

NEBRASKA

DEPT. OF NATURAL RESOURCES

Annual Report and Plan of Work for the **State Water Planning and Review Process**

Submitted to the Governor and Legislature

by the

Director of the Nebraska Department of Natural Resources

September 2017

G O O D L I F E . G R E A T W A T E R .

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I. INTRODUCTION

AUTHORITY

The state water planning and review process was initiated in 1978 to redirect and accelerate Nebraska's water planning efforts. This is a report of the Director of the Department of Natural Resources and is submitted in compliance with *Nebraska Revised Statutes* §§ 2-1599 and 2-15,106. *Neb. Rev. Stat.* § 2-1599 provides that:

Statement of Purpose

In order to provide for the effective conservation and management of Nebraska's water resources, the legislature hereby endorses the concept of a state water planning and review process. The purpose of this planning process shall be to coordinate and direct the planning efforts of the state agencies and university divisions with the responsibilities and interest in the water resources field. This interagency planning process shall be designed to: (1) Provide the Legislature and citizens of Nebraska with information and alternative methods of addressing important water policy issues and area-wide or statewide water resources problems; (2) provide coordinated interagency reviews of proposed local, state, and federal water resources programs and projects; (3) develop and maintain the data, information, and analysis capabilities necessary to provide state agencies and other water interests with a support base for water planning and management activities; (4) provide the state with the capacity to plan and design water resources projects; and (5) conduct any other planning activities necessary to protect and promote the interests of the state and its citizens in the water resources of Nebraska.

Neb. Rev. Stat. § 2-1599 provides that:

Annual report; contents.

On or before September 15 for each odd-numbered year and on or before the date provided in subsection (1) of section 81-132 for each even-numbered year, the director shall submit an annual report and plan of work for the state water planning and review process to the Legislature and Governor. The report submitted to the Legislature shall be submitted electronically. The report shall include a listing of expenditures for the past fiscal year, a summary and analysis of work completed in the past fiscal year, funding requirements for the next fiscal year, and a projection and analysis of work to be completed and estimated funding requirements for such work for the next succeeding four years. The explanation of future funding requirements shall include an explanation of the proposed use of such funds and the anticipated results of the expenditure of such funds. The report shall, to the extent possible, identify such information as it affects each agency or other recipient of program funds. The explanation of future funding requirements shall be in a form suitable for providing an explanation of that portion of the budget request pertaining to the state water planning and review process.

The Department of Natural Resources (Department) utilizes several of its program areas to implement the state water planning and review process. Implementation focuses on the following objectives:

1. Maintain data, information, and analysis capabilities for water planning, including specific programs for collecting, maintaining, and distributing information on streamflows, as well as analyzing water uses and water supplies across the state;
2. Provide staff and resources to support planning and implementation of water resources projects;
3. Support locally developed water management plans for conjunctively managing hydrologically connected ground and surface water supplies;
4. Provide resources to map and identify areas vulnerable to flood damage;
5. Participate in interagency collaboration with federal agencies, state agencies, local natural resources districts (NRDs), and other water interest entities on various water resources programs and projects; and
6. Consolidate and present information in a form that is understandable and useful to the public and interagency collaborators.

PURPOSE

The purpose of the Department's Annual Report and Plan of Work document is to fulfill the Department's obligations under *Neb. Rev. Stat. §§ 2-1599 and 2-15,106*, and in doing so, highlight progress made and planned future work for a wide range of water planning and management activities. The report will detail how various Department programs work to build and disseminate water resources information, promote collaboration; and utilize water planning and implementation to better manage the state's valuable water resources¹. The Department's Water Planning, Engineering Programs and Services, and Field Office divisions are highlighted, with the recognition that there is considerable collaboration among Department divisions through all phases of water planning and management. The Department also participates in wide-range of interagency activities, and seeks to improve interagency coordination and collaboration as much as possible when these opportunities emerge.

REPORT OUTLINE

This report covers statewide water planning and management activities, as well as activities that pertain to unique Nebraska river basins. As such, there is one "Statewide" chapter and six "River Basin" chapters. The "Statewide" chapter contains information about state-scale water planning and management activities, as well as general Department initiatives such as interagency collaboration, metrics, water database development, and administration of state funds. The "River Basin" chapters cover activities specific to the following river basins (Figure 1):

1. Big Blue-Little Blue
2. Republican

¹ Please note that this document only contains activities that pertain to the Department's authorities, and does not address activities that fall under a different agency or entity's authorities. For example, the Department's authorities do not include water quality, groundwater management, or management of public drinking water supplies, as these authorities lie primarily with other local or state agencies.

3. Lower Platte
4. Upper Platte
5. Niobrara-White-Hat
6. Missouri Tributaries-Nemaha

All chapters are sub-divided into “*Synopsis of Fiscal Year 2017 Activities*” and “*4-Year Work Projection*” sections. These sections provide a summary of the previous fiscal year water planning and management activities, followed by four-year work projections for these activities.



Figure 1: Nebraska River Basins

II. STATEWIDE

SYNOPSIS OF FY2017 ACTIVITIES

Communications

Internal

Internal communication efforts have continued to help the Department increase cross-division awareness and coordination. For example, internal agency electronic newsletters have been used to inform staff of a variety of activities that occur across Department Divisions. In addition, the Director has continued to offer internal Open Houses to convey information to all personnel, including those that work in field offices. Here, conference call technology has been utilized to allow for virtual attendance of remotely-based staff. Following the Open Houses, a summary of the content is shared with all Department personnel. These types of conduits help to keep personnel informed and allow them to respond to questions from stakeholders on Department topics that aren't immediately within the scope of their work.

Several procedures have also been set in place to increase staff interaction across divisions and convey information learned from outside events. For example, staff members are encouraged to conduct Department-wide "brown bag seminars" to present materials ahead of a conference talk or presentation. In doing so, the staff presenter receives feedback offered by colleagues with a wide-range of backgrounds and expertise, while the audience is made more aware of initiatives and projects that may occur outside of their own division.

The Department has also continued to offer annual Water Tours for staff members that focus on both the planning and implementation of water resources projects within a specific river basin. The FY2017 Water Tour covered the Missouri River Tributaries Basin, and allowed staff from various disciplines and divisions to engage with one another and learn more about the Basin, as well as the Department's work in the region. Upon return, participants were required to create and deliver a presentation of their tour experience, followed by a question and answer session. All Department personnel were invited to the presentation and encouraged to participate to learn from the experiences of the tour attendees. Participation in the tours increases staff awareness and understanding of long-standing surface water and groundwater entities and projects across the state, which contributes to more meaningful staff engagement with citizens across the state.

External

PUBLIC OUTREACH EVENTS

The Department has continued to actively engage with partnering local natural resources agencies across the state through water planning, floodplain management, and field office activities. In addition, the Department continues to seek opportunities to interact with stakeholders through participation in a wide variety of public outreach events. Where applicable, the Department utilizes interactive exhibits that include a touchscreen water quiz, a groundwater flow model, and a flood simulation physical model.

In FY2017, the Department participated in the following statewide or regional events:

- Husker Harvest Days
- Nebraska State Fair
- Nebraska Women in Agriculture conference
- Nebraska Association of Resource Districts conferences
- Nebraska Governor's Ag conference
- Nebraska State Irrigation Association/Nebraska Water Resources Association joint convention
- Nebraska Planning and Zoning Association/American Planning Association--Nebraska planning conference

In FY2017, the Department also engaged with stakeholders and local partnering agencies at the following community events:

- Various, locally sponsored water tours
- Lincoln Earth Day
- Lincoln Waterfest
- World O! Water in Papillion

DEPARTMENT NEWSLETTER

A Department newsletter continued to be published on a quarterly/seasonal basis to keep stakeholders informed about Department news and to provide important information concerning water management in Nebraska.

