-Element watershed management plans: Lower Elkhorn NRD Water Quality Management Plan (WQMP), Lower Platte River WQMP, and Lower Platte South NRD WQMP. In addition, the NPS program has continued to emphasize groundwater quality planning through

development of Drinking Water Protection Management Plans with the communities of Broken Bow,



## Agriculture Section

The Agriculture Section programs consist of the Livestock Waste Control Program, the Chemigation Program, and the Agricultural Chemical Containment Program.

### LIVESTOCK WASTE CONTROL PROGRAM

#### Overview

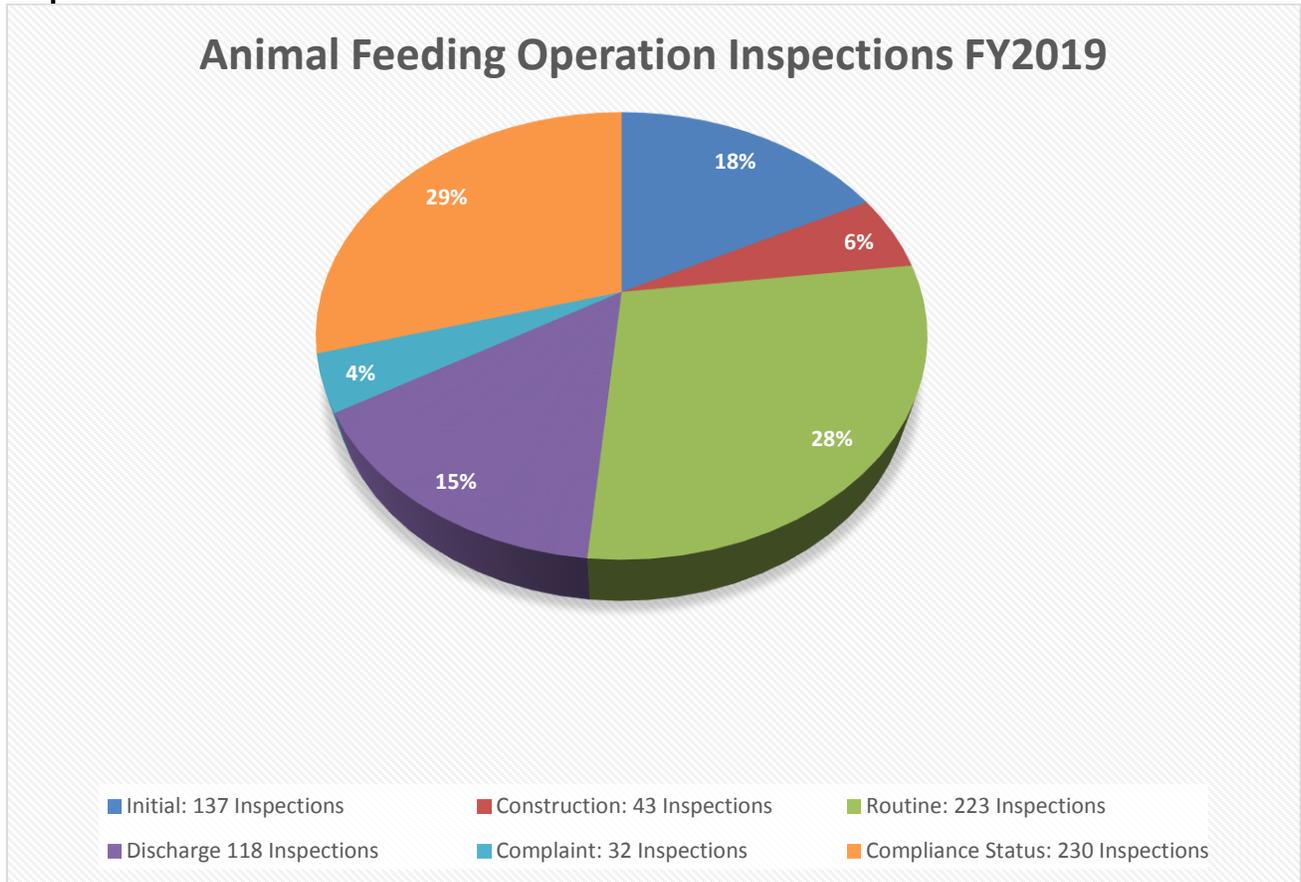
The Livestock Waste Control Program (LWC) is charged with the overall responsibility to protect Nebraska's surface water and groundwater from discharge of livestock waste from any of the thousands of Animal Feeding Operations (AFOs) in Nebraska.

To accomplish this responsibility, the program administers *Title 130 - Livestock Waste Control Regulations*. The LWC program primarily focuses on the 1,230 active large Concentrated Animal Feeding Operations (CAFOs) required to have permits, but also works with approximately 2,183 Medium AFOs. The LWC Program uses inspections, permitting, and periodic monitoring to fulfill this responsibility. The program also implements the National Pollutant Discharge Elimination System (NPDES) program for CAFOs.



Amendments to Title 130 became effective October 4, 2011 to reflect changes in the U.S. Environmental Protection Agency (EPA) CAFO Rule for NPDES permitting, which primarily involved who needs to apply for NPDES permit coverage. The changes were necessary to ensure the Department would continue to administer the NPDES permit program for EPA. As a result, only CAFOs that discharge are required to apply for NPDES permit coverage.

**Inspections**



The LWC Program staff conducted a total of 783 livestock waste control inspections and investigations in FY2019 (including complaint and discharge investigations). The chart above illustrates the breakdown by type of inspection or investigation. A concerted effort was made during the fiscal year to revisit many medium-sized operations to ensure that they were in compliance with Title 130 and the EPA CAFO Rule.

The flooding in March of 2019 caused a significant amount of discharges. About 100 discharges were reported from that event alone. There were 101 more discharge investigations in FY2019 than the previous year.

A short description of each type of inspection and investigation follows:

**Initial Inspection:** Before constructing a new operation or expanding an existing operation, all medium and large AFOs – whether or not the operation currently is permitted -- must request an initial inspection by LWC Program staff. The reason for this inspection is to determine if livestock waste control facilities (LWCF) must be constructed, expanded, or modified to prevent a discharge and to properly manage the livestock waste generated by the operation.

**Post Construction Inspection:** Upon completion of any required construction of a LWCF, program staff conduct a post-construction inspection to verify the waste control facility was constructed as approved by the Department.

**Routine Inspections:** Once a CAFO or an AFO has received a permit, and the Department has approved operation of the LWCF, program staff will conduct periodic, routine inspections to monitor operation of the livestock waste control facilities, management of the operation’s livestock waste,

and the records these CAFOs and AFOs are required to maintain. Routine inspections are regularly scheduled with an AFO, involving a detailed, extensive review of the operation’s recordkeeping and waste management at the operation.

**Discharge Investigations:** Discharge investigations are conducted when livestock waste control facilities discharging are reported. Sometimes these discharges are not recorded as complaints because the AFO does self-reporting, as required by the regulations.

**Complaint Investigations:** When a complaint is received, LWC Program staff will investigate and may conduct an on-site investigation.

**Compliance Status Inspections:** Generally conducted to verify the AFO's operating status or level of compliance with a specific requirement; these inspections are usually less urgent, non-emergency situations.

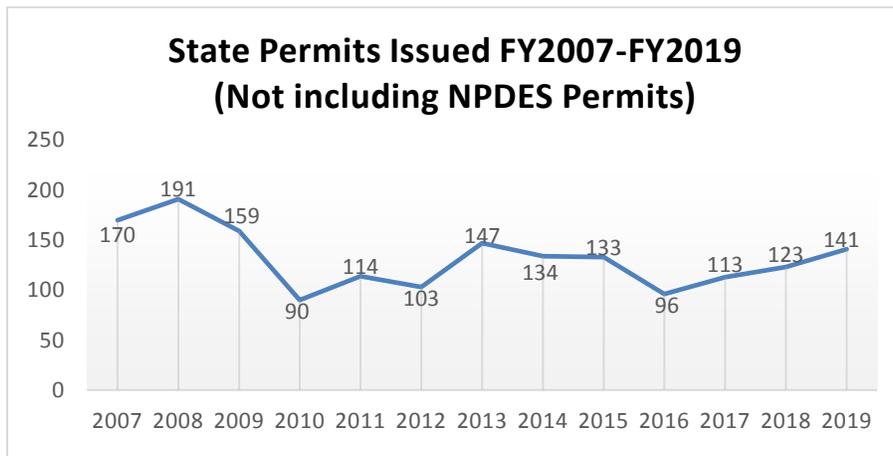
**State Permitting**

After conducting an initial inspection, the Department may require the AFO to submit an application for a Construction and Operating Permit – the state permitting process for livestock waste control facilities – prior to construction of livestock waste control facilities.

The Department received a total of 150 permit applications and issued 141 permits during FY2019, as shown in the table to the right.

| <b>Construction and Operating Permits – FY2019</b> |                              |                       |
|--|------------------------------|-----------------------|
| <b>Type of Application or Permit</b>               | <b>Applications Received</b> | <b>Permits Issued</b> |
| New permits  | 77                           | 76                    |
| Modified permits                                   | 54                           | 47                    |
| Transfer permits                                   | 19                           | 18                    |
| <b>TOTAL</b>                                       | <b>150</b>                   | <b>141</b>            |

The totals do not include applications received or permits issued for any NPDES permits. The chart below shows the total number of state permits issued annually for livestock waste control facilities since FY2007. The Department updated some existing Construction Permits, Construction Approvals and Operating Permits to Construction and Operating Permits if the AFOs updated their nutrient management plans (NMP) to current Title 130 standards. The NMP updates were mainly in conjunction with NPDES Permit renewals or transferred permits.



Once a permitted AFO has completed its construction project, the Department conducts a post-construction inspection. If the post-construction inspection shows the construction was completed as approved, the Department notifies the AFO that operation of the new livestock waste control facility is approved. In FY2019, the Department gave approval to 62 AFOs for operation of their new or expanded LWC facilities.

### National Pollutant Discharge Elimination System (NPDES) Permit

The LWC Program also oversees the NPDES permitting process for livestock, issuing coverage under individual NPDES permits to CAFOs, as well as coverage under an NPDES General Permit for Concentrated Animal Feeding Operations Confining Cattle. Both permits expire every five years, and permittees are required to submit a reissuance application to continue NPDES permit coverage.

The table below summarizes the number of NPDES applications received and permits issued for livestock waste control facilities in FY2019.

| <b>NPDES PERMITS – FY2019</b>                    |                       |                |
|--|-----------------------|----------------|
| Type of NPDES Application/Permit                 | Applications Received | Permits Issued |
| <b>GENERAL PERMIT FOR CAFOs CONFINING CATTLE</b> |                       |                |
| New Coverage                                     | 14                    | 3              |
| Modified or Transferred                          | 25                    | 11             |
| Reissued   | 1                     | 54             |
| <b>SUBTOTAL GENERAL PERMIT:</b>                  | <b>40</b>             | <b>68</b>      |
| <b>INDIVIDUAL PERMITS</b>                        |                       |                |
| New Coverage                                     | 3                     | 4              |
| Modified or Transferred                          | 2                     | 2              |
| Reissued   | 12                    | 6              |
| <b>SUBTOTAL INDIVIDUAL PERMIT:</b>               | <b>17</b>             | <b>12</b>      |
| <b>NPDES TOTALS:</b>                             | <b>57</b>             | <b>80</b>      |

### Fees

The annual fee is assessed on all permitted Large CAFOs and all CAFOs covered under an NPDES permit. The fee is determined based upon the number of head of livestock for which the operation has a permit. The fees provide 20% of the Department's costs to administer the livestock waste control program, as required by statute. The Department received \$263,562 in annual permit fees. In addition, the Department received \$48,618 in initial inspection fees, \$38,585 in permit application fees, and \$1,900 in late payment fees, for a total of \$352,665 in fees.

General information about the Livestock Waste Control Program, including applications, fact sheets, forms, guidance documents, copies of the NPDES General Permit and the four general permits, Title 130 regulations, and public notices of permit issuance or denial, can all be found on the Department's website at: <http://dee.ne.gov>.

## Costco

The livestock program began receiving new chicken barn applications from producers under contract with Costco in FY2018. These chicken producers are not required to obtain permits because their waste product is considered dry manure. However, Costco is requiring their contract chicken producers to apply and obtain the same permit that cattle or hog producers apply for. There have been 34 Construction and Operating permits issued for Costco producers through FY2019. More Costco chicken barn applications are expected in the next year.

## Livestock Growth

Livestock continues to grow in Nebraska. In FY2019 the state saw an increase of 37 large operations from FY2018. The state also saw an increase of 30 medium operations from FY2018. With this growth there was an increase of 34 new Construction and Operating Permits issued from FY2018.

## CHEMIGATION PROGRAM

The Chemigation program, which functions in cooperation with Nebraska's 23 Natural Resources Districts (NRDs), works to ensure that users of irrigation systems applying fertilizers and pesticides do not contaminate the sources of irrigation water. These regulations are contained in *Title 195 – Chemigation Regulations*.

Since 1987, the NRDs have inspected irrigation systems used for chemigation for functioning safety equipment and issued site permits. Chemigation permits are issued annually, and are reported to the Department on a calendar year basis. The 27,727 chemigation permits issued in 2019 constituted a 5% increase in permits issued compared to 2018 (26,835 permits).



A chemigation applicator must be certified by the Department every four years. To receive certification, an applicator must complete training and testing, which is provided under contract with the University of Nebraska Cooperative Extension. Applicator certifications also are reported on a calendar-year basis.