DIGITAL NOTIFICATIONS

The Department has continued to update its social media accounts on a regular basis. In addition, in FY2017 the Department expanded its utilization of GovDelivery to reach stakeholders in a convenient, consistent manner. The Department's GovDelivery notification system now includes news releases, surface water orders, notices of surface water applications, dam safety plan approvals, Department and floodplain newsletters, training opportunities, and NeRAIN updates.

WEBSITE

The Department launched a new website in May 2017. The new website simplifies the way stakeholders receive information and provides a more up-to-date snapshot of water management in the state. The Department disseminates a large amount of information, and the new website better organizes this information to make it easier for users to access.

PARTICIPATION IN OUTSIDE ORGANIZATIONS

The Department participates in various organizations and committees that either directly involve water planning or provide input from the Department's perspective on water quantity related topics. Two of these organizations, the Western States Water Council and the Interstate Council on Water Policy, allow the Department to interact with and share information with other state agencies that administer similar responsibilities. The Department is involved to varying degrees with other organizations such as the Climate Assessment and Response Committee, Missouri River Recovery Implementation Committee, the American Water Resources Association, and the Lower Platte River

Corridor Alliance. The Department also provides representation for the Nebraska Geographic Information System (GIS) Council, and the Nebraska GIS/LIS Association.

Interagency Collaboration

Nebraska Association of Resources Districts

The Department has continued close collaboration with the Nebraska Association of Resources Districts (NARD) via the Department/NARD liaison. This was a position that was created in 2013 in order to provide for coordinated and streamlined exchange of program information, data, and studies on the various water management programs between the Department and the NRDs. In addition, the liaison jointly assists the Department and NRDs with identifying projects that promote conservation, efficient water use, and the stabilization or improvement of water supplies, as well as supporting the development of water plans at both the NRD and basin level. The liaison's work greatly enhances the Department's ability to keep up-to-date on the plethora of NRD activities across the state

In FY2017, the liaison attended numerous NRD meetings and events to keep up-to-date on activities, emerging issues, and opportunities. In turn, the liaison worked closely with the Water Planning Division by attending Division-wide meetings, one-on-one meetings with the Division head, and additional meetings with the Division River Basin Coordinators. In addition, the liaison worked with the Department and NRDs to communicate information regarding the Water Sustainability Fund, Water Resources Cash Fund, and other local, state, and federal funding opportunities for water conservation projects. The liaison also worked with the Department and NRDs to address ways to improve uniformity of NRD database management systems, thereby promoting more efficient data dissemination between NRDs and the Department.

Natural Resources Commission

In addition to administering the six natural resources assistance funds overseen by the Nebraska Natural Resources Commission (Commission), the Department evaluated Water Sustainability Fund project and activity applications to determine eligibility for the Commission's consideration regarding grant and/or loan funding.

Nebraska Department of Environmental Quality

In FY2017, conversations between the Department's Water Planning division and the Nebraska Department of Environmental Quality (NDEQ) were initiated to investigate whether planning work between the agencies and partnering Natural Resources Districts (NRDs) could be coordinated. For example, if stakeholder processes and associated consultant work could be combined at some level, overall costs for all agencies involved would likely be reduced. In addition, coordination of efforts could provide more clarity to the public on the differing state agency plans and processes. Thus, a future goal could be that both water quantity (Department) and water quality (NDEQ) elements to be addressed in a single, streamlined stakeholder process.

Through these conversations, the Department and NDEQ recognized that there would be limitations on collaboration due to the differing statutes for water quality vs. water quantity planning and NDEQ's responsibilities to fulfill requirements prescribed by the Environmental Protection Agency. Nonetheless, the Department and NDEQ are continuing

the conversation along with two NRDs that are in the process of both water quality and water quantity planning. The direction forward is to loosely combine two upcoming stakeholder processes in FY2018. In doing so, it is expected that the state agencies and partnering NRDs will have an unprecedented opportunity to learn about the ways that coordination and collaboration between agencies could be used to more efficiently and effectively address water quantity and quality issues, and better serve the public.

University of Nebraska Public Policy Center

In fiscal year 2017 (FY2017), the Department continued collaboration with the University of Nebraska Public Policy Center for 1) consultation with senior leadership on external and internal engagement strategies; 2) data collection and analysis, including for the annual employee survey, NASIS survey participation for information about Nebraskans' perspectives, and design of metrics data compilation; and 3) consultation services for divisions and initiatives.

Specific consultation services provided by the Public Policy Center include development and implementation of survey tools for specific divisions. One of the surveys developed in FY2017 was designed to gauge customer satisfaction with Department issuance of dam inspection reports and responses to applications for surface water appropriations. This survey will be implemented in FY2018. In addition, the Public Policy Center provided the Water Planning Division support and guidance on how best to solicit meaningful feedback for the Integrated Network of Scientific Information and GeoHydrologic Tools (INSIGHT) web portal, as well as how to prioritize actions based on the feedback received. INSIGHT is the Water Planning Division's water use and supply web portal and is explained in more detail in subsequent sections.

Metrics Report for the Governor

Beginning in July 2015, the Department has provided monthly updates to the Governor on a number of performance indicators. The process of developing metrics to best represent the work of the Department is ongoing. Most recently, the Department's various divisions have been working to develop QDIP Board metrics and plan to incorporate these measurements into the monthly Metrics Report, as these become available.

The Metrics Report currently includes measurements of how many new applications to appropriate surface water are approved within the target period of 18 weeks, how many new applications for dams are approved within 90 days, and how many dams have been inspected by the Department in the current year. In addition, the Metrics Report includes monthly measurements that show the number of times certain web applications are accessed, including the INSIGHT web portal and several interactive maps that were created by the Department. As needed, the Metrics Report includes measurements on activities that occur less frequently (e.g. quarterly or annually); this enables the Department to track and report on activities that progress more slowly, such as collaborative water planning. The Monthly Metrics reports are available to the public via the Department's website.

The Metrics Report is also used to update the Governor about potential emerging issues and accomplishments. This portion of the report is only made available to the Governor and the Department's staff. This section may include, for example, Water Sustainability Fund application updates, Platte River Recovery Implementation Program activities,

Republican River Compact Administration activities, or water related litigation. Accomplishments in FY2017 included improvements to the on-line groundwater well registration system, repair and removal of unsafe dams, and advancements in collaborative water planning.

Water Planning and Management Databases

The Department is a leader in statewide water planning and management data dissemination and has developed and/or maintains a wide variety of state water-related databases. Some of the databases are updated daily, so internal and external users can access and utilize the most up-to-date data. Specific water planning and management database programs or activities that the Department administers are listed below.

National Hydrography Dataset

The Department is the steward of the Nebraska portion of the National Hydrography Dataset (NHD), which is a national, geographic dataset containing detailed information about surface water features (streams, lakes, canals, etc.)

Watershed Boundary Dataset

The Department is also the steward of the Nebraska portion of the Watershed Boundary Dataset (WBD), which is a national, geographic dataset that contains delineations of reach, subbasin, and basin boundaries.

Statewide Surface Water Rights Geographic Datasets

The Department creates and maintains geographically referenced delineations of land areas associated with surface water rights and their points of diversion to show where water is accessed from a stream or river. Recent developments include web-based capabilities to disseminate surface water permitting data, which was previously only made available to the public through a lengthy data request process. To do this, the Department used a mapping application to create an interactive surface water rights map from which users can view and download surface water permitting information. The web application has greatly improved the efficiency by which the public can access surface water permit data.

Nebraska Rainfall Assessment and Information Network

The Nebraska Rainfall Assessment and Information Network (NeRAIN) is a database and website that has been active since 2004. It provides a large amount of locally derived weather information that is uploaded daily by hundreds of volunteers across the state. NeRAIN data is used by many organizations and individuals, including farmers and NRDs (for irrigation), the National Weather Service (drought monitoring, flood forecasting), insurance adjusters, researchers, and others. In FY2017, an updated NeRAIN website was launched. Improvements included an updated look and feel, and enhanced zooming capabilities for maps.