In calendar year 2019, 2,037 applicators have been trained, tested and certified, bringing the current number of certified chemigation applicators to 5,588 applicators. Information about chemigation applicator training dates and certified applicators is available after January 1 of each year on the Department's web site, <http://dee.ne.gov>.

**AGRICULTURAL CHEMICAL CONTAINMENT PROGRAM**

The Agricultural Chemical Containment program regulates the construction and use of commercial and private facilities for the storage, loading, and rinsing activities of bulk liquid fertilizers and bulk liquid and dry pesticides. These regulations are contained in *Title 198 - Rules and Regulations Pertaining to Agricultural Chemical Containment*.

The regulations administered by this program provide specific requirements for design by a Nebraska Registered Professional Engineer, construction materials, containment capacities and maintenance. Although no permit or registration is required, the operation must have a construction plan for the facility and a management program.

The Department and the Nebraska Department of Agriculture have a cooperative agreement that outlines the procedure for coordinating inspection activities between the two agencies. The agreement enhances the communication between the agencies and provides specific protocols to be followed when investigating Agricultural Chemical Containment complaints.

## Water Permitting and Certification Programs

There are a number of certification and permitting programs relating to wastewater treatment facilities, ranging from certification of those who work on septic systems to the permitting of large municipal facilities. These programs include:

- **Onsite Wastewater Treatment Facilities Program** – This program administers system design, professional certification and system registration requirements that affect mostly smaller wastewater treatment or storage systems, such as septic systems, household lagoons, and holding tanks, and anyone doing work on these types of facilities.
- **Wastewater Treatment Facility Operator Certification Program** – This program administers the certification program for wastewater treatment facility operators to ensure proper operation and maintenance of these facilities.
- **Sanitarian Program** - The Sanitation Program inspects the following types of facilities: public swimming pools, recreational camps and mobile home parks. The Sanitation Program also performs well and septic inspections upon request for property transfers. The DHHS has a Memorandum of Understanding with the Nebraska Department of Agriculture to perform food inspections at the following facilities: schools, college food service (room and board for students), senior centers, and child care centers (upon referral from the DHHS Licensure Unit).
- **Wastewater Engineering Program** – The wastewater engineering program reviews and issues permits for commercial, industrial, and municipal wastewater facilities that are planned for construction. The program also maintains regulations for the operation and maintenance of wastewater facilities and for the proper abandonment of facilities when they are removed from service.
- **Drinking Water Engineering Program** - The drinking water engineering program provides engineering plan review; issuance of construction permits; inspection of newly constructed projects for issuance of approvals for placement into service; technical assistance and advisory contacts with owners/operators of public water systems, consulting engineers, state, federal and local officials, organizations, and the general public in matters relating to siting, design, construction, maintenance, and operation of public water systems. In addition to public water systems, the program provides similar services for all new and substantially modified public swimming pools and spas.
- **The National Pollutant Discharge Elimination System (NPDES) Program** – This program is responsible for regulating discharges of pollutants to Waters of the State to maintain and protect the water quality of Nebraska's streams, lakes, rivers, and groundwater.
- **The Nebraska Pretreatment Program** -- This program functions to protect municipal wastewater collection and treatment systems from damage or overloading by industries.

### Onsite Wastewater, Sanitation and Operator Certification Program Accomplishments and Challenges

On February 14, 2019, NDEE and the Nebraska Department of Health and Human Services (DHHS) announced a Memorandum of Agreement. Through the agreement, the DHHS Sanitation

Program and staff moved to the NDEE Onsite Section. The goal is to have the programs integrate into a team to better serve the communities and citizens of the state. The move has been successful and the programs are working together well. Soon after the integration of the Sanitation program occurred, a significant remainder of FY2019 was spent responding to the catastrophic flooding events. The Onsite Wastewater Section assisted Drinking Water Section staff with staffing collection sites for individuals who wanted their flood impacted private drinking water well sampled. The program took this opportunity to educate homeowners on managing septic systems after a flood event. In addition to the flood response an additional significant accomplishment for the Section was successfully negotiating an inter-governmental agreement between NDEE and the University of Nebraska-Lincoln. The agreement provides UNL funding to implement professional development trainings and education resources for Onsite Wastewater professionals. Another accomplishment for the Section was launching online system registration. Each year the Section processes roughly 1,600 paper registrations and applicable fees associated with the registration. The online system registration portal allows certified professionals to register systems online and pay via credit card, or print a receipt and pay with a traditional check. Over the next year the Section will promote online system registration. Lastly, program staff attended and presented at the annual Nebraska Onsite Waste Water Association Annual Convention. The annual convention is held each year in February in Kearney and is the best opportunity to discuss changes in the industry with certified installers, manufacturers, and other regulators.

### Onsite Wastewater Treatment Facilities Program Overview

The requirements administered by the Onsite Wastewater Program cover septic systems, wastewater holding tanks, individual household wastewater lagoons, and other decentralized wastewater treatment systems not connected to municipal wastewater treatment systems. The majority of onsite systems are for single households. However, there are onsite or decentralized systems that provide wastewater treatment for multiple houses (these systems are sometimes called cluster systems), mobile home parks, churches, recreational facilities, camper trailer parks, a variety of businesses with high strength wastes (such as restaurants, butcher shops, and wineries), equipment maintenance buildings, and other commercial or industrial facilities. The U.S. EPA estimates that nearly one in four households depend on onsite systems for wastewater treatment.



NDEQ Staff at a Mound System Installation Workshop

The *Private Onsite Wastewater Treatment System Contractors Certification and System Registration Act (Act)* passed in 2003 required that anyone doing work associated with onsite wastewater systems be certified by the State of Nebraska. The Act provided for the registration of all onsite wastewater systems constructed, reconstructed, altered, or modified. The law also provided for certification and system registration fees to support the program. The Act was amended in 2007 to provide for application fees for permits and subdivision approvals as well as waiving fees for government inspectors. A certification by examination is required for professionals to obtain initial certification. Currently, 512 people hold onsite wastewater certificates. Some

professionals obtain certification in multiple categories. The categories of certification are: Installer (Master and Journeyman), Pumper (Master and Journeyman), Inspector, and Soil Evaluator. Current certificates expire December 31, 2019, and may be renewed via continuing education requirements or re-examination. Certificates must be renewed every two years.

The registration requirement for onsite wastewater systems provides a statewide inventory of new or modified onsite systems. Since registrations began in 2004, over 23,000 systems have been registered, with 1,271 systems registered in FY19.

The Section receives a large number of complaints. There were 128 new onsite-related complaints in FY19 and program staff resolved a total of 62 complaints, which includes both old and new complaints. Typical types of complaints that are investigated include: failed systems that have a surface discharge, and which may pose a threat to public health or the environment, and systems installed by individuals who are not certified by NDEE. In addition, the Section fields approximately 4000 calls annually seeking compliance assistance.

The regulations set minimum design standards for all onsite wastewater treatment systems and include an "Authorization by Rule" provision which allows for the installation of typical onsite systems by a certified professional and subsequent operation by the owner without a site-specific construction or operating permit. These standard conforming systems constitute the vast majority of all new and replacement onsite systems.

Title 124 requires Department approval prior to construction of any subdivision with any lot less than three acres where onsite wastewater treatment is proposed, or if design standards cannot be achieved. Common examples are if a system cannot meet setback distances or the 4-foot groundwater separation distance prescribed in the regulation. Department engineers review construction/operating permit applications. In the past year, the program received 36 applications for construction/operating permits and 17 applications for subdivision review and approval.

### **Sanitarian Program**

The Sanitarian Program staff inspect all public swimming pools/spas located at hotels, apartments, municipalities and recreational facilities. During inspections staff check water chemistry, safety equipment, personnel training and mechanical areas. Recreation camps and mobile home parks are inspected to assure conditions are safe, sanitary and comply with Title 178. The DHHS has a Memorandum of Understanding with the Nebraska Department of Agriculture to perform food inspections at the following facilities: schools, college food service (room and board for students), senior centers, and child care centers (upon referral from the DHHS Licensure Unit). Lastly, sanitarians conduct evaluations of domestic water supplies and onsite wastewater treatment systems at the request of home owners, purchasers, or mortgage lending institutions. Many lenders require an inspection of the onsite water and wastewater treatment systems for compliance with applicable State of Nebraska regulations prior to granting a loan. During the evaluation, staff visually inspect the water well and the onsite wastewater treatment system and collect water samples to test for bacteria and nitrates.



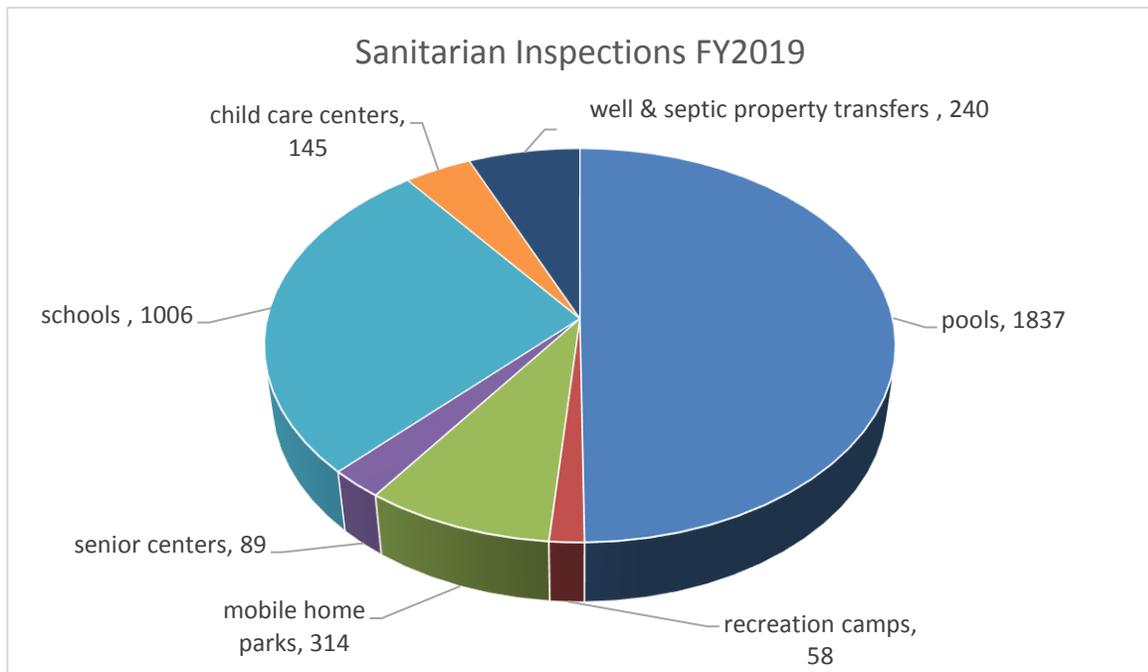
Sign temporarily closing an apartment pool



Ord Community Pool

The DHHS has partnerships with Douglas County Health Department, Lincoln-Lancaster County Health Department, Central District Health Department and the City of Norfolk to perform inspections at public swimming pools in their jurisdictions.

During FY2019, the seven sanitarian program staff completed 3,449 inspections at 2,514 pools, camps, parks, child care and senior centers, and schools. There were an additional 240 well and septic evaluations completed for property transfers. The chart below shows a breakdown of FY2019 inspections:



## **Wastewater Treatment Facility Operator Certification Program**

Competent and qualified operators are a critical component to ensure that wastewater treatment plants are well run and protect the environment. The life span of treatment facilities can be prolonged and proper operation and maintenance programs can protect the owner's substantial financial infrastructure investment. The Wastewater Treatment Facility Operator Certification Program was established to help accomplish this. The program administers the operator certification program, which includes administering certification exams, issuing certificates, evaluating continuing education programs, tracking certificate compliance, processing certificate renewals, and conducting facility ratings to determine operator needs, in addition to continuing to evaluate ways to help wastewater treatment facility operators obtain continuing education to maintain their certification and help them do their jobs.

This program administers nationally accredited certification exams to new wastewater operators, or to operators wishing to advance their credentials, and issues certification renewals for operators who have obtained the necessary Department-approved continuing education as provided for in *Title 197 – Rules and Regulations for the Certification of Wastewater Treatment Operators in Nebraska*. Staff will continue to monitor those facilities that are required to have certified operators and work with them to help them comply with the regulations.

Municipal, commercial, compatible industrial facilities, and non-compatible industrial facilities are required to employ certified operators based on the point rating assigned to each facility by NDEE. The point rating for each facility is based on the design flow, type of treatment, instrumentation and control systems, and laboratory analysis requirements at each location. Certified Operators for municipal, commercial, and compatible industrial facilities are classified under the following categories: Class L (lagoons), Class I, Class II, Class III, and Class IV, according to the type of facility and its point rating. Certified operators for non-compatible industrial facilities are classified under the following categories: Industrial I, Industrial II, Industrial III, and Industrial IV, according to the type of facility and its point rating.

The Wastewater Operator Certification Program currently has 818 operators with municipal/compatible certificates. In addition, there are currently 100 certified operators with industrial certificates.

NDEE also reviews applications and issues operator certification exemptions for towns and other entities that have full-retention non-discharging lagoon wastewater treatment facilities that may not require qualified operators due to very limited maintenance and operational needs. The exemption is for a fixed four-year period and the period under current review will end at the end of 2020. NDEE has contacted approximately 300 facilities potentially eligible for the exemption and, of these, issued four-year operator exemptions to 216 facilities.

The Department contracts with the Association of Boards of Certification (ABC) for testing services for the Operator Certification Program. Starting in 2019 ABC issued a new exam series for Class 1 through 4. Since the Department began using this exam series the pass rate for exams has declined sharply. The Department is evaluating this issue and is working with ABC and our education providers to find the cause of the decline in pass rate.