Integrated Network of Scientific Information and GeoHydrologic Tools Database and Web Portal (INSIGHT)

The Integrated Network of Scientific Information and GeoHydrologic Tools (INSIGHT) database and web portal was developed by the Department in 2012. INSIGHT provides

summarized information on water use and water supply, as well as current and projected future water balances for Nebraska's river basins and subbasins. It is primarily used internally by water planning and modeling staff, and externally by water managers, technicians, and the public.

Streamgaging Website

The Department operates over 200 stream and canal flow gages statewide. The data acquired from gage measurements are summarized and disseminated to the public via a Department web portal.

In addition, the Department has been working to convert historical gage measurement data into electronic format. The Department's predecessors started streamgaging and gaging existing canals in 1895, the year surface water laws on water appropriations became effective. Some of the gages still exist today, but many more have come and gone over the last 122 years. Streamflow data and canal diversion data are two more pieces of information that can be used by modelers, historians, and other persons interested in the hydrogeologic history of Nebraska. The historical streamgage information will be made available to the public through the streamgaging web portal.

Water Planning

Fully Appropriated Basins (FAB) Evaluation

The Department compiles and publishes an evaluation of the expected long-term availability of hydrologically connected water supplies for areas that are not currently participating in the development or implementation of an Integrated Management Plan (IMP). In December 2016, the Department completed its 12th annual evaluation, entitled "2017 Annual Evaluation of Availability of Hydrologically Connected Water Supplies", also known as the Fully Appropriated Basin (FAB) report. A variety of hydrologic, water use, water rights, and other related data were utilized in compiling this report.

Technical Analyses

The Department has continued to develop and improve hydrologic tools and models that, when combined cover every major river basin in the state. These tools assist the FAB evaluation and other analyses conducted by the Department. Details for specific models are included in subsequent river basin sections of this report.

The Department continued to improve the interactive INSIGHT web portal to share data and information on water supplies and water uses across the state. INSIGHT uses the best available scientific data, information, and technology related to streamflow and water quantity to provide a broad overview of information intended for the general public, more technical information for water managers, and access to data and model files for engineers, modelers, or other individuals and entities interested in this information. The Department also solicited input from various user groups and has begun to incorporate that input to update the web interface. Various Department programs, including Integrated Water Management and Planning, Streamgaging, and Permits and Registration, have contributed data and information to the INSIGHT project, along with source data from local NRDs, surface water irrigation districts, and other water users.

Funds to Aid Local Government

The Department administers several Nebraska natural resources funds and programs that support water related management activities, programs, or projects within the state. Two of the larger funds primarily support local units of government and include the:

- Nebraska Resources Development Fund
- Water Sustainability Fund

Details regarding the administration of these and other funds can be found on the Natural Resources Commission's website (<https://nrc.nebraska.gov/>) and below.

Nebraska Resources Development Fund

The Nebraska Resources Development Act of 1974 created the Nebraska Resources Development Fund (NRDF) to assist with the development and wise use of Nebraska's water and land resources. The NRDF can be used to provide grants or loans to political subdivisions of the state, or an agency of the state, for development projects. The Department is responsible for administering the program, while the statutory authority for approving projects and funding levels rests with the Commission.

During the 2017 legislative session, LB22 reduced General Fund contributions to the NRDF by \$125,613. Appropriations for both FY 2018 and FY2019 were set at \$3.14 million and are expected to complete the remaining projects: Buck & Duck Creek, Lower Turkey Creek, Pigeon/Jones Creek, Sand Creek Environmental Restoration, Upper Prairie/Silver/Moores Creek, and Western Sarpy/Clear Creek.

Water Sustainability Fund

The Legislature created the new Water Sustainability Fund in LB906 (2014) and defined governance and appropriation in LB1098 and LB1098A. In July 2014, \$21 million was transferred to the fund. In 2015, LB657 re-appropriated the unexpended cash balance of about \$21 million and appropriated \$8 million for both the 2016 and 2017 fiscal years. LB661 provided and stated the intent that \$11 million be transferred to the fund for a minimum of 10 years. In 2016, LB957 authorized the Commission to approve one additional partial allocation, up to \$11 million, contingent upon the availability of unallocated funds. According to *Neb. Rev. Stat. § 2-1506*, the goals of the Water Sustainability Fund are to:

- Provide financial assistance to programs, projects, or activities that increase aquifer recharge, reduce aquifer depletion, and increase streamflow;
- Remediate or mitigate threats to drinking water;
- Promote the goals and objectives of approved integrated management plans or ground water management plans;
- Contribute to multiple water supply management goals including flood control, reducing threats to property damage, agricultural uses, municipal and industrial uses, recreational benefits, wildlife habitat, conservation, and preservation of water resources;
- Assist municipalities with the cost of constructing, upgrading, developing, and replacing sewer infrastructure facilities as part of a combined sewer overflow project;
- Provide increased water productivity and enhance water quality;
- Use the most cost-effective solutions available; and

- Comply with interstate compacts, decrees, other state contracts and agreements and federal law.

The Legislature found that these goals can be met by equally considering programs, projects, or activities in the following categories:

- Research, data, and modeling;
- Rehabilitation or restoration of water supply infrastructure, new water supply infrastructure, or water supply infrastructure maintenance or flood prevention for protection of critical infrastructure;
- Conjunctive management, storage, and integrated management of ground water and surface water; and
- Compliance with interstate compacts or agreements or other formal state contracts or agreements or federal law.

It was further stated that the Legislature intended the Water Sustainability Fund to be equitably distributed statewide to the greatest extent possible for the long-term and to give priority funding status to projects that are the result of federal mandates.

The Department is responsible for administering the program, while the statutory authority for approving projects and funding levels rests with the Commission. Both the Commission and the Department have defined and established policies and rules for the process of applications review and evaluation set out in LB1098. Over 26 applications were approved in FY2017, and over \$30 million in assistance was awarded. Twenty-four new applications for project, program, and activity funding were submitted in July 2017.

Critical Infrastructure Facilities Fund

This fund was created by LB957 in FY2016 and funded by a \$13.7 million one-time transfer from the Cash Reserve Fund on June 30, 2016. The Department was directed to use the Fund to provide a grant to an NRD to offset costs related to soil and water improvements intended to protect critical infrastructure facilities within the NRD, which includes military installations, transportation routes, and wastewater treatment facilities. The Papio-Missouri River NRD submitted an application for a \$13.7 million grant to help fund its Offutt Air Force Base levee project. The application was approved and a contract providing for disbursement of funds to the NRD on a cost reimbursement basis was completed. The project began in FY2017 with completion projected in FY2019.

Statewide Data Collection

Streamgaging Program

Stream and canal gaging activities are considered part of the State Water Planning and Review Process. *Neb. Rev. Stats.* §§ 46-227, 46-252, 46-258, 46-261(3), 61-208, 61-209, 61-211, 61-215, and 61-216 authorize and require the Department to measure the quantity of water in the state's streams and canals. Due to the size of the streamgaging network and the importance of accurate, timely streamflow information, significant funding is budgeted for ongoing streamgaging activities.

The Data Collection Program of the Water Administration Division oversees data collection procedures, reviews streamgaging records, and ensures that quality control

standards are met. The Data Collection Program works in close conjunction with the five Department field offices. The field offices are responsible for making streamgaging measurements, operating and maintaining streamgaging stations and equipment, and for general water administration. Data collected through the streamgaging network is used by the Department to make informed decisions when administering water rights, issuing permits, studying surface water/groundwater interactions, responding to flood emergencies, modeling floodplains, quantifying water supplies and uses, calibrating groundwater models, complying with interstate compacts, and planning for future water demands.

In FY2017, the streamgaging program focused on continuing to update its telemetry system from landline and cellular to satellite telemetry. This enables efficient transfer of data from remote locations to the Department servers. Approximately 20 streamgages (out of over 200) are still in need of the satellite telemetry upgrade. Upgrading more streamgages to satellite telemetry reduces costly cell phone bills and further facilitates our goal of providing users with timely data through the Department's streamgaging website.

Surface Water Use-Voluntary Reporting Program

The Department initiated the Surface Water Use-Voluntary Reporting Program in fall 2014 in the Loup and Niobrara River Basins. The program has since been incrementally expanded, and now covers most of the state. To implement the program, postcards are sent to surface water irrigators, requesting a voluntary submission of surface water use information via the Department's water use reporting website. The data received is summarized and stored on Department servers. The online survey tool helps to better assess current water use, project future water needs, and enhance management and oversight of surface water throughout the state. One application of this program has been to create NRD-specific surface water use summaries and then disseminate this information to the NRD and the public as part of integrated water management implementation. As more data is gathered, this information will assist the Department with more accurate estimates of surface water use across the state and will improve the data that is provided through the INSIGHT web portal.

Floodplain Management

The Department is responsible for handling floodplain management matters for the State of Nebraska. The floodplain section of the Engineering and Technical Services Division coordinates an overall program aimed at addressing the wise use of land that is subject to flooding. This program includes multiple elements related to hazard mitigation and floodplain management planning.

Technical Assistance

The Department provides technical assistance to communities, state agencies, federal agencies, and the general public on a daily basis. One unique form of technical assistance that the Department provides to local floodplain administrators is Base Flood Elevations (BFEs) Determinations. These BFEs allow administrators to make informed floodplain management decisions related to proposed development. The Department provided 242 BFE Determinations in FY2017.

The Department also provides technical assistance on implementing local floodplain management ordinances, in part, through outreach and training for local officials. During the last fiscal year, the Department presented on floodplain topics at the Nebraska Floodplain and Stormwater Managers Association (NeFSMA) Annual Conference, NeFSMA Membership Meeting, Nebraska Association of Resources Districts (NARD), the Nebraska Planning and Zoning Annual Conference, Nebraska Association of County Officials, Professional Surveyors Association of Nebraska, and the Association of State Floodplain Managers National Conference. The Department also provided Floodplain Management Workshops around the state for floodplain administrators. The workshops were held in South Sioux City, Lincoln, and Holdrege. The section also publishes a quarterly Floodplain Management Today Newsletter for local floodplain administrators and other interested parties.

Mapping

The Department identifies and delineates floodplain and floodways using both federal and state dollars. As of June 30, 2017, the State of Nebraska had completed digital Flood Insurance Rate Maps (FIRMs) for 57 counties. The maps were provided by either or both the floodplain management section and the Federal Emergency Management Agency (FEMA). Mapping work is ongoing through the FEMA Risk MAP process for a number of watersheds and counties including Upper Little Blue, Upper Big Blue, West Fork Big Blue, Logan Creek, Lower Elkhorn, and Middle North Platte – Scotts Bluff watersheds. Paper Inventory Reduction projects are ongoing in Burt, Nemaha, Richardson, Cheyenne, Scotts Bluff, and Deuel counties. This mapping information is utilized by communities to support hazard mitigation and floodplain management planning activities.

National Flood Insurance Program

The Department serves as the National Flood Insurance Program (NFIP) Coordinating Office for the State of Nebraska. The NFIP Coordinator serves as a liaison between FEMA, Nebraska community floodplain administrators, and the general public. Numerous Community Assistance Visits, Community Assistance Contacts, and Ordinance Review Assistance efforts have been completed around the state. This typically involves floodplain management or flood insurance related technical assistance that may be used to support community floodplain management decision making. Due to ongoing changes in the NFIP, the Department has also sent staff to training sessions to learn more about the Community Rating System (CRS) in order to provide accurate technical assistance. Department staff is now providing additional technical assistance to help communities interested in joining the CRS program. CRS allows communities to implement floodplain management activities above the NFIP minimum and get credits in the form of flood insurance premium reductions. The Department helps the communities in the state save approximately \$625,000 per year in flood insurance premium costs. There are currently six communities in Nebraska participating in CRS and there are seven new communities working on their applications. NFIP coordination activities and CRS assistance activities provide resources to communities that support floodplain management planning and the management of floodplain development.

Mitigation

The Department provides technical assistance to any entity implementing flood mitigation planning and related projects. The Department provides NRDs, counties, and communities with planning assistance for the purpose of updating local Hazard Mitigation Plans

(HMPs). According to the Nebraska Emergency Management Agency (NEMA), most of the state's population is now covered by an all Hazards Mitigation Plan. HMPs include flood mitigation components.

The Department currently administers the Flood Mitigation Assistance grant (FMA) on behalf of FEMA. In addition to this program, the Department assists NEMA with two other FEMA programs: the Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation grant program (PDM). In February 2017, the FMA grant awarded nearly \$155,000 for a flood mitigation and a planning project in Nebraska.

The HMGP grant is provided to Nebraska after a Presidential disaster declaration and the proposed projects are reviewed by the Governor's Task Force on Disaster Recovery, for which the Department is a co-chair, along with NEMA. As part of the Task Force, the Department assists with review of these applications and provides technical assistance for project implementation as appropriate, per existing authorities.

Interagency Partnerships

The Department continues to facilitate partnerships with numerous state and federal agencies to make Nebraska more resilient from flooding. The Nebraska Silver Jackets team is a partnership among the Department, NEMA, USACE, FEMA, USGS, NOAA, and other partners to coordinate and expand communication about flood risk. In FY2017, the Silver Jackets worked on a new hydrologic and hydraulic study for streams within the City of Scottsbluff. This study will be used as leverage data for the Scotts Bluff County Paper Inventory Reduction project. Silver Jackets is also working on projects to assess flood mitigation strategies for Deshler, Hebron, and Dewitt.

When requested, the Department also assists state agencies during major events. When high water threatens communities and properties in Nebraska, the Department assists NEMA in providing and helping the public to understand real time flood information for the rivers in Nebraska. Here, Department staff monitor the rivers and stay in contact with NEMA staff throughout high water events. In FY2017 there were no major events.

FOUR-YEAR WORK PROJECTION

Water Planning

The Department will continue to work with all 23 NRDs individually (either through FAB determinations or voluntary approaches) that are developing or implementing integrated management plans (IMPs) jointly with the Department, or with groups of NRDs who are participating in basin-wide planning activities with the Department. Each IMP is evaluated on a regular basis to determine if modifications or updates to the plan, tools, or data are necessary. The ongoing implementation of IMPs and basin-wide plans in fully and overappropriated areas of the state rely on funds from the Water Resources Cash Fund, for which a separate report is completed by the Department and filed with the legislature. Pursuant to statutory authorization, this fund is used to implement management actions by NRD's and the Department that result in reductions in consumptive uses, increased groundwater recharge, or enhanced streamflows. Projects being developed and implemented include conjunctive management of groundwater and surface water, streamflow augmentation wells, short-term leasing and permanent retirement of irrigated

acres, and other projects to capture excess streamflows and release the water back to the stream at times when existing streamflow is unable to meet the demand for flows.

Data Collection

The Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts based on needs across the state. The Water Administration Division, through its Data Collection Program and the field offices, will continue to work together to develop improved workflows, implement automated quality checks, and increase data accessibility. The Water Administration Division will continue to work with the Information Technology Division to develop and refine mobile applications that will be utilized by the field offices to administer surface water, complete inspections, and collect data in the field in a more efficient and effective manner. The Department projects that within one year, the Voluntary Water Use Reporting tool will be offered throughout the entire State of Nebraska.