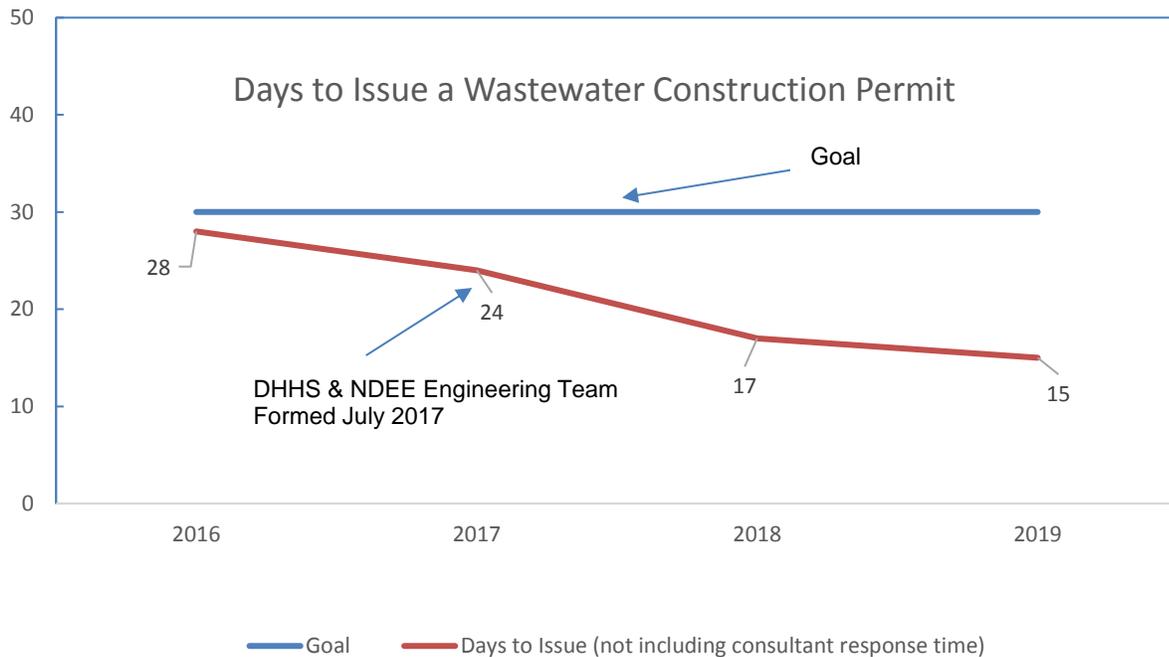
## **Engineering Programs**

In July 2017, NDEE and the Nebraska Department of Health and Human Services (DHHS) announced a Memorandum of Agreement to improve coordination of Safe Drinking Water Act and Clean Water Act programs. Through the agreement, 8 DHHS staff in the engineering program were moved to shared office space with NDEE wastewater engineering staff. The goal is to have the two

engineering programs integrate into a team to better serve the communities and citizens of the state. The focus of this re-location of the Drinking Water engineering staff has been to enhance communication and integrate the state's services to communities. Locating staff together better serves Nebraska communities in addressing their water and wastewater infrastructure needs by enhancing state agency coordination. The agencies have focused on cross-training staff between the NDEE and DHHS engineering programs to build resiliency and ensure complete and timely review of applications and coordinated site assistance.

**Wastewater Engineering**

The engineers in the wastewater division administer Nebraska's construction permit program for wastewater facilities built in the state. Industries, commercial facilities, and municipal utilities are required to submit the plans and specifications for their projects to NDEE for review and approval. The construction documents are reviewed to make sure that the collection systems and treatment facilities will function properly and protect the public and the environment from adverse effects. During FY2019, 236 applications for wastewater projects were received and 239 projects were approved. There was one application withdrawn. The cross-training between NDEE and DHHS engineers has improved timeliness of wastewater construction permits as pictured in the graph below:



Nebraska's design standards for wastewater facilities are found in NDEE *Title 123 -- Rules and Regulations for the Design, Operation and Maintenance of Wastewater Works*. These standards are updated periodically to keep Nebraska in agreement with regional standards. The state's design standards are written to encourage the use of proven technologies, but have also allowed the use of innovative designs where they are appropriate. In June 2019, the NDEE proposed updates to Title 123 to the Environmental Quality Council. The majority of the proposed changes were to eliminate duplicative language and provide clarity to the reader. One exemption was removed which did not require a construction permit for pretreatment facilities if the facility discharged to a public owned treatment works in another state.

**Drinking Water Engineering**

The Drinking Water Engineering Section provides engineering plan review; issuance of construction permits; inspection of newly constructed projects for issuance of approvals for placement into service; technical assistance and advisory contacts with owners/operators of public water systems, consulting engineers, state, federal and local officials, organizations, and the general public in matters relating to siting, design, construction, maintenance, and operation of public water systems. In addition to public water systems, the program provides similar services for all new and substantially modified public swimming pools and spas.



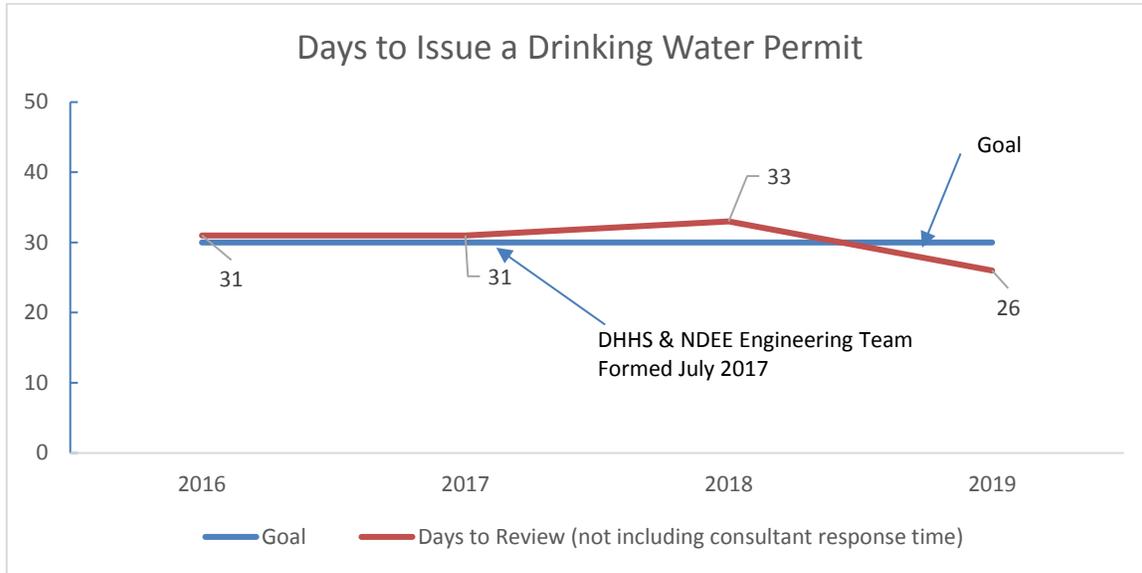
**Alliance water tower**

On April 4, 2010, Title 179 NAC 7, Siting, Design and Construction of Public Water Systems -- became effective. As a result, public water systems can enter into a 3-year agreement to construct water distribution main projects without having to submit plans and specifications to DHHS for review and approval. These systems are subject to an annual audit by the Drinking Water Engineering Section as a condition of the agreement. As of December 31, 2018, a total of 23 public water systems had entered into a 3-year agreement with the DHHS.

The table below details the drinking water engineering activities for FY2019:

| <b>Drinking Water Engineering Activities</b>                                 | <b>Number</b> |
|--|---------------|
| Water Projects Received for Review and Approval                              | 171           |
| Water Projects Inspected   | 124           |
| Engineering Reports for Water System Improvements Evaluated                  | 23            |
| New Water Well Sites Evaluated   | 7             |
| Three-Year Agreements for Distribution Main Projects—Annual Audits Completed | 26            |
| New/Modified Swimming Pool/Spa Projects Received for Review and Approval     | 66            |
| Pool/Spa Construction Projects Inspected                                     | 46            |

As with the wastewater engineering program, the drinking water engineering program has experienced improved timeliness as a result of the cross-training between NDEE and DHHS engineers:



### National Pollution Elimination System (NPDES) and Related Programs

The Water Permits Division administers permitting programs that regulate point source dischargers of water pollutants, including:

- **The National Pollutant Discharge Elimination System (NPDES) Program**, which is responsible for regulating discharges of pollutants to Waters of the State in order to maintain and protect the water quality of Nebraska's streams, lakes, rivers, and groundwater. NPDES programs also include:
  - **Combined Sewer Overflows**, which addresses those municipalities that have combined storm water and wastewater sewer systems. Currently, the City of Omaha is the only municipality operating a combined sewer in the State.
  - **Wastewater Treatment Sludge and Bio-solids Disposal**, which are requirements for treatment and disposal of municipal and industrial wastewater sludges and bio-solids.
  - **Storm Water Permit Program** – This permit programs involves: 1) Construction sites of a specific size; 2) the Municipal Separate Storm Sewer System permits for medium and large municipalities; 3) Industrial facilities.
- **The Nebraska Pretreatment Program** functions to protect communities' collection and treatment system assets from damage or overloading by industries.

Activities include issuing permits to minimize, monitor, and limit pollutants in wastewater and storm water discharges, and evaluate compliance with the permits and other applicable regulatory requirements of the programs and provide assistance to the regulated community.

## NPDES Permits

Anyone who directly discharges pollutants to Waters of the State is required to obtain a permit. NPDES permits control pollutant discharges by establishing wastewater limitations for pollutants and/or requiring permittees to maintain certain operational standards or procedures. Permittees are required to verify compliance with permit requirements by monitoring their wastewater, maintaining records, and/or filing periodic reports.

NDEQ is responsible for developing and issuing NPDES permits, and for ensuring that permitted facilities comply with permit requirements. The regulatory basis for this program is through an Environmental Protection Agency (EPA) delegation agreement with the Department and NDEE *Title 119 - Rules and Regulations Pertaining to the Issuance of Permits under the National Pollutant Discharge Elimination System*. The Nebraska NPDES program encompasses a number of different types of discharges including: municipal, commercial and industrial wastewater discharges; livestock waste control; industrial discharges to public wastewater treatment systems (also known as the Nebraska Pretreatment Program); municipal combined sanitary and storm sewer overflows (CSO); and construction, industrial, and municipal storm water discharges. Graphs on the next page show distribution of permits issued to various types of NPDES dischargers. Livestock NPDES permits may be found in a separate section.

Most NPDES permits limit the discharge of pollutants by establishing effluent limitations for specific pollutants such as carbonaceous biochemical oxygen demand, total suspended solids, and ammonia among others. The permittee is then responsible for testing their wastewater discharge to ensure that the limits are not exceeded. Permits may also limit toxicity in effluents and permittees may be required to demonstrate that their wastewater is not toxic to aquatic organisms (e.g., daphnia or fathead minnows). Permits may also require development of Best Management Practice Plans to minimize or control pollutant discharges.

The permit development process involves identifying the pollutants of concern, and then developing permit limits based upon the more stringent of either technology-based standards or water quality based standards. Technology-based standards reflect effluent quality that can be achieved using treatment technology that is available to the permittee. NDEQ Title 119 sets forth technology-based standards for municipal facilities and many types of industrial facilities. Technology-based standards can also be developed on a case-by-case basis when necessary.

Water quality based limits are the limits necessary to meet the in-stream water quality standards established in NDEQ *Title 117 - Nebraska Surface Water Quality Standards*. In some instances, where a surface water/groundwater interconnection may be of concern, NPDES permit limits may be based upon NDEQ *Title 118 - Groundwater Quality Standards and Use Classification*.

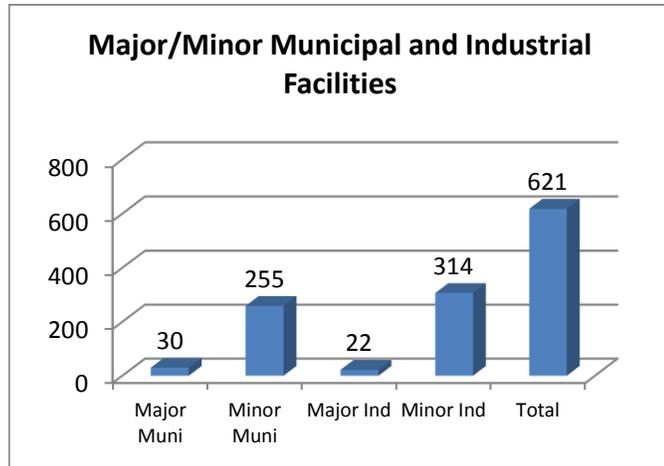
Permits may be developed and issued on an individual site-specific basis, or they may be developed and issued to apply to facilities with similar activities or effluent characteristics. These two types of permits are respectively referred to as individual permits and general permits. To date, the department has developed and issued general permits for the following activity categories: hydrostatic testing, dewatering, land application of concrete grooving/grinding slurry, pesticides applications to, over, and near Waters of the State, gasoline contaminated groundwater remediation projects, petroleum product contaminated groundwater remediation projects, construction site storm water, and industrial site storm water. Municipal Separate Storm Sewer System (MS4) permits have been issued to entities, including metropolitan areas and counties that meet the criteria of the NPDES Storm Water Program.