With the majority of streamgages updated to telemetry technology, the next steps will be to complete satellite telemetry updates to canals within the gaging network. In addition, and in order to meet the Department's and the public's needs, the Department will continue to develop systematic approaches to evaluate the adequacy of the existing streamgaging network, as well as determining the need for additional gages.

Floodplain Management

The Department will continue to provide technical assistance to communities for floodplain management administration activities and deliver related training to local officials. The Department will also continue to offer technical assistance to any entity implementing flood mitigation planning and related projects. This includes assisting NEMA as requested. The Department also provides NRDs, counties, and communities with planning assistance for the purpose of updating local hazard mitigation plans, which include flood mitigation components. According to NEMA, most of the state's population is now covered by a hazard mitigation plan.

The Department will continue to work with FEMA on Risk MAP projects throughout the state. In the next four years, the following watersheds are proposed to receive new flood hazard data (although final authorization to commit funds will be made from FEMA on a regular basis): Upper Little Blue, West Fork Big Blue, Upper Big Blue, Middle North Platte–Scotts Bluff, Lower Elkhorn, Logan, North Fork Elkhorn, Upper Elkhorn, and Lewis and Clark. Counties that are proposed to receive new flood insurance rate maps in the next four to six years include Adams, Clay, Hamilton, York, Seward, Scotts Bluff, Cheyenne, Deuel, Richardson, Nemaha, Burt, Custer, and Boone.

The Department will continue to update existing models and tools, as well as develop new tools that support water management. Some of these future tool updates will be collaborative efforts with NRDs in regard to the planning process and evaluation of overall plan goals. Other efforts will be geared toward developing new tools or updating existing models to support the FAB Evaluation and basin-wide water accounting and water administration programs.

III. Big Blue-Little Blue River Basins

SYNOPSIS OF FY2017 ACTIVITIES

Water Planning

Blue River Basin Model

The Department completed development of a groundwater model of the Big and Little Blue River basins in 2013 and utilized this model for the 2017 Fully Appropriated Basins (FAB) report. The Department continued to collect data and information that will be used for model updates. The Department has initiated discussions with the Upper Big Blue NRD in an effort to develop a work plan that could serve as the path forward for collaboration in future modeling activities.

Fully Appropriated Basins (FAB) Evaluation

For the 2017 FAB evaluation, the Department reached a preliminary conclusion that the Big and Little Blue basins were not fully appropriated.

Voluntary Integrated Management Plans

The Department continued work with the Little Blue River Basin NRDs on two joint voluntary IMPs; the IMPs cover the Tri-Basin NRD and Little Blue NRD portions of the Little Blue River Basin, respectively. The overarching purpose of each IMP is to jointly manage hydrologically connected ground and surface water to protect existing users and sustain a balance between uses and supplies. Stakeholder meetings were held over the fall and winter of FY2017 to discuss issues, goals and objectives for each voluntary IMP. The first meeting was a joint meeting with both Tri-Basin and Little Blue Basin stakeholders present to discuss the River Basin as a whole. Individual stakeholder meetings for each NRD were subsequently held to work on NRD specific management goals. In early 2017, both stakeholder processes were put on hold to allow the Little Blue NRD Board of Directors time to update their groundwater management plan. It was recognized that the updates could include new groundwater regulations, and if adopted, such regulations would affect the content of the IMPs.

In July 2016 and January 2017, the Lower Big Blue NRD and Upper Big Blue NRD, respectively, initiated separate voluntary IMP processes with the Department. Initial meetings were held with the NRDs to discuss the path forward and potential coordination of stakeholder processes with NDEQ's water quality planning initiatives.

Blue River Basin Compact

The Blue River Basin Compact Administration met for the 44th Annual Meeting in May 2017 in York, Nebraska where regular business was conducted. This included reports from Nebraska and Kansas on water administration activities in the Basin and standing committee reports on water levels, streamgage readings, legal activities, and budget items. Department staff supplied support for compact administration and standing committees. Intrastate coordination on the Blue River Basin Compact water quality issues mainly occurs between the Department of Environmental Quality and the local NRDs.

Streamgaging

The Department operates five streamgages in the Big Blue River Basin. The Department now operates three streamgages in the Little Blue River Basin. Two of these streamgages were added in 2017 through cooperation with the Little Blue NRD.

Floodplain Management

Floodplain management staff continued work on FEMA Risk MAP projects in the Upper Big Blue, West Fork Big Blue, and Upper Little Blue watersheds. The end goal from these projects are updated digital FIRMs. This mapping information is utilized by communities to support hazard mitigation and floodplain management planning activities.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department will work to improve and update the Blue Basin model that provides data and information necessary for the Department's FAB Evaluation and other analyses. The Department will continue discussions with the Blue River NRDs regarding potential collaboration in future modeling activities. The Department will continue to coordinate with other state and local water management agencies to expand data collection activities and analyses of hydrologic data to better understand hydrologically connected water resources.

Voluntary Integrated Management Plans

The Department will continue to work with the Little Blue and Tri-Basin NRDs on development of voluntary IMPs, resuming the stakeholder process as soon as is feasible in light of the Little Blue NRD groundwater management plan revisions. It is expected that development of these IMPs will be completed in 2018, and implementation of IMP actions and monitoring will follow. The Department will continue discussions and planning for the upcoming Lower Big Blue NRD and Upper Big Blue NRD voluntary IMPs. It is expected that the stakeholder process for each of these IMPs will occur in 2018, with IMP development completed in 2019. The stakeholder processes will be coordinated to some extent with NDEQ's water quality planning stakeholder processes to gain better insight on how statewide water planning efforts can be coordinated.

Blue River Basin Compact

The Department will continue to fulfill its obligations under the Blue River Basin Compact and does not expect an increased level of commitment under this obligation.

Data Collection

Based on needs across the state, the Department will continually evaluate and prioritize data collection and analyses to support state and local planning efforts. These efforts will continue for streamgaging, floodplain management, and water planning activities in the Blue River basins. Other details regarding the four-year projection of work are contained in the Statewide section of this report.

Floodplain Management

Over the next four years, the Department will be working with FEMA to complete Risk MAP projects in the Upper Big Blue, the West Fork Big Blue, and the Upper Little Blue watersheds. These are on-going projects, where all new enhanced and basic hydrologic and hydraulic engineering has been completed, and the projects are now starting the FEMA regulatory process. It is anticipated that Adams and Clay counties will receive digital FIRMs in FY2018, Hamilton and York counties in FY2019, and Seward County in FY2020. It is also anticipated that FEMA will fund data development (new hydrology and hydraulics) in Thayer and Nuckolls counties in FY2018. The Risk MAP process includes outreach and planning events to promote resilient communities and risk reduction throughout the lifetime of the project.

IV. Lower Platte River Basins

(ELKHORN RIVER, LOUP RIVER, AND LOWER PLATTE RIVER BASINS)

SYNOPSIS OF FY2017 ACTIVITIES

Water Planning

Technical Analyses

The Central Nebraska Model (CENEB) is a regional groundwater model that encompasses the Niobrara and Loup River basins, and portions of the Elkhorn River Basin; the Loup and the Elkhorn basins are tributaries of the Lower Platte River Basin. Model construction was completed by the Department and consultants in July 2013. Data from this model has been incorporated into INSIGHT for the entire Loup River Basin and the portion of the Elkhorn River Basin that is contained in the model. The CENEB model is available to NRDs to evaluate management actions as a part of IMP implementation. This model was used in the 2017 FAB Evaluation.

The Department has continued to work with consultants on development of a regional numerical groundwater model for the Lower Platte and Missouri River Tributaries basins. When complete, the model will be used for the Department's FAB Evaluation and will also be available for use by NRDs. The model is divided into two parts: the northern model, which covers the upper two-thirds of eastern Nebraska; and the southern model which covers the Nemaha Basin. Initial set-up and documentation of the northern model was completed in fall 2016 with subsequent calibration occurring through 2017. The southern model and dataset development was initiated in spring 2016 and is continuing.

Fully Appropriated Basins (FAB) Evaluation

For the 2017 FAB Evaluation, the Department reached a preliminary conclusion that the Lower Platte River Basins were not fully appropriated.

Basin-wide Planning

LOWER PLATTE RIVER BASIN COALITION

In 2013, the seven NRDs in the Lower Platte River Basin and the Department signed a five-year interlocal agreement to form the Lower Platte River Basin Coalition (Coalition). A Board of Directors, technical committee, and managerial committee were formed as a part of the Coalition. The Coalition's efforts are completely voluntary and, as such, planning activities do not have statutorily prescribed components, in contrast to other basin-wide planning activities described in later sections of this report.

The purpose of the Coalition is to pursue development of components that could comprise a Lower Platte River basin-wide water management plan. It was recognized that the NRDs and the Department have their own powers for planning and management of water resources within defined boundaries, but the water supplies and uses across the Basin are interrelated. If agreed to, the Basin-wide Plan would include a framework for water accounting and managed development across the Basin. It would not, however, include regulatory actions. Any agreed-to regulatory actions would instead be implemented through individual IMPs. As such, agreement by all Consortium members is paramount to the success of a potential basin-wide plan.

In FY2017, the Department attended all Coalition technical and management committee meetings and reviewed consultant deliverables such as databases and reports. The Department also worked to build and improve upon existing data and analyses that is a part of the Department's INSIGHT web portal. The improved INSIGHT data and analyses, if agreed to, will serve as the foundation of the basin-wide accounting system.

LOWER PLATTE RIVER CONSORTIUM (Drought Contingency Planning)

In fall 2016, an interlocal agreement between the Lower Platte South NRD, the Lower Platte North NRD, Metropolitan Utilities District, Lincoln Water System, and the Department was entered into in order to create the Lower Platte River Consortium (Consortium). The purpose of the Consortium is to develop forecasting tools to provide advanced notice of likely drought conditions in the Lower Platte River Basin as well as mitigation and responsive actions that can be deployed during the onset of drought conditions to protect public water systems, agricultural uses, and instream flows.

The Department has been involved in all Consortium activities including regular Consortium meetings, the hiring of a consultant, and oversight of project work that includes a water conveyance study and preparation of a drought contingency plan. In FY2017, two grants were awarded, instrumentation to gage conveyance on the River was initiated, and a public workshop was held to better understand drought planning and potential solutions.

Voluntary Integrated Management Plans (IMPs)

ADOPTED VOLUNTARY IMPS

The following NRDs have adopted voluntary IMPs in the Lower Platte River Basin:

- Lower Platte South NRD, adopted May 2014
- Papio-Missouri River NRD, adopted August 2014
- Lower Loup NRD, adopted June 2016
- Upper Loup NRD, adopted July 2016

Upon adoption of the voluntary IMPs, the Department and NRDs work to implement management actions and monitoring as specified in each voluntary IMP. Each year the Department and NRD conduct an annual review of the voluntary IMP. The annual reviews typically include an initial meeting between the Department and NRD to discuss the previous year's progress towards meeting the goals and objectives of the IMP. Joint action steps to be implemented in the subsequent year are also discussed. Next, the Department and NRD prepare a report outlining the previous year's actions, monitoring activities, and jointly identified actions for the succeeding year. The NRD and the Department present highlights of the annual review report at a publicly noticed meeting within the NRD, such as at an NRD Board Meeting. The annual review reports and presentations are made available via the Department's website at <https://dnr.nebraska.gov/water-planning>.

The second and third annual reviews were conducted for the Lower Platte South NRD in August 2016, and August 2017, respectively. The first and second Papio-Missouri River NRD annual reviews were conducted in May 2016 and July 2017, respectively. The first annual reviews for the Upper Loup and Lower Loup NRDs were held in August 2017. So far, none of the IMPs have undergone amendments since the time of adoption; however,

amendments are anticipated with completion of the voluntary Lower Platte River Basin-Wide Plan. The Basin-wide Plan will outline accounting and managed growth specifics that, if agreed to, will be implemented through the individual voluntary IMPs.

VOLUNTARY IMP DEVELOPMENT

In FY2017, the voluntary IMPs for the Lower Platte North and Lower Elkhorn NRDs remained in development phase, although the stakeholder process and majority of the writing has been completed for these plans. The intent is to keep these IMPs on hold until the Lower Platte River Basin-Wide Plan is completed, which provides an opportunity for components of the Basin-wide Plan to be incorporated into the voluntary IMPs prior to adoption, thereby avoiding a lengthy amendment process.

Lastly, the Upper Elkhorn NRD initiated development of a voluntary IMP with the Department in June 2015. This process has been on hold due to variety of factors, such as development of the Lower Platte River Basin-wide Plan and multiple requests made to the Department for voluntary IMP development following passage of LB1098. The Department has been consistently communicating with the Upper Elkhorn NRD and is planning to resume the process in FY2018.

Streamgaging

The Department does not operate Platte River Basin streamgages in the lower portion of the Basin, but instead utilizes five gages operated by the U.S. Geological Survey. The Department operates 11 streamgages, one canal gage, and cooperates with the U.S. Geological Survey on one streamgage in the Elkhorn River Basin. The Department operates 12 streamgages and 24 canal gages in the Loup River Basin.

Floodplain Management

In FY2017, the Department started the scoping phase of Risk MAP, called Discovery, in the Logan and Lower Elkhorn watersheds. This includes new basic hydrologic and hydraulic analyses, engagement meetings, and a needs assessment. This mapping information will be utilized by FEMA to scope future projects in the Elkhorn River Basin.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analysis

The Department and consultants will continue development and calibration of the Lower Platte River and Missouri Tributaries models. Expected completion will occur in late 2017 and late 2018 for the northern and southern models, respectively. Data from the models will be incorporated into INSIGHT analyses and made available to water managers and the public via the INSIGHT web portal.

Additionally, the Department will continue to collect data for the CENEB model to assess portions of the Niobrara, Loup, and Elkhorn River Basins. These modeling tools will be updated as needed and utilized in the Department's annual FAB report and in support of implementation of IMPs.

Voluntary Integrated Management Plans (IMPs)

The Department will continue to work jointly with the Lower Platte South, Papio-Missouri River, Upper Loup, and Lower Loup NRDs to implement their respective voluntary IMPs, including regular assessment of progress being made toward the goals and objectives of the plans. The Department and NRDs expect that, with adoption of the Lower Platte River Basin-wide Plan, the voluntary IMPs will be amended to be consistent with the basin-wide strategy agreed to by all Lower Platte River Basin NRDs and the Department. The Department will additionally work with the Lower Elkhorn and Lower Platte North NRDs to update draft voluntary IMP language so it is consistent with the Basin-wide Plan, and then move forward with IMP adoption and subsequent implementation. The Department will also resume work with the Upper Elkhorn NRD to develop a voluntary IMP through a stakeholder process and joint NRD and Department writing of the plan, ensuring consistency with the Lower Platte River Basin-wide Plan.

Basin-Wide Planning

The Department will also continue working with the Lower Platte River Basin Coalition and the Lower Platte River Consortium to complete and implement, when/where applicable, the basin-wide plan, conveyance study, and drought contingency plan.

Data Collection

Based on needs across the state, the Department will continually evaluate and prioritize data collection and analyses to support state and local planning efforts. These efforts will continue for streamgaging, floodplain management, and water planning activities in the Lower Platte River Basin. Other details regarding the four-year projection of work are contained in the Statewide section of this report.