There are 617 facilities with discharge authorizations under individual permits (municipal, industrial and pretreatment), and 27 municipal storm water permits (MS4). There are nearly 2,600

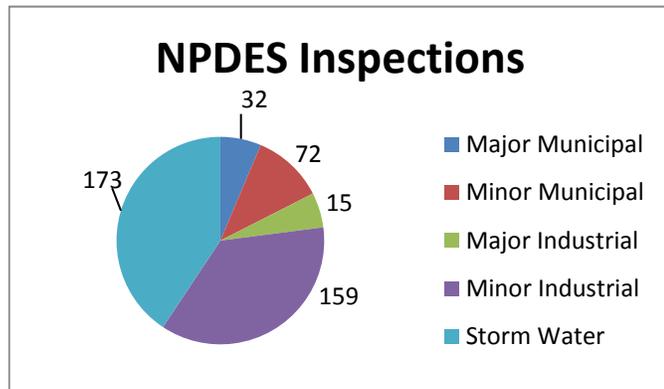
active facilities authorized to discharge under other general permits. The general permits include 1,542 active authorizations under the construction general storm water permit, 126 dewatering including Omaha, 46 hydrostatic testing, 850 industrial storm water, 17 pesticide, and 15 Treated Ground Water Remediation Discharge sites.

**Municipal and Industrial Facilities**

Industrial and municipal facilities are both grouped as major or minor facilities based upon their size and/or their potential to impact the receiving stream. The chart titled "Major/Minor Municipal and Industrial Facilities" provides a numeric break down of these types of facilities.



Municipal and industrial facilities are required to verify compliance with numeric permit limits by monitoring their effluents (i.e., self-monitoring). Monitoring frequency can vary from daily to annually depending upon the pollution and impact potential of the facility. The facility must report monitoring results to NDEE; typically this is done on a quarterly basis. However, monitoring results that indicate non-compliance with permit requirements must be reported verbally within 24 hours. Records of all monitoring activities must be kept for a period of three years.



The Section verifies compliance through a variety of activities including reviewing discharge monitoring reports, following up on complaints and incident reports, conducting on-site inspections, and performing effluent monitoring inspections. Inspections are planned and conducted to align with the federal fiscal year.

During on-site inspections, section personnel walk through the facility and review operational procedures and records. Major industrial, major municipal, and pretreatment facilities receive annual on-site inspections. The priority of minor facilities inspections is based on discharge compliance histories, incident reports and complaints. Minors are inspected once every five years at a minimum. Inspectors performed 451 NPDES inspections in Fiscal Year 2019. A breakdown of those inspections is provided in the chart above. The minor industrial inspections include 118 pretreatment inspections. During selected effluent monitoring inspections, effluent samples are collected and analyzed by the Department to compare with self-monitoring results. Facilities selected for effluent monitoring inspections are chosen based upon pollution potential, past compliance or incident report histories, complaints, and/or Basin Management Approach priorities.

Data generated by facility monitoring and NDEE on-site and effluent monitoring inspections are reviewed and entered into the federal Integrated Compliance Information System (ICIS) computer database. This database is used to generate facility reports and review facility compliance history.

In addition to inspections, NDEE provides permit assistance visits to help permittees better understand the requirements in their permits and help identify problems before they become significant noncompliance. These visits can be requested by the permittee or offered by NDEE. NDEE conducted 13 assistance visits in the 2019 Fiscal Year.

### **Combined Sewer Overflow Program**

The City of Omaha has combined sewers that are subject to storm-induced bypasses of untreated wastewater. Many of Omaha's systems were built prior to the existence of secondary sanitary wastewater disposal standards. When storm or snow melt runoff is occurring, these systems may become hydraulically overloaded and excess water flows bypass the treatment system. Untreated wastewater is discharged into the receiving stream when bypasses occur.

The City and the Department work within the framework of the Clean Water Act, a consent Order initiated in 2007, and the City's Long Term Control Plan (LTCP). The projects included in the LTCP span through 2037 and are estimated to cost over \$2 billion. The goal of the projects is to reduce or eliminate combined sewer overflows and comply with State and Federal regulations. The City has completed 36 of the projects identified in the LTCP. The order was amended in January 2018 to allow for evaluation of existing and future CSO improvements. The evaluation will help determine what efforts have been the most or least effective meeting permit requirements, provide socio-economic value to neighborhoods, improve the bid process, and improve value engineering for projects.

The City of Omaha and NDEQ continue to work cooperatively on evaluating and implementing long term solutions to protect water quality, comply with the CSO requirements of the Clean Water Act, and minimize the financial impacts to the most vulnerable citizens in the community. The 2019 flooding continues to impact this progress. The NDEE and the City are working to determine the latest impacts and the path forward.

The City provides updates and encourages public involvement with its CSO program. This can be viewed on the City's website at <http://omahacso.com/>.

### **Wastewater Treatment Sludge and Bio-solids Disposal**

Disposal requirements for municipal and industrial wastewater treatment sludges or biosolids can be incorporated into NPDES permits. These sludge disposal requirements assure that sludges or biosolids are treated and disposed in a manner that is environmentally sound and protective of human health. Beneficial use through the land application of biosolids, is an effective management tool.

On Feb. 19, 1993, the EPA published the federal sludge regulations under 40 CFR 503. Under these regulations, an estimated 330 municipal facilities in the state have sludge monitoring requirements. These requirements include metal and nutrient content analyses; improved records for tracking the amount of sludge and metals applied to each disposal site, and cumulative disposal limits. The Department has not sought delegation of this program from the EPA. The program is managed out of the EPA Region 7 office in Lenexa, KS. NDEQ provides guidance for municipalities, approves land application sites, and provides permit language to assist with biosolids program compliance.

## **Storm Water Program**

In compliance with federal regulations, the NPDES Storm Water Programs regulate the discharge of pollutants in storm water from certain construction sites, industrial facilities and municipal storm sewers. Federal Storm Water regulations determine the threshold for coverage of construction sites at one acre or more; or sites that are less than one acre if they are part of a common plan of development or sale. Industrial facilities include a number of different types of facilities in addition to typical process industries (e.g., landfills, wastewater treatment sites, recycling centers, scrap yards, mining operations, transportation facilities, and hazardous waste facilities). These regulations also determine the number of municipalities and urban areas that are subject to the NPDES program for storm water discharges.

Two general permits have been issued to provide coverage for industrial facilities and construction sites. Both of these general permits require the permittee to develop Storm Water Pollution Prevention Plans to control and reduce the discharge of pollutants. Since FY2017, an online application process is utilized for the Construction Storm Water General Permit that streamlines the issuance of coverage to applicants. This online process coordinates with the Nebraska Game and Parks Commission and facilitates endangered and threatened species reviews, reducing the time and paperwork needed. The City of Lincoln now shares a construction storm water permitting and records system with the NDEE. This increases communication and efficiency with the State, City, and permitted community.

Urbanized areas are subject to the Municipal Separate Storm Sewer System (MS4) Program. Currently, permitted urbanized areas in Nebraska include the cities of Lincoln and Omaha, Douglas, Sarpy, and Dakota Counties, the communities of Beatrice, Columbus, Fremont, Grand Island, Hastings, Kearney, Lexington, Norfolk, North Platte and Scottsbluff. The program also requires coverage for the University of Nebraska, Lincoln and Omaha; the Nebraska Department of Transportation, and Offutt Air Force Base. The NDEE works with individual permittees and organizations, like Nebraska H2O and the Nebraska Floodplain & Stormwater Managers Association, to conduct outreach. The NDEE also evaluates the individual storm water management plans provided by permittees and communicates if these plans meet requirements. This can also include site visits throughout the year to evaluate implementation of the plans.

## **Nebraska Pretreatment Program Permits**

The Nebraska Pretreatment Program functions to protect municipal wastewater collection and treatment systems from damage or overloading by industrial dischargers. The pretreatment regulations are found in Title 119. The rules and regulations set forth prohibited discharge standards that apply to all industrial users of publicly owned wastewater treatment facilities and require permits for significant industrial users. The significant industrial users are determined by one of several means: 1) the existence of an industrial category for which pretreatment discharge standards are established in NDEQ Title 119; 2) the volume or strength of the wastewater discharged from the facility; or 3) the potential of the industrial user to adversely affect the wastewater collection or treatment facilities.

The authority for establishing the Pretreatment Program is derived from the NPDES program requirements set forth in Section 402 of the Federal Clean Water Act. The issuance procedures and general format of Pretreatment Program and NPDES permits are very similar. Permittees are required to carry out self-monitoring activities, maintain records and submit periodic reports. Compliance activities include report reviews, on-site inspections and compliance monitoring inspections. Compliance data are entered into the national database, ICIS, to facilitate compliance review activities.

Although the Pretreatment Program is really a subprogram of the NPDES program, administration of this program requires more coordination and cooperation with local municipal officials. To accomplish this, the Department has entered into Memorandums of Agreement (MOAs) with 11 communities describing respective city and state responsibilities. The agreements vary in nature depending on the size and capabilities of the community. Omaha and Lincoln are the most active municipal partners, accepting responsibility for a large variety of activities including facility sampling, inspections, complaint investigations, permit reviews, and industrial user technical assistance. Other communities rely more heavily upon the State for compliance inspections and technical reviews. However, all cities with agreements conduct initial complaint or incident investigations, report significant incidents to the NDEE and assist in permit development by reviewing draft permits. The NDEE is working with communities throughout the state to get them more involved in the pretreatment program and to improve cooperative efforts in this program.

## State Revolving Loan Fund Programs

The Water Permits Division's Financial Assistance Section administers distribution of state and federal assistance for the Clean Water State Revolving Loan Fund and the Drinking Water State Revolving Loan Fund.

### Clean Water State Revolving Loan Fund

The Nebraska Clean Water State Revolving Loan Fund (CWSRF) program provides low-interest loans and small community matching grants to municipalities for construction of wastewater treatment facilities and sanitary sewer collection systems to alleviate public health and environmental problems. The loan principal repayments go into new loans, and interest earnings on the Fund are used to pay off the state match bond that are issued annually and to make new loans. A small administrative fee are charged to each loan made through the CWSRF. These funds pay for program operating costs including day-to-day program management activities. Also included are other costs associated with debt issuance, financial management, consulting, and support services necessary to provide a complete program.

The CWSRF program receives an annual federal EPA capitalization grant. A 20% state match, required to obtain the federal grant, is provided through Nebraska Investment Finance Authority (NIFA) bond issues. The EPA awarded the 2018 capitalization grant, in the amount of \$8,070,261, in August of 2018. The required match of \$1,638,400 was provided through bonds and cash. In State Fiscal Year (SFY) 2019, the CWSRF funded projects totaling \$8,749,528 in loans and \$771,302 in loan forgiveness and grant funds.

### Additional Subsidy Awards

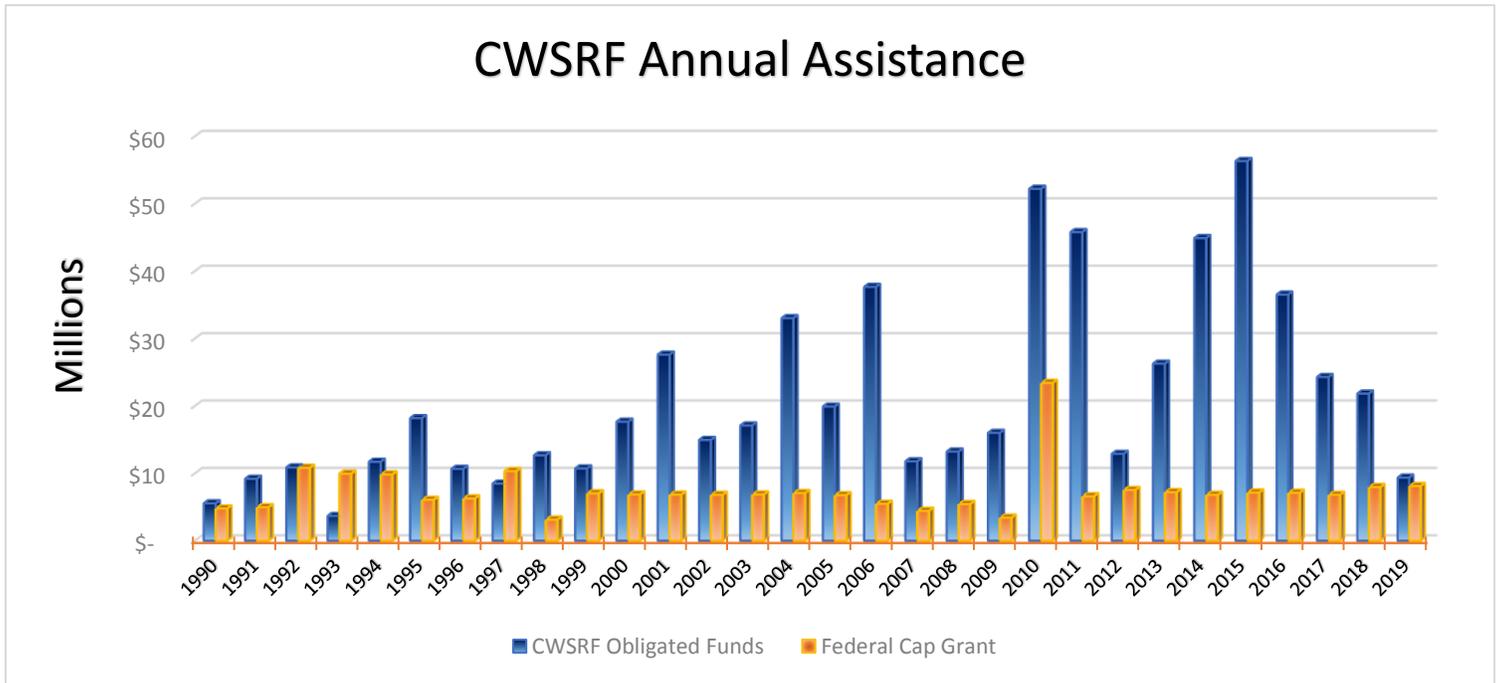
Many small municipalities find that the development and construction of needed projects are too costly without the additional grant subsidy provided concurrent with the CWSRF loan. To assist those communities with project costs, the CWSRF provides additional subsidy awards to financially distressed municipalities with a population of 10,000 or less. One available grant is the Project Planning Activities and Report Grant (PPAR). This grant is funded through the Administrative Cash Fund and awarded to small communities to identified wastewater treatment facility project needs. After the project is identified there is another grant available to communities in concurrent with a construction loan called the Small Town Grant (STG). This grant is also funded through the Administration Cash Fund and can provide subsidy of the project cost of up to \$250,000 per project. This grant has provided \$9.65 million in grant funding for 81 projects concurrent with a CWSRF loan since the start of the program.

Loan forgiveness is another form of subsidy that is funded through the CWSRF program by reserving up to 10% of the capitalization grant with a maximum award of \$150,000 per project. Similar to the PPAR and STG, borrowers must show financial hardship to be eligible for this grant.

### Total CWSRF Assistance Provided

After 30 years of activity, the Fund's Net Assets have reached \$323.6 million. Since its inception, the CWSRF has provided loans for 309 projects with a cumulative loan award amount of \$575.4 million.

The graph below provides the total assistance provided by the Clean Water program per year since inception.



### Drinking Water State Revolving Loan Fund

The Nebraska Drinking Water State Revolving Loan Fund (DWSRF) program provides low-interest loans and grants to owners of public water systems. Similar to the CWSRF loan program, loan principal repayments go into new loans, and interest earnings on the Fund are used for revenue bonds purchased for state match, a requirement of the capitalization grant, and to make new loans. There is also a small administration fee charged to each loan of the DWSRF that goes to program management activities.

Where the DWSRF is different from the CWSRF is that there is an agreement between the NDEE and the Nebraska Department of Health and Human Services, Division of Public Health (NDHHS-DPH), to operate the program and administer the DWSRF funds. In addition, the DWSRF is also unique in that loans may be awarded to privately owned public water supplies. Other program differences include set-asides for program administration, technical assistance, wellhead protection, capacity development, and operator certification. After 22 years of activity, the Fund's Net Assets have reached \$204.9 million.

### DWSRF Set-Aside Funds

The Small System Technical Assistance set-aside (up to 2% of the capitalization grant) provides technical assistance to Public Water Systems (PWS) serving a population of 10,000 or less. This is accomplished through contracts with organizations with expertise in dealing with small systems and is coordinated by the NDHHS-DPH.

In SFY2019, under the Local Assistance and Other State Programs set-aside (15%), four agreements for preliminary engineering reports totaling \$60,000 were awarded to high priority ranked communities to address public health issues associated with public water supplies. In

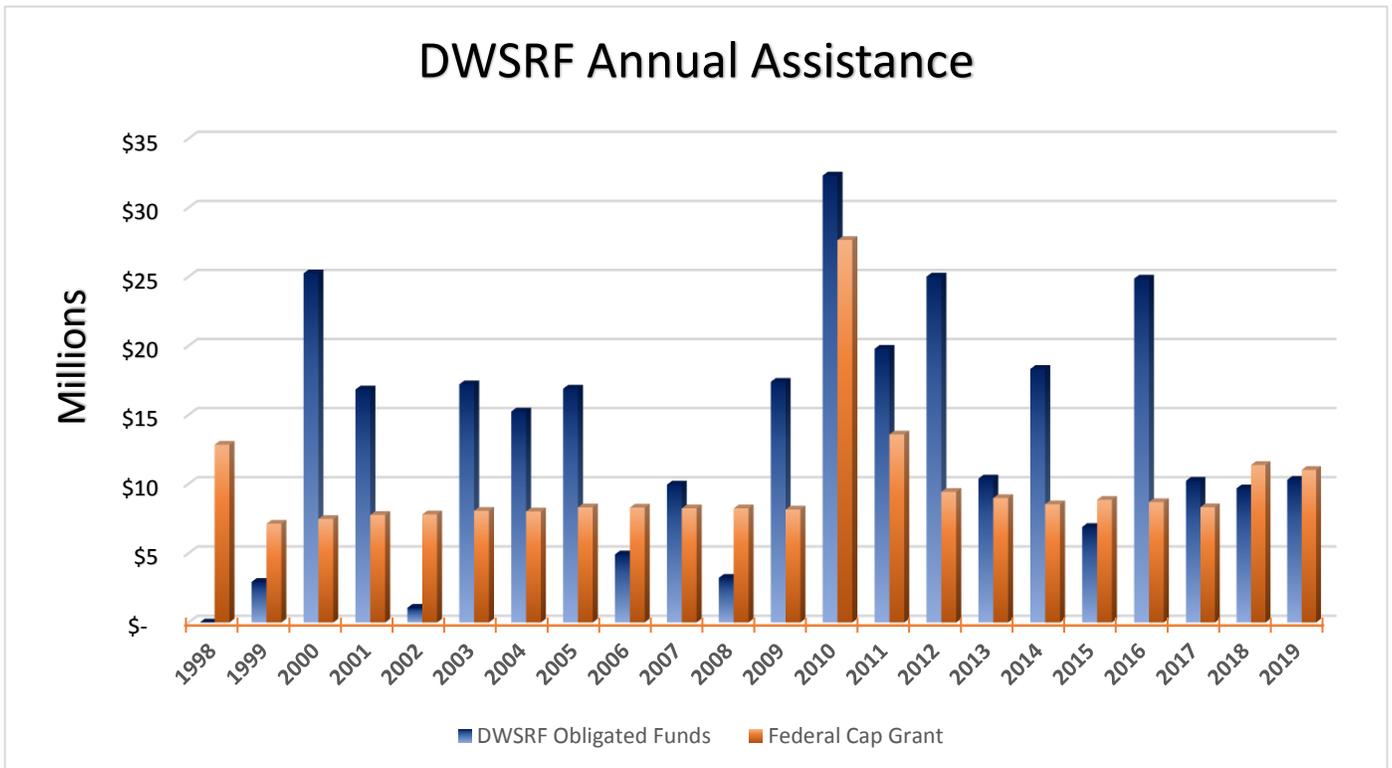
addition, the communities of Creighton, Dodge, Plainview, and West Knox Rural Water District were selected to receive Source Water Grants totaling approximately \$150,000 from the 2018 Capitalization Grant.

The State may use up to a total of 10 percent of the Capitalization Grant for the PWS Program Administration set-aside. NDHHS-DPH used \$1,234,500 from the FFY 2018 Capitalization Grant to administer Nebraska’s Public Water Supply Program during SFY 2019. That amount included \$130,900 of authority that had been previously reserved from past capitalization grants.

The 2018 DWSRF capitalization grant allocation totaled \$11,036,000. In SFY 2019, the DWSRF entered into eleven binding commitments to communities, including three amendments to already existing loans, to provide financial assistance to PWS projects totaling \$10,286,699, of which disadvantaged communities received \$1,798,941 in forgiveness funding. The Federal Fiscal Year (FFY) 2018 capitalization grant required that a minimum of 20% of the grant be reserved for additional subsidization (e.g., principal forgiveness).

In addition, from the FFY 2018 capitalization grant \$2,130,220 was allocated to the 2% (\$220,720), 10% (\$1,234,500), and 15% (\$675,000) set-asides. More details on the programs associated with these set-asides can be found in the Drinking Water State Revolving Fund Annual Report for SFY 2019 on our website at <http://deq.ne.gov/>.

The graph reflects the cumulative loan assistance of DWSRF.



SRF Assistance by District

| District | CWSRF Assistance           |                        |                        | DWSRF Assistance           |                        |                        | Total SRF Assistance    |                        |                      |
|----------|----------------------------|------------------------|------------------------|----------------------------|------------------------|------------------------|-------------------------|------------------------|----------------------|
|          | Below Market Interest Loan | CWSRF Grant Assistance | CWSRF Total Assistance | Below Market Interest Loan | DWSRF Grant Assistance | DWSRF Total Assistance | Total Below Market Loan | Total Grant Assistance | Total Assistance     |
| 1        | \$8,583,858                | \$926,436              | <b>\$9,510,294</b>     | \$13,042,084               | \$2,898,203            | <b>\$15,940,287</b>    | \$21,625,942            | \$3,824,639            | <b>\$25,450,581</b>  |
| 2        | \$13,173,808               | \$650,919              | <b>\$13,824,727</b>    | \$9,574,715                | \$540,935              | <b>\$10,115,650</b>    | \$22,748,523            | \$1,191,854            | <b>\$23,940,377</b>  |
| 3        | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 4        | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 5        | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 6        | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 7        | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 8        | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 9*       | \$140,619,110              | \$1,908,000            | <b>\$142,527,110</b>   | \$6,552,655                | \$1,272,182            | <b>\$7,824,837</b>     | \$147,171,765           | \$3,180,182            | <b>\$150,351,947</b> |
| 10       | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 11       | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 12       | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 13       | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 14       | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 15       | \$3,874,588                | \$120,577              | <b>\$3,995,165</b>     | \$2,984,156                | \$772,916              | <b>\$3,757,072</b>     | \$6,858,744             | \$893,493              | <b>\$7,752,237</b>   |
| 16       | \$15,528,483               | \$2,008,079            | <b>\$17,536,562</b>    | \$17,422,618               | \$1,340,896            | <b>\$18,763,514</b>    | \$32,951,101            | \$3,348,975            | <b>\$36,300,076</b>  |
| 17       | \$22,367,736               | \$1,523,766            | <b>\$23,891,502</b>    | \$6,962,528                | \$557,664              | <b>\$7,520,192</b>     | \$29,330,264            | \$2,081,430            | <b>\$31,411,694</b>  |
| 18       | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 19       | \$11,663,750               | \$189,394              | <b>\$11,853,144</b>    | \$2,273,161                | \$125,000              | <b>\$2,398,161</b>     | \$13,936,911            | \$314,394              | <b>\$14,251,305</b>  |
| 20       | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 21       | \$750,000                  | \$250,000              | <b>\$1,000,000</b>     | \$0                        | \$0                    | <b>\$0</b>             | \$750,000               | \$250,000              | <b>\$1,000,000</b>   |
| 22       | \$4,327,139                | \$1,086,404            | <b>\$5,413,543</b>     | \$5,537,187                | \$1,614,846            | <b>\$7,152,033</b>     | \$9,864,326             | \$2,701,250            | <b>\$12,565,576</b>  |
| 23       | \$25,826,664               | \$833,963              | <b>\$26,660,627</b>    | \$4,049,050                | \$814,955              | <b>\$4,864,005</b>     | \$29,875,714            | \$1,648,918            | <b>\$31,524,632</b>  |
| 24       | \$27,798,199               | \$524,400              | <b>\$28,322,599</b>    | \$15,759,160               | \$4,025,420            | <b>\$19,784,580</b>    | \$43,557,359            | \$4,549,820            | <b>\$48,107,179</b>  |
| 25       | \$0                        | \$0                    | <b>\$0</b>             | \$2,056,127                | \$0                    | <b>\$2,056,127</b>     | \$2,056,127             | \$0                    | <b>\$2,056,127</b>   |
| 26       | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 27       | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 28       | \$0                        | \$0                    | <b>\$0</b>             | \$14,977,829               | \$0                    | <b>\$14,977,829</b>    | \$14,977,829            | \$0                    | <b>\$14,977,829</b>  |
| 29       | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 30       | \$5,274,475                | \$334,478              | <b>\$5,608,953</b>     | \$9,916,128                | \$1,905,104            | <b>\$11,821,232</b>    | \$15,190,603            | \$2,239,582            | <b>\$17,430,185</b>  |
| 31       | \$0                        | \$0                    | <b>\$0</b>             | \$0                        | \$0                    | <b>\$0</b>             | \$0                     | \$0                    | <b>\$0</b>           |
| 32       | \$7,322,713                | \$1,502,949            | <b>\$8,825,662</b>     | \$6,226,189                | \$1,468,291            | <b>\$7,694,480</b>     | \$13,548,902            | \$2,971,240            | <b>\$16,520,142</b>  |
| 33       | \$9,693,048                | \$75,989               | <b>\$9,769,037</b>     | \$1,663,361                | \$289,293              | <b>\$1,952,654</b>     | \$11,356,409            | \$365,282              | <b>\$11,721,691</b>  |
| 34       | \$13,352,041               | \$757,551              | <b>\$14,109,592</b>    | \$6,109,170                | \$1,360,906            | <b>\$7,470,076</b>     | \$19,461,211            | \$2,118,457            | <b>\$21,579,668</b>  |
| 35       | \$37,338,756               | \$0                    | <b>\$37,338,756</b>    | \$0                        | \$0                    | <b>\$0</b>             | \$37,338,756            | \$0                    | <b>\$37,338,756</b>  |
| 36       | \$13,355,804               | \$2,611,798            | <b>\$15,967,602</b>    | \$6,559,816                | \$660,564              | <b>\$7,220,380</b>     | \$19,915,620            | \$3,272,362            | <b>\$23,187,982</b>  |
| 37       | \$29,389,328               | \$0                    | <b>\$29,389,328</b>    | \$15,318,375               | \$223,869              | <b>\$15,542,244</b>    | \$44,707,703            | \$223,869              | <b>\$44,931,572</b>  |
| 38       | \$9,818,320                | \$1,697,932            | <b>\$11,516,252</b>    | \$2,046,701                | \$318,126              | <b>\$2,364,827</b>     | \$11,865,021            | \$2,016,058            | <b>\$13,881,079</b>  |
| 39       | \$7,450,784                | \$100,000              | <b>\$7,550,784</b>     | \$859,653                  | \$186,578              | <b>\$1,046,231</b>     | \$8,310,437             | \$286,578              | <b>\$8,597,015</b>   |
| 40       | \$8,038,867                | \$2,291,297            | <b>\$10,330,164</b>    | \$8,953,930                | \$2,387,352            | <b>\$11,341,282</b>    | \$16,992,797            | \$4,678,649            | <b>\$21,671,446</b>  |
| 41       | \$7,697,064                | \$1,213,004            | <b>\$8,910,068</b>     | \$6,933,602                | \$2,191,300            | <b>\$9,124,902</b>     | \$14,630,666            | \$3,404,304            | <b>\$18,034,970</b>  |
| 42       | \$18,064,666               | \$40,484               | <b>\$18,105,150</b>    | \$10,750,175               | \$737,046              | <b>\$11,487,221</b>    | \$28,814,841            | \$777,530              | <b>\$29,592,371</b>  |
| 43       | \$23,522,145               | \$2,314,344            | <b>\$25,836,489</b>    | \$7,791,151                | \$1,397,958            | <b>\$9,189,109</b>     | \$31,313,296            | \$3,712,302            | <b>\$35,025,598</b>  |
| 44       | \$28,069,565               | \$1,886,650            | <b>\$29,956,215</b>    | \$19,739,097               | \$1,694,631            | <b>\$21,433,728</b>    | \$47,808,662            | \$3,581,281            | <b>\$51,389,943</b>  |
| 45       | \$6,985,901                | \$0                    | <b>\$6,985,901</b>     | \$0                        | \$0                    | <b>\$0</b>             | \$6,985,901             | \$0                    | <b>\$6,985,901</b>   |
| 46*      | \$34,847,644               | \$1,250,000            | <b>\$36,097,644</b>    | \$0                        | \$0                    | <b>\$0</b>             | \$34,847,644            | \$1,250,000            | <b>\$36,097,644</b>  |
| 47       | \$14,392,211               | \$2,392,483            | <b>\$16,784,694</b>    | \$24,399,184               | \$3,843,862            | <b>\$28,243,046</b>    | \$38,791,395            | \$6,236,345            | <b>\$45,027,740</b>  |
| 48       | \$14,142,244               | \$991,959              | <b>\$15,134,203</b>    | \$7,688,598                | \$2,550,340            | <b>\$10,238,938</b>    | \$21,830,842            | \$3,542,299            | <b>\$25,373,141</b>  |
| 49       | \$12,160,210               | \$0                    | <b>\$12,160,210</b>    | \$1,476,413                | \$0                    | <b>\$1,476,413</b>     | \$13,636,623            | \$0                    | <b>\$13,636,623</b>  |