Floodplain Management

It is anticipated that FEMA will fund the next phase of data development, for the Logan and Lower Elkhorn watersheds; the scoping phase for Upper Elkhorn and North Fork Elkhorn watersheds; and the Paper Inventory Reduction projects for Boone and Custer counties. This would include eight enhanced hydrologic models, 16 enhanced hydraulic models, new basic hydrologic and hydraulic studies, and finalization of the basic hydrologic and hydraulic studies completed in FY2017. These projects also include community outreach meetings. The end goal is to have new effective FIRM panels; however, this goal is contingent on the next phase being funded by FEMA.

V. Missouri Tributaries-Nemaha River Basins

SYNOPSIS OF FY2017 ACTIVITIES

Water Planning

Technical Analyses

The Department has continued to work with consultants on a regional numerical model for the Lower Platte and Missouri River Tributaries basins. The model is divided into two parts: the northern model which covers the northern two-thirds of eastern Nebraska and the southern model which covers the Nemaha Basin. The model will be used for the Department's FAB Evaluation and is also available for use by NRDs. Data from the model will be incorporated into the INSIGHT analysis and available through the INSIGHT web portal. Initial development of the upper model was completed in summer 2016 with documentation completed in fall 2016. Final calibration is currently underway with conclusion of the northern model project expected in 2017. The southern model development was initiated in spring 2016 and will follow on the completion of the northern model with expected completion in 2018.

The Department continued to assess potential advancements in the best available science and methods that could be incorporated into these modeling tools, by supporting efforts of the Eastern Nebraska Water Resources Assessment (ENWRA) organization. To accomplish this, Department staff attended ENWRA meetings and workshops to stay up-to-date on study progress and developments, and technical expertise pertaining to ENWRA data. A portion of ENWRA's work involves utilization of airborne geophysical studies to assist in mapping of subsurface geology/hydrogeology in Eastern Nebraska. The Department's primary interest in this work is to increase understanding the effectiveness of airborne geophysical studies in assessing hydrologic connection of aquifers and streams through groundwater modeling tools.

Fully Appropriated Basins (FAB) Evaluation

For the areas with sufficient data and appropriate hydrologic conditions to use the current evaluation methodologies, in the most recent FAB report, the Department reached a preliminary conclusion that the basins were not fully appropriated.

Voluntary Integrated Management Plans (IMPs)

A public hearing process and subsequent adoption of the joint Lewis and Clark NRD and Department voluntary IMP occurred in fall 2016. This voluntary IMP has regulatory actions that involve education requirements for new groundwater (NRD) and surface water (Department) permits. Thus, the Department has been working on an educational packet that will accompany paperwork and requirements for all new surface water permit applications.

On March 10, 2017, the Nemaha NRD submitted a letter of intent to develop a voluntary IMP with the Department. The Department reciprocated this letter on March 20, 2017. The Department subsequently met with the NRD to discuss groundwater modeling efforts that could provide foundational data for the voluntary IMP process.

The initiation of the Nemaha NRD voluntary IMP marks an exciting milestone, as it represents the point in time where all 23 NRDs in the state are now participating in joint integrated water management with the Department.

Streamgaging

The Department does not currently operate any streamgages in the Missouri Tributaries-Nemaha River Basin.

Floodplain Management

In FY2017, the Department was awarded funds from FEMA to complete Paper Inventory Reduction projects for Burt, Nemaha, and Richardson counties. These projects have a quick timeline (3 years) in comparison to Risk MAP projects (5 years). This year the Department contracted out the Nemaha and Richardson projects and completed most of the hydrology and hydraulics for the Burt County project in-house. This mapping information is utilized by communities to support hazard mitigation and floodplain management planning activities.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department and consultants will work to incorporate the recently developed Lower Platte-Missouri Tributaries model (northern portion) into the INSIGHT analysis and annual FAB evaluation. The Department will continue development of the southern portion (Nemaha Basin), with completion of this model expected to occur in FY2018. Upon completion, the southern model will also be incorporated into the INSIGHT and FAB analyses. In addition, the Department will continue to support efforts of ENWRA to evaluate whether the coupling of groundwater modeling tools and airborne geophysical studies will help improve understanding of hydrologic connections between aquifers and streams.

Voluntary Integrated Management Plans (IMPs)

The Department will continue to work with the Lewis and Clark NRD to jointly implement actions identified in their voluntary IMP. Specifically, this will include completing the educational materials for the new surface water permits educational requirement, so that this regulatory action can be implemented in 2018. Also, the Lewis and Clark NRD and the Department will hold the first joint review of the voluntary IMP in fall 2018 to assess progress made towards accomplishing the goals and objectives of the IMP. The Department will also work with the Nemaha NRD to develop the voluntary IMP for this area, with an expected kick-off for IMP development occurring in fall 2018.

Data Collection

Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts. These efforts will continue in the area of streamgaging, floodplain mapping, and integrated

management. Other details regarding the four-year projection of work are contained in the Statewide section of this report.

Floodplain Management

Work will continue for Burt, Nemaha, and Richardson counties, and it is anticipated that all three counties will go Preliminary before the end of FY2018. It is also expected that FEMA will fund a Discovery update for the Lewis and Clark Watershed. The update will include the basic hydrologic and hydraulic analyses to determine which projects should be scoped for the future.

VI. Niobrara-White-Hat River Basins

SYNOPSIS OF FY2017 ACTIVITIES

Water Planning

Technical Analyses

The Department has continued to utilize the Upper Niobrara White integrated surface water and groundwater model that was developed by the Department and Upper Niobrara White NRD in 2013. This model includes the upper portions of the Niobrara River Basin, and small regions of the White River and Hat Creek basins. Data generated from the model are incorporated into the Department's INSIGHT and FAB evaluations.

The Central Nebraska Model (CENEB) is a regional groundwater model that encompasses the Niobrara and Loup River Basins, and portions of the Elkhorn River Basin. Model construction was completed by the Department and consultants in July 2013. Data generated from the model have been incorporated into the Department's INSIGHT analyses and FAB evaluations. The CENEB model is available to NRDs to evaluate management actions as a part of IMP implementation. In FY2017, the Department began work with Niobrara River Basin NRDs to refine the CENEB model in the areas in which the model overlaps with the Upper Niobrara Model (western boundary of Cherry County). Once refinements are complete, the Department plans to release an updated delineation of hydrologically connected areas in the Niobrara River Basin.

Fully Appropriated Basins (FAB) Evaluation

In the 2017 FAB evaluation, the Department reached a preliminary conclusion that the Niobrara River Basin, downstream of the Mirage Flats Diversion Dam to the confluence of the Niobrara River and the Missouri River, was not fully appropriated.

Integrated Management Plans (IMPs)

The Upper Niobrara White NRD and Department jointly adopted an IMP in 2009 for the portion of the NRD that is upstream of the Mirage Flats Irrigation District, following a determination of fully appropriated for that area. This IMP was amended in 2011 to clarify actions and incorporate minor changes. The Department and Upper Niobrara White NRD have conducted seven annual reviews to jointly assess progress being made towards IMP goals and objectives, and to prioritize future actions.

In 2014, the Department and the Lower Niobrara NRD jointly adopted a voluntary IMP for the NRD. Since this time, the Department and the Lower Niobrara NRD have conducted three annual reviews to evaluate progress made towards achieving the goals and objectives of their IMP and to plan future actions.

In January 2015, the Middle Niobrara NRD requested to work with the Department on a voluntary IMP for their NRD and an IMP development process was initiated. A stakeholder meeting was held in spring 2016 to assess potential goals and objectives. This IMP planning effort is currently pending due to discussions between the Niobrara River Basin Alliance, Nebraska Public Power District, and the Nebraska Game and Parks Commission regarding the assessment and implementation of LB1038 and associated management issues (further discussed below).