\*The data collected is from loan obligations and grants awarded to communities for SRF related projects. Grants include Loan Forgiveness, Small Town Grant (CW only), and Planning Grants.

\*\*For the cities of Omaha and Lincoln which have multiple districts in the area, District 9 was selected for Omaha projects and District 46 was used for Lincoln area projects.

## Nebraska’s Public Water Systems

### Population and Type of System

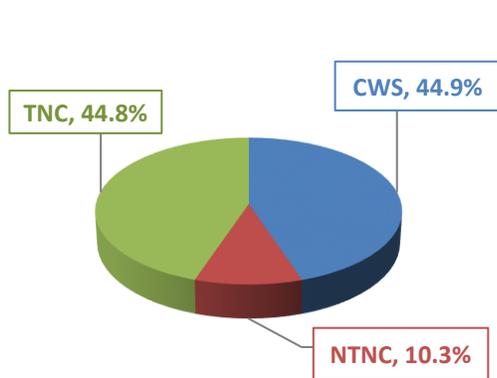
Nebraska public water systems can be broken down into categories based on the size of the population served and/or the type of population served.

| Population   | CWS        | NTNC       | TNC        | Total Systems | Percentage* |
|--------------|------------|------------|------------|---------------|-------------|
| < 101        | 104        | 75         | 513        | 692           | 51.3%       |
| 101-500      | 276        | 46         | 87         | 409           | 30.3%       |
| 501-1000     | 97         | 8          | 4          | 109           | 8.1%        |
| 1001-3300    | 87         | 8          | 0          | 95            | 7.0%        |
| 3301-10000   | 28         | 2          | 0          | 30            | 2.2%        |
| 10001-50000  | 11         | 0          | 0          | 11            | 0.8%        |
| >50000       | 3          | 0          | 0          | 3             | 0.2%        |
| <b>TOTAL</b> | <b>606</b> | <b>139</b> | <b>604</b> | <b>1349</b>   | <b>100%</b> |

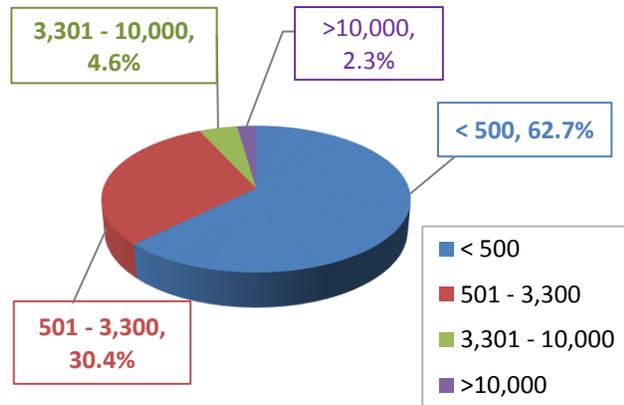
*\*Based on approximate population*

CWS = Community ..... 606 systems  
 NTNC – Non-transient, non-community ..... 139 systems  
 TNC = Transient, non-community ..... 604 systems

**Public Water System Types**



**Community Public Water Systems by Size of Population**



Approximately 80% of all Nebraskans get their water from a community public water system. Private domestic wells provide water for the remaining 20% of the overall State population.

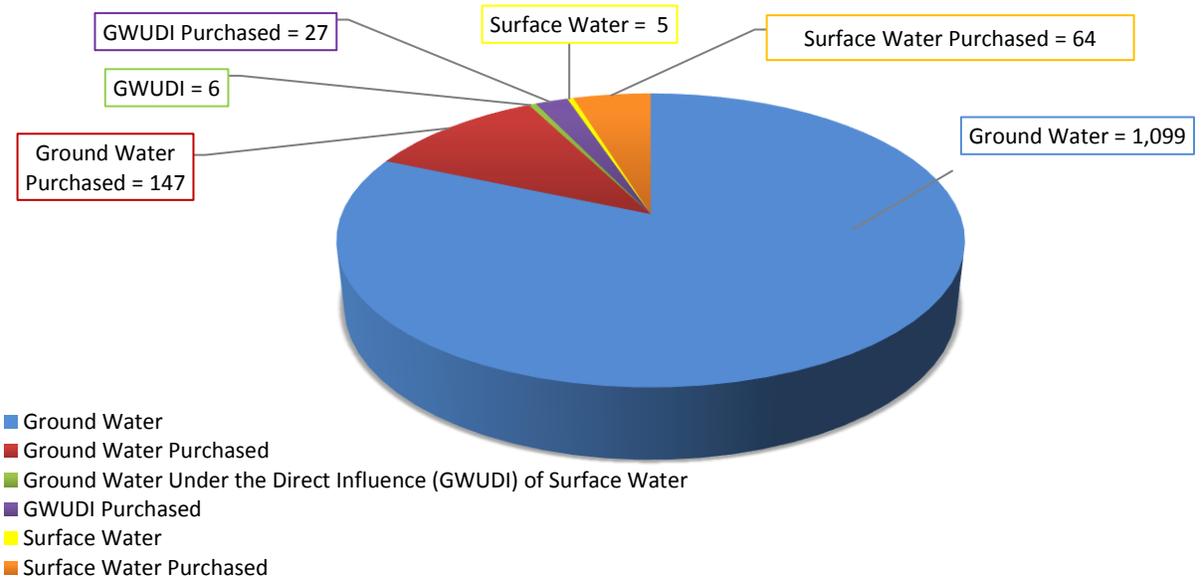
As you can see, over 60% of Nebraska’s community water systems are below 500 people in size. Water systems with populations below 3,300 are considered to be “small systems” by the EPA. This makes Nebraska a predominantly small system state with 93.1% of all of the State’s community public water systems serving 3,300 or fewer persons.

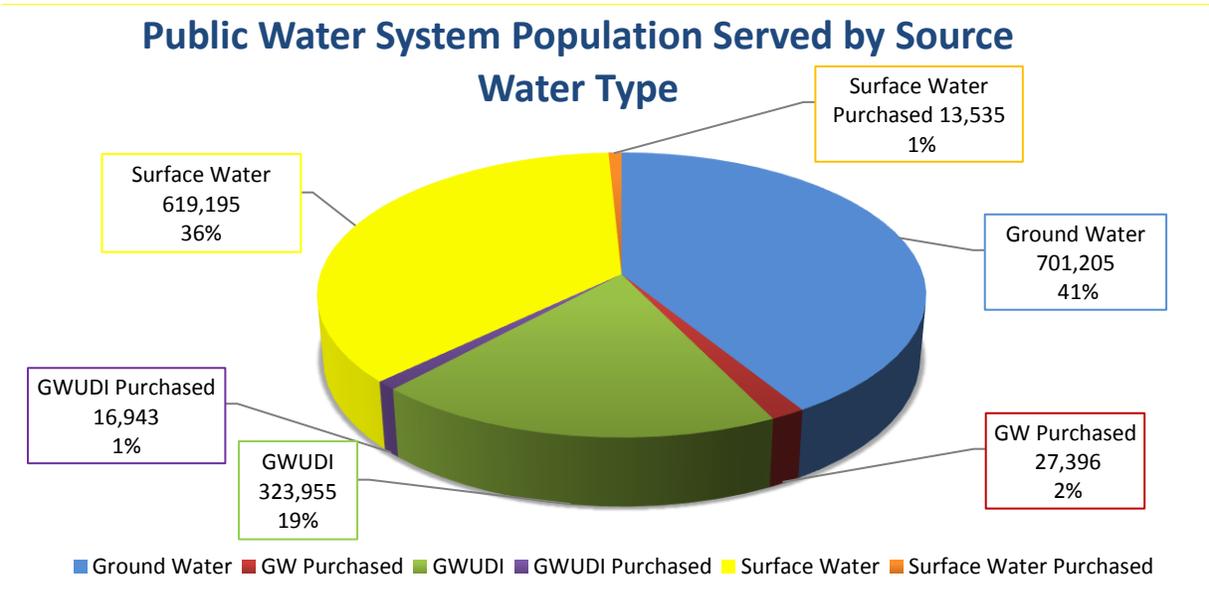
### Public Water in Nebraska

The Drinking Water Program at the Department of Health and Human Services administers the State’s regulations governing public water systems (Title 179 NAC 2 through 26), promulgated under the State’s SDWA pursuant to and in accordance with the federal SDWA. EPA promulgates rules and sets standards in accordance with the federal SDWA, which was originally passed in 1974 and later amended in 1986 and 1996.

Public water systems provide water to approximately 80% of the people of Nebraska. Private domestic wells provide water for other 20% of Nebraskans. Most of the water Nebraskans drink is ground water and only five public water systems in the state obtain their drinking water from surface water. Another 64 systems purchase water from those five systems. In addition, 6 systems utilize ground water under the influence of surface water (GWUDI), and 27 additional systems purchase water from those six systems. The remaining 1,125 systems use ground water, and an additional 147 systems purchase their water from another ground water system.

**Number of Systems by Source Water Type**





*\*Percentages rounded to nearest 1%*

**What Nebraska’s Public Water System Program Does**

The Drinking Water Program has 31 full time equivalent positions (FTEs). The Monitoring and Compliance Section has 9, the Engineering Section has 8, the Field Services and Training Section has 12, and two FTEs contribute to the administration of the program.

**Field Services and Training Section**

The Public Water System Field Services and Training (FS&T) Section encompasses four separate but related areas of responsibility:

- 1) Field services (inspections, operator assistance, etc.)
- 2) Training
- 3) Capacity development, and
- 4) Water system security

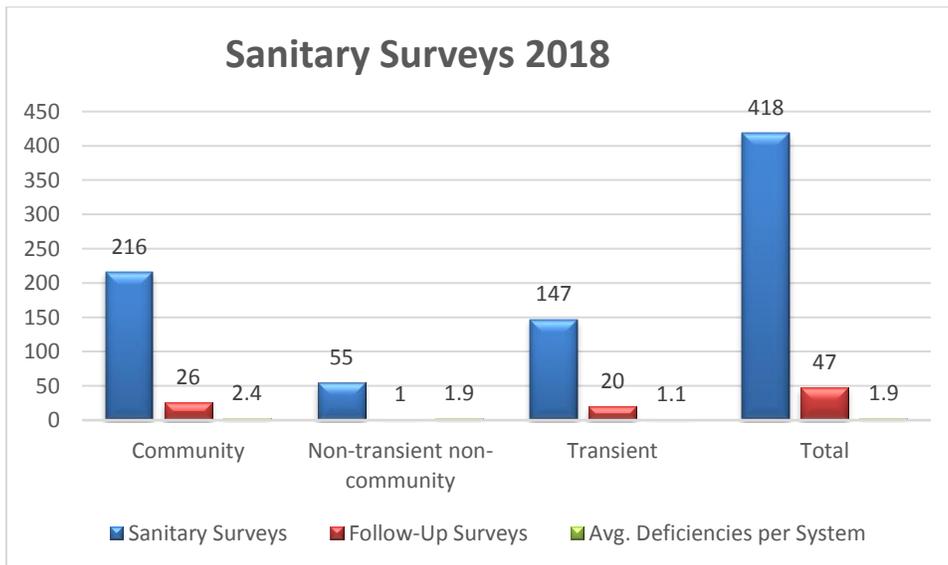
FS&T staff include a supervisor, eight field representatives, a training coordinator, a capacity development coordinator, and a staff assistant. FS&T staff conduct sanitary surveys, train public water system operators, attend and present information at continuing education programs for water operators, assist public water systems (PWSs) with Level 1 and Level 2 assessments, during emergency situations, and help public water systems to achieve or maintain adequate technical, financial, and managerial capacity. There are eight field areas with locations in North Platte, Grand Island, Norfolk, Blair, Nelson, Chadron and Lincoln to provide close contact and timely assistance to Nebraska’s public water systems. The Norfolk office serves two field areas.