Basin-wide Planning

The Department and the Niobrara River Basin Alliance (NRBA) initiated a voluntary basin-wide planning process in 2014. The NRBA includes the Upper Niobrara-White, Middle Niobrara, Lower Niobrara, Upper Loup, and Upper Elkhorn NRDs. In FY2016, the basin-wide planning effort was put on hold as the NRBA, the Nebraska Game and Parks Commission, and the Nebraska Public Power District negotiated an agreement to work together to protect future economic activity, agriculture, other water users, fish and wildlife, and recreation activities along the Niobrara River. This negotiation included the potential transfer of the Spencer hydropower dam and water right, which impacts land ownership, appropriations, and easements. Since this time, the Department has been working with the partners to consider a comprehensive path forward on a wide variety of water management and stakeholder processes, including consideration for the basin-wide planning process.

LB1038 IMPLEMENTATION

The Nebraska Legislature passed LB1038 on April 12, 2016. The bill included several environmentally related provisions, including a provision that addressed a water rights agreement between the NRBA, Nebraska Public Power District, and the Nebraska Game and Parks Commission regarding the Spencer Dam. The bill was signed into law by the Governor on April 18, 2016. Since this time, the Department has been assessing and outlining the implementation of the bill along with a variety of related water resources and water rights administration issues in the Basin.

Niobrara River Compact

The Upper Niobrara River Compact (Compact) was ratified by the states of Wyoming and Nebraska in 1962. The Compact provides for an equitable division of the available surface water supply of the Basin. It provides for acquisition of information regarding groundwater and underground water flow necessary for apportioning said flow, in addition to calling on the states to address issues that may lead to disagreements. The Department and the Wyoming State Engineer's Office discuss the Compact at a regularly occurring meeting in the fall of each year.

At the fall 2016 meeting, the members discussed the states' water supply conditions, surface water administration, the completed climate variability study, a conjunctive management model project between the Upper Niobrara White NRD and the Department, a Wyoming Department of Transportation study on the June 2015 flood event near Lusk, Wyoming and other related hydrologic activities. An additional technical subcommittee meeting was held in spring 2017 to discuss current hydrologic conditions, integrated management planning, and a UNL Conservation and Survey Division study of "aquifer absent" areas in the Upper Niobrara White NRD. Other ongoing technical studies and work were also discussed that included further information on the 2015 flood event and ongoing efforts by the Wyoming Water Development Office to update its Northeast River Basin Plan.

Streamgaging

The Department operates 15 streamgages, 19 canal gages, and uses information from an additional two gages operated by the U.S. Geological Survey in the Niobrara-White-Hat River Basins.

Floodplain Management

In FY2017 there were no specific projects occurring in the Niobrara-White-Hat River basins. Please see the Statewide section of this report, which references general statewide floodplain activities related to the Niobrara, White, and Hat River basins.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department will continue to work with the Upper Niobrara White NRD to collect the information needed to update and refine the integrated groundwater and surface water operations model discussed in previous sections, and will use the model to evaluate various management actions and how these may affect water supply and use. The Department will continue to collect data to update the CENEB model to assess the central and lower portions of the Niobrara River Basin. Both models will be updated as needed and will be utilized in upcoming FAB evaluations and future INSIGHT editions.

Integrated Management Plans (IMPs) and Basin Planning

The Department will continue to conduct annual IMP reviews with the Upper Niobrara White and the Lower Niobrara NRDs to evaluate progress being made towards goals and objectives of each IMP. The Department will also work with the Middle Niobrara NRD to re-engage the stakeholders and continue development of this voluntary IMP. The Department will continue to stay up-to-date with basin-wide planning activities, including discussions regarding the assessment and implementation of LB1038 and associated management issues.

Niobrara River Compact

The States of Wyoming and Nebraska will continue to meet at least once annually to discuss the Compact. Additional coordination with the Bureau of Reclamation is expected with regard to finalizing a Niobrara River Basin climate variability study.

Data Collection

Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts. These efforts will continue in the area of streamgaging, floodplain mapping, and integrated management. Other details regarding the four-year projection of work are contained in the Statewide section of this report.

Floodplain Management

Currently there are no anticipated floodplain management projects in the next four years in the Niobrara-White-Hat River basins. However, it remains a priority of the Department to update the paper maps in Box Butte and Sheridan counties with digital information in the future.

VII. Republican River Basin

SYNOPSIS OF FY2017 ACTIVITIES

Water Planning

Integrated Management Plans (IMPs)

The Department and the Republican River Basin NRDs continually assess the implementation of IMPs in the Basin. Near the end of FY2017, the Department and Republican River Basin NRDs began to discuss the need to develop a fifth generation IMP for each of the three primary NRDs in the Basin. The Department has begun to identify what changes to these three IMPs are necessary in order to align the accounting and forecasting procedures outlined in the IMPs with agreements reached by the Republican River Compact Administration (RRCA) in August 2016 and May 2017.

This year's accounting and forecast indicated the potential for non-compliance with the Republican River Compact (Compact) unless certain management actions were put into place. Those actions are specified in the IMPs and are proactively being implemented by both the NRDs and the Department to help ensure Compact compliance for Nebraska. This year's forecast was the fifth consecutive year that has been designated as a Compact Call Year.

Basin-wide Planning

The passage of LB1098 in the 2014 legislative session mandated the creation of a Basin-wide Plan for the hydrologically connected portion of the Republican River Basin. In 2015, the Department and four Republican River Basin NRDs (including Tri-Basin NRD) began a series of meetings with a group of Basin stakeholders to consult and collaborate on the formulation of the Basin-wide Plan and included management actions. Those stakeholder meetings continued throughout FY2017. In April 2017, the Department and the NRDs exchanged letters jointly agreeing to extend the deadline for the plan to be completed, adopted, and take effect by one additional year (to April 17, 2018) as allowed in *Neb. Rev. Stat. §46-755 (3)*.

Republican River Compact

The States of Colorado, Kansas, and Nebraska continued the discussions on long-term agreements throughout 2015 and 2016. These discussions culminated in long-term agreements (Republican River Compact Administration resolutions) signed by all three states in August 2016. These agreements are based upon the successes of the prior annual agreements that created positive outcomes for all states.

Several pending cases in State District Court had been filed by various irrigation districts and irrigation district patrons against the Department and the NRDs in the Republican River Basin. The recent litigation has focused on claims related to actions taken by the Department and NRDs for implementation of the IMPs as a means of ensuring Compact compliance in 2013 and 2014. These cases are in various phases of being resolved through the District Court and the Nebraska Supreme Court and are coordinated through the Nebraska Attorney General's Office.

Water Resources Cash Fund

A significant source of funding for the activities in the fully appropriated areas of the Republican River Basin is the Water Resources Cash Fund. A total of \$6.6 million dollars (including funds obtained via a grant from the Nebraska Environmental Trust) are allocated to this fund annually and a significant portion is utilized to meet the requirements of IMPs and interstate decrees, compacts, or agreements in the Republican River Basin. Details on the projects and expenditures of the Water Resources Cash Fund can be found in the annual report to the legislature regarding this cash fund.

Streamgaging

The Department operates 19 streamgages, four canal gages, and cooperates with the U.S. Geological Survey on three streamgages in the Republican River Basin.

Floodplain Management

In FY2017 there were no specific floodplain management projects in the Republican River Basin. Please see the Statewide section of this report, which references general statewide floodplain activities related to the Republican River Basin.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department will work with the Republican River Basin NRDs to develop and test specific conjunctive management action scenarios via modeling tool outputs from the Republican River Basin Conjunctive Management Project. Each irrigation district in the Basin can also be represented and analyzed with this set of modeling tools. A work plan was distributed to the Nebraska Bostwick Irrigation District (NBID