**Field Services -- Sanitary Surveys**

Routine sanitary surveys are conducted once every three years for community water systems (CWS) and non-transient non-community (NTNC) public water systems and once every five years for transient non-community (TNC) PWSs. A few of the items for which field personnel check are the presence of a properly licensed water operator in responsible charge, an emergency plan, and a cross-connection control program. When deficiencies are found, the system is notified of the needed improvements.

In 2018, field personnel conducted 418 sanitary surveys (216 community, 55 non-transient non-community, and 147 transient public water systems) and 47 follow-up surveys (26 community, 1 non-transient non-community, and 20 transient public water systems). A total of 791 deficiencies were found in 2018. This reflects an overall deficiency rate of 1.9 deficiencies per sanitary survey in 2018. There was an average of 2.4 deficiencies found in community systems, an average of 1.9 deficiencies found in non-transient non-community water systems, and an average of 1.1 deficiencies in transient water systems. No deficiencies were found in 173 (41%) sanitary surveys done in 2018. The number of deficiencies found in Nebraska’s public water systems declined by 14% from 2017 to 2018.

Outside of sanitary surveys, field staff conduct site inspections for the location of new wells, in addition to assisting engineering services personnel in conducting construction inspections of public water system projects (such as the drilling of wells, the construction of treatment plants, and the erection of water towers) during construction and upon completion. When needed, field services staff provide public health advice concerning emergency situations associated with natural disasters or contamination of a public water system. As needed or upon request, they go out to communities to help public water system personnel identify potential causes of problems in their systems.



### Level 1 & Level 2 Assessments

When public water systems have a confirmed presence of coliform bacteria, the Revised Total Coliform Rule (RTCR) requires that either a Level 1 or Level 2 assessment of the system be conducted. An assessment is an evaluation to identify the possible presence of sanitary defects, defects in coliform monitoring practices, and (when possible) the likely reason for the presence of coliform bacteria in the system. Any identified defects are required to be corrected.

A Level 1 assessment is triggered by the confirmed presence of only total coliform in the public water system. The public water system is responsible for completing a Level 1 assessment and submitting its findings to the DHHS for review. Then field staff are responsible for completing the review of a Level 1 assessment.

Level 2 assessments are triggered by either multiple Level 1 assessments within a running twelve-month period, or by the confirmed presence of *E. coli* in the system. The Level 2 assessment is conducted by field staff and provides a much more detailed evaluation of the public water system.

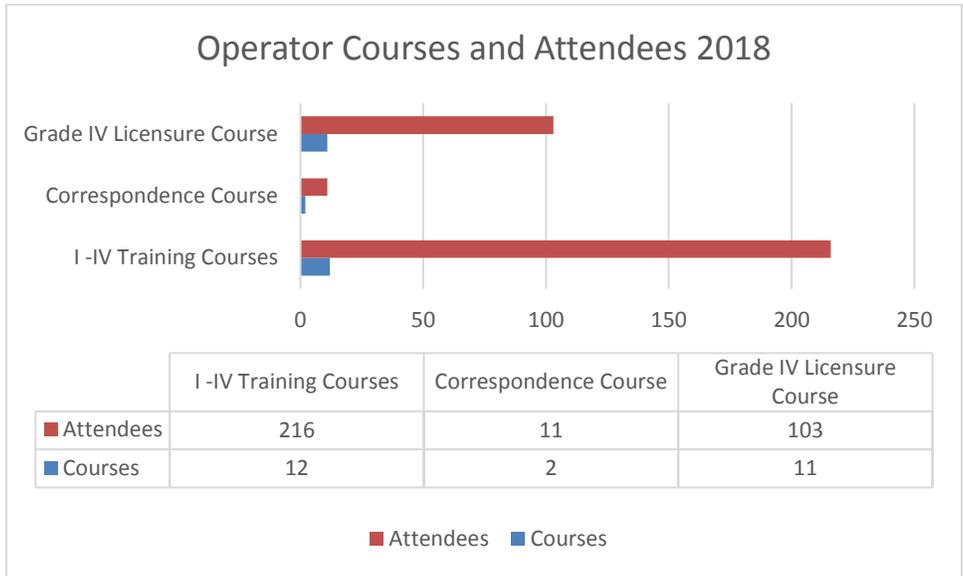
The Drinking Water Program maintains a number of hypochlorinators for temporary loan to public water systems when bacterial contamination is a source of concern. This assistance to communities in need of temporary chlorination of their water supplies has been very helpful in ensuring the safety of drinking water. When a power outage or source failure is involved, program staff also help systems locate equipment and supplies which may be needed. In general, the program's response to emergencies is limited to consultation and advice regarding actions to be carried out by the owners of public water systems.

In addition to the tasks mentioned above, the FS&T program has been actively enforcing water operator licensing standards through the issuance of fines against operators who are in responsible charge of their respective public water systems who allow their licenses to expire. Without a valid license, they are not allowed by regulation to be in responsible charge of or operate a public water system, and the DHHS has the ability to issue administrative penalties (fines) against such persons when they continue to be in responsible charge or operate without a valid water operator license. During 2018 no fines were issued to individuals for "Practice (Operating) Without a License."

### Training

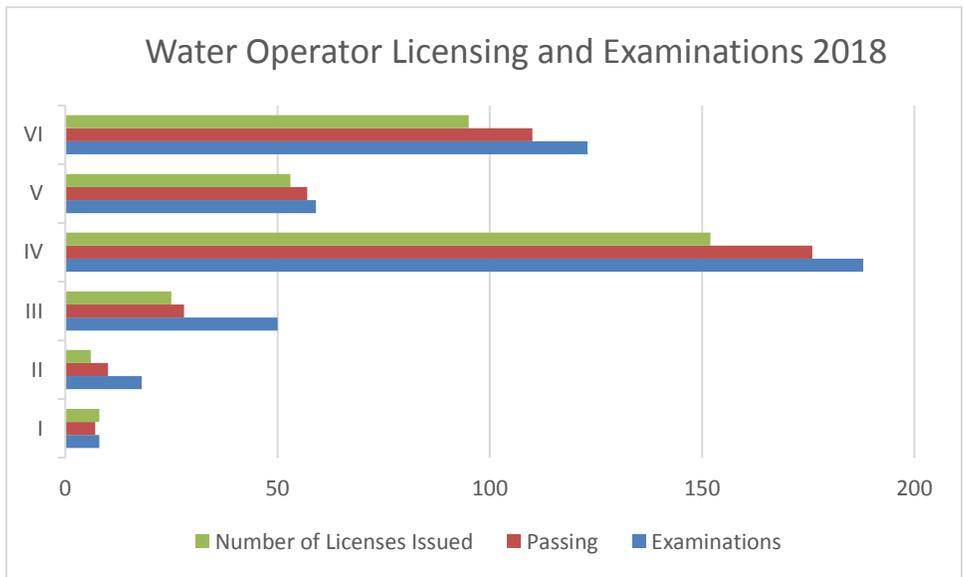
DHHS conducts emergency response training sessions around the state. This training focuses on the necessity of keeping a good working emergency response plan up-to-date and training all individuals who have a role in the plan.

In 2018, FS&T program personnel conducted 12 water operator training courses, Grades I through IV, with a total of 216 attendees. An additional 11 persons completed the correspondence course that is also offered to prepare for the Grade IV licensure examination. For Grade VI licensure (backflow preventer testing and repair), 11 courses were offered with a total of 103 attendees. For Grade V operators (transient systems only), there are no classroom courses. Training is obtained through a self-study process. Water operators are licensed only after successfully passing an exam. Examinations are offered following each training course and can also be scheduled individually.



The following table breaks down the number of licenses issued following examination at each grade level during 2018:

| Grade | Examinations | Passing | Number of Licenses Issued |
|-------|--------------|---------|---------------------------|
| I     | 8            | 7       | 8                         |
| II    | 18           | 10      | 6                         |
| III   | 50           | 28      | 25                        |
| IV    | 188          | 176     | 152                       |
| V     | 59           | 57      | 53                        |
| VI    | 123          | 110     | 95                        |



The Drinking Water Program and other training providers offered continuing education opportunities for water operators in 2018. Coordinated by the program, a group informally known as the Water Operator Training Coalition convened periodically in 2018 to identify training needs and to avoid conflicts in the scheduling of training opportunities. Members include the Nebraska Rural Water Association, the League of Nebraska Municipalities, the Midwest Assistance Program, Central Community College, and the Nebraska Section of the American Water Works Association. In 2018, as in past years, the Coalition produced a calendar identifying dates and locations of continuing education opportunities for distribution to licensed water operators.

A total of 126 workshops/seminars/conferences were offered in Nebraska in 2018 for the purpose of water operator continuing education. Of these, 42 focused primarily on backflow prevention continuing education for Grade VI operators.

### **Capacity Development**

The Capacity Development Coordinator has been overseeing DHHS's 2% contracts with the various technical assistance providers – the 2% Team -- which consist of the same members as the Water Operator Training Coalition. The name comes from the 2% set-aside from the Drinking Water State Revolving Fund.

To provide a measurement for financial and managerial capacity for a project that has been funded by the State Revolving Fund Program, assessments need to be made on water systems prior to beginning any new construction. These initial assessments provide a basis whereby a determination can be made as to the financial and managerial capacity of the system, before work begins on the new project. Once the project has been completed and the system has been in operation for approximately one to two years, a follow-up assessment is done to show the improvement that has been accomplished with the funding that was provided. There was one initial assessment, and two follow-up assessments done in 2018.

A concerted effort has been made to educate water system operators regarding their role in developing and maintaining adequate capacity for their water systems. The Capacity Development Coordinator typically coordinates with DHHS's Water Operator Training Coalition partners to provide training to water operators. Due to unforeseen staffing issues, DHHS was not able to provide this training in 2018.

Ten board/council information sessions were held to advise members about the legal and fiduciary responsibilities that they have to assure adequate, safe water to their customers. A total of 62 board/council members attended, representing 10 community water systems.

The 2% Team provides continuing education for water operators, and also assists DHHS by providing technical, managerial and financial assistance to public water systems. The 2% Team made 277 contacts in 2018. These included assistance with the applications for funding from various sources, training manuals, and mentors from large systems to assist small systems, as well as several other activities. DHHS has found capacity development to be a proactive approach to helping systems.

## Drinking Water Engineering Section

The Drinking Water Engineering Section provides engineering plan review; issuance of construction permits; inspection of newly constructed projects for issuance of approvals for placement into service; technical assistance and advisory contacts with owners/operators of public water systems, consulting engineers, state, federal and local officials, organizations, and the general public in matters relating to siting, design, construction, maintenance, and operation of public water systems.

The Nebraska Safe Drinking Water Act and regulations adopted thereunder require that plans and specifications for all major construction related to public water systems be prepared by a registered professional engineer and be approved by DHHS before construction begins. The law defines major construction as structural changes that affect the source of supply, treatment processes, or transmission of water to service areas, but it does not include the extension of service mains within an established service area.

Water system plan review was incorporated into state law to increase assurance that water source development, treatment, storage, and distribution facilities would be constructed or expanded in a manner contributing to the ability of the system to deliver safe drinking water. Emphasis is placed on encouraging long-term benefits from capital investment as opposed to temporary actions designed to eliminate an emergency situation. Engineering services are a significant factor in preventing the occurrence of contamination in the delivery of safe drinking water.

In 2018, DHHS received 178 sets of plans and specifications for the construction of water projects for review and approval. In addition, engineering staff conducted 170 inspections of constructed water projects.

On April 4, 2010, state regulations – Title 179 NAC 7, *Siting, Design and Construction of Public Water Systems* -- became effective. As a result, public water systems can enter into a 3-year agreement to construct water distribution main projects without having to submit plans and specifications to DHHS for review and approval. These systems are subject to an annual audit by the Drinking Water Engineering Section as a condition of the agreement. In 2018, 22 annual audits were completed and as of December 31, 2018, a total of 23 public water systems had entered into a 3-year agreement with the DHHS.

## Drinking Water State Revolving Fund

The engineering staff also participates in the common pre-application review process for federal and state agencies' loan; grant programs for water and wastewater projects; and the Drinking Water State Revolving Fund (DWSRF) program activities. The DWSRF program is administered jointly by DHHS and the Nebraska Department of Environmental Quality (NDEQ).

At the beginning of the 2018 calendar year, the Drinking Water Engineering Section reviewed the responses from the annual DWSRF needs survey sent out to all public water systems the preceding fall. The returned surveys indicated 326 eligible projects with just over \$970.5 million in infrastructure needs. The ranking system developed by DHHS was used to prioritize and establish the funding order for DWSRF projects. Historically public health was the primary ranking factor for forgiveness, but the number of communities needing to address those concerns continued to fall during the last fiscal year cycle. As a result, the program switched to primarily funding infrastructure replacement. Subsequent, the DWSRF closed 10 loans in 2018 for \$16,276,316, with \$2,919,864 of that provided in forgiveness assistance. In the fall of 2018, the Engineering Services staff started drafting the next Intended Use Plan (IUP), with a public water system needs

survey form mailed to all public water supply systems in concert with the clean water needs survey conducted by NDEQ's Clean Water SRF.

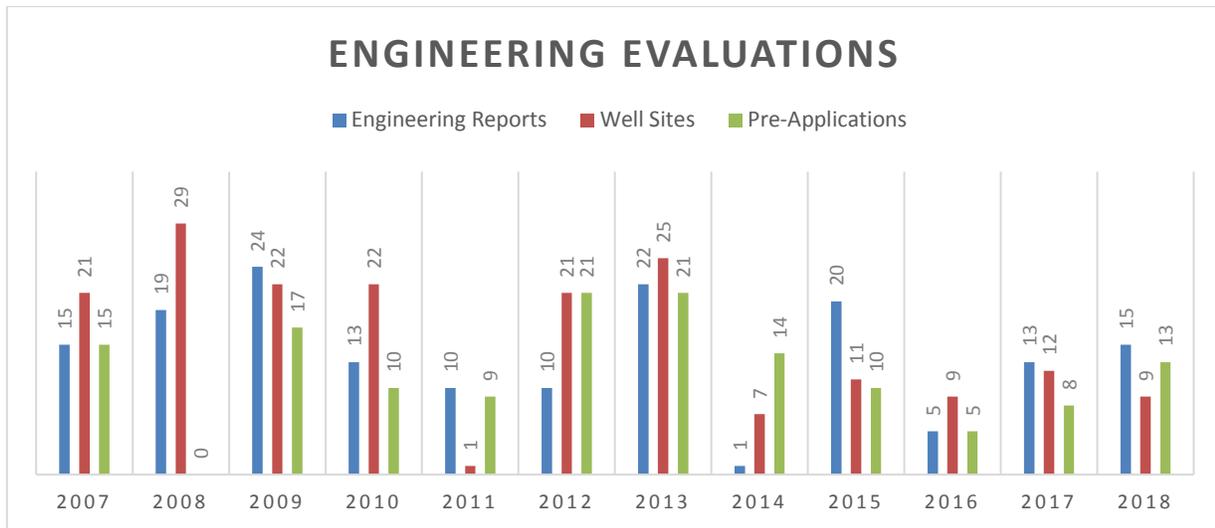
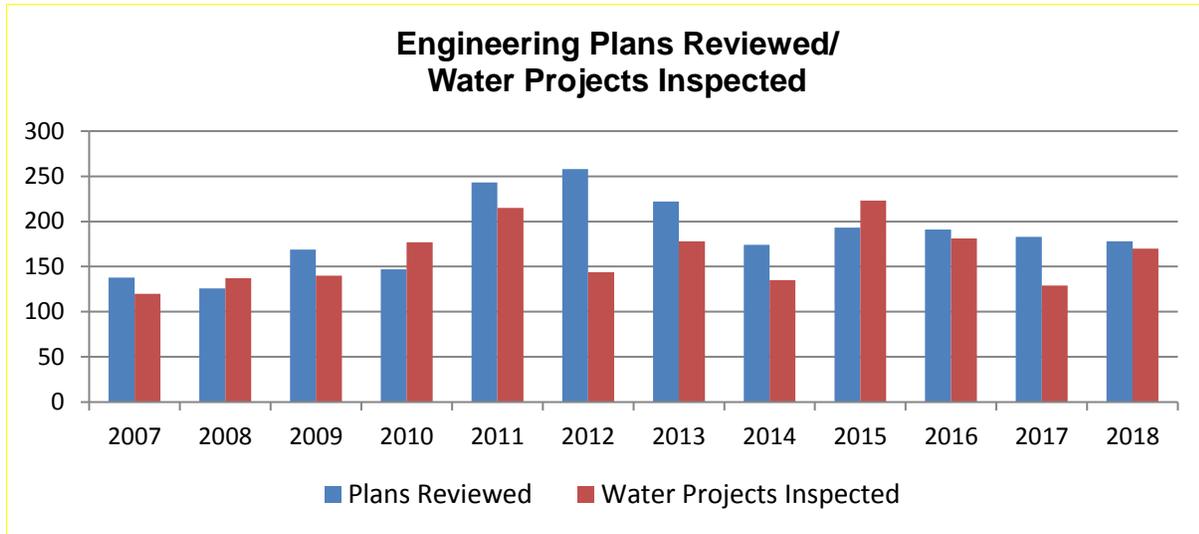
The Drinking Water Engineering Section staff also review and evaluate justifications provided by professional engineers for any new well site that does not meet the setback distances in Title 179 NAC 7. In 2018, a total of nine new well site justifications were reviewed and approved. In addition, the engineering staff also works with NDEQ and City officials in evaluating encroachment issues that may be of concern to existing public drinking water wells. One encroachment issue was evaluated and resolved.

DHHS and NDEQ enter into a Memorandum of Agreement on July 2017. The DHHS Drinking Water Engineering Section now works closely with the NDEQ Water Division Technical Assistance Unit to facilitate administration and review of construction projects. This has allowed for cross-training, improved efficiency, a more complete understanding, and more effective support for the construction permitting process. The crossing training will be an on-going process.

In summary, the Drinking Water Engineering Section activities play a significant role in ensuring that public water systems in Nebraska provide safe drinking water to the public.

### SUMMARY OF THE DRINKING WATER ENGINEERING SECTION ACTIVITIES January 1, 2018 to December 31, 2018

| ACTIVITIES  | NUMBER |
|---|--------|
| Water Projects Received for Review and Approval   | 178    |
| Water Projects Inspected  | 170    |
| Engineering Reports for Water System Improvements Evaluated   | 15     |
| New Water Well Sites Evaluated  | 9      |
| Common Pre-Applications for Water/Wastewater Projects for Federal and State Financial Assistance Reviewed | 13     |
| Operation and Maintenance Manuals for Drinking Water State Revolving Loan Funded Projects Reviewed        | 3      |
| Three-Year Agreements for Distribution Main Projects—Annual Audits Completed                              | 22     |
| Encroachment Issues   | 1      |



### Monitoring and Compliance Section

The Monitoring and Compliance (M&C) Section of the Drinking Water Program establishes monitoring schedules and reviews analytical results for contaminants in drinking water. In this review of analytical results, M&C personnel determine compliance with MCLs and issue appropriate enforcement actions, when necessary, to help a PWS return to compliance.

### Monitoring and MCL Violations, and Assessments

There were no any waterborne diseases or deaths reported in Nebraska due to public water systems in 2018.

A public water system is required to monitor for the presence of volatile organic, synthetic organic, inorganic, radionuclide, and microbial contaminants. If a contaminant is present in the water, the system must monitor and verify that it does not exceed the maximum contaminant level (MCL). An MCL is the amount of a substance that is allowed to be in the water before the system must take corrective action to lower the level. Levels of substances below the MCL are not considered to be harmful to health. In 2018, only 6 of 87 contaminants for which community public water systems monitor were found in quantities above the MCL. That means 81 contaminants for which monitoring was conducted were not found above the MCL in *any* community water system in Nebraska.

A major monitoring violation occurs when no valid samples are obtained. Significant monitoring violations are defined as any major monitoring violation that has occurred during a specified reporting period, which differs for each contaminant.

The following tables summarize the types of violations issued in calendar year 2018 and the number of public water systems that received violations. There were a total of 258 violations from 145 public water systems for MCLs and monitoring. There were 13 treatment technique violations and there were no public notice violations in Nebraska in 2018.

### **Revised Total Coliform Rule (RTCR)**

The objective of the RTCR is to increase public health protection through the reduction of potential pathways of entry for fecal contamination into distribution systems. The rule is based on a “find and fix” approach and has established a MCL for E. coli. As with the prior Total Coliform Rule, all public water systems are required to monitor for the presence of coliform bacteria and routine monitoring is based on the system type and size. RTCR assessments and corrective actions are required based on these monitoring results. A system is required to do Public Notice (PN) for failure to complete an assessment or corrective action, and for an Acute E. coli violation.

With this “find and fix” approach, Level 1 and Level 2 Assessments of the public water system are conducted in accordance with the RTCR. The assessments are meant to evaluate a system and try to find the reasons for the Total Coliform or E. coli detects.

A Level 1 Assessment is triggered when total coliform is found in the system. The public water system is responsible for conducting the Level 1 Assessment and for returning the completed Level 1 paperwork to their Field Area Representative who reviews and accepts it or returns it for further information. Identified defects noted in the Assessment are required to be corrected in a timely manner.

A Level 2 Assessment is triggered when a system incurs multiple Level 1 Assessments in a running 12-month period, or if a system has a confirmed E. coli presence within their system. The Level 2 Assessment is a more detailed analysis of the public water system, with many similarities to a sanitary survey. A DHHS Field Area Representative conducts Level 2 Assessments with a representative of the public water system. Level 2 paperwork is completed and identified defects are noted. The system is sent a letter and copy of the paperwork, and is responsible for responding to the letter in a timely manner with a timeline of when the defects found will be corrected.

**RTCR Assessments**

(All public water systems must monitor for total coliform bacteria.)

| Type of RTCR Assessment                    | Number of Assessments Triggered | Number of Systems | % of Systems with Assessments |
|--|---------------------------------|-------------------|-------------------------------|
| Level 1, Multiple TC +                     | 114                             | 114               | 8.4%                          |
| Level 2, 2 <sup>nd</sup> Level 1 triggered | 97                              | 66                | 4.9%                          |
| Level 2, <i>E. coli</i> MCL triggered      | 10                              | 10                | 0.7%                          |

**RTCR Violations**

| Type of RTCR Violation                            | Number of Violations Issued | Number of Systems | % of Systems with Violations |
|---|-----------------------------|-------------------|------------------------------|
| Treatment Technique, Level 1 requirements not met | 0                           | 0                 | 0%                           |
| Treatment Technique, Level 2 requirements not met | 0                           | 0                 | 0%                           |
| MCL – <i>E. coli</i> +                            | 10                          | 10                | 0.7%                         |
| Monitoring, Additional Routine, Major Routine     | 116                         | 102               | 7.6%                         |

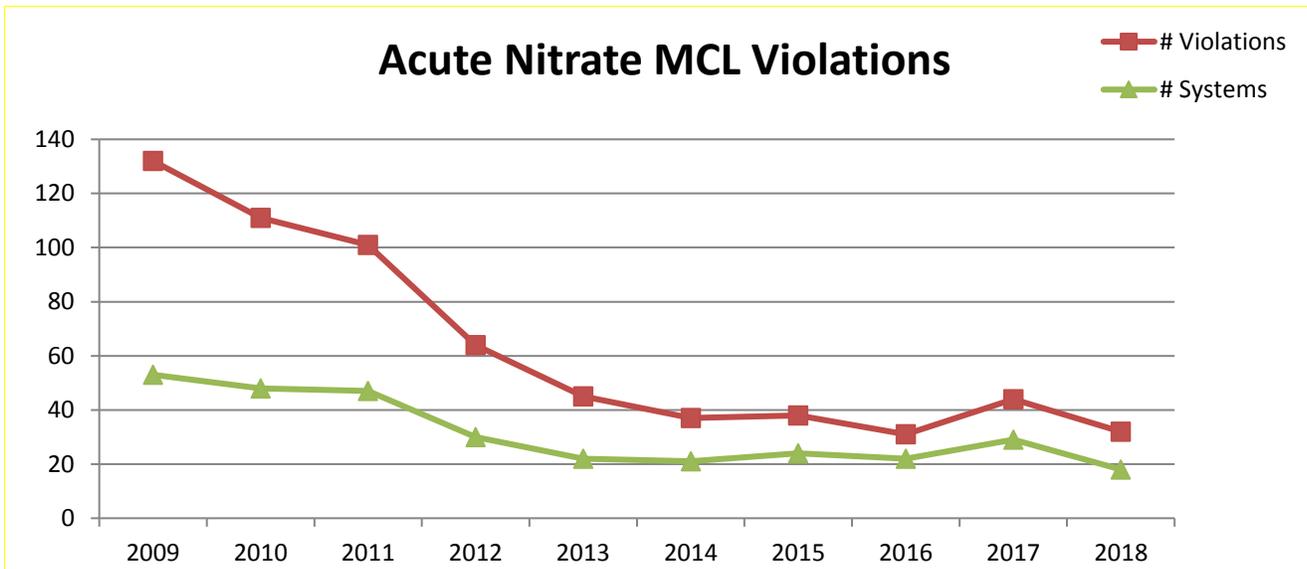
**Nitrate-Nitrite Violations**

This listing is separate from other Inorganic Contaminants because only Community and Non-transient, non-community systems monitor for other inorganic contaminants, while all public water systems monitor for Nitrate-Nitrite.

Data indicates the number of nitrate-nitrite MCL violations decreased from 2017 and the number of monitoring violations also decreased from the previous year.

| Violation     | Number of Violations | Number of Systems | % of Systems with Violations |
|---------------|----------------------|-------------------|------------------------------|
| MCL – 10 mg/l | 32                   | 18                | 1.3%                         |
| Monitoring    | 11                   | 10                | 0.9%                         |

Nitrate-nitrite violations are considered acute violations because immediate adverse health effects can be experienced when nitrate is consumed by the vulnerable population of pregnant women, infants under six months of age, and nursing mothers. The system is significantly out of compliance when it receives one violation and will be issued an Administrative Order if two acute nitrate-nitrite violations are issued within a consecutive three quarter period.



Looking at the past 10 years, the number of nitrate MCL violations decreased significantly from 2009 to 2013 and has maintained consistent numbers since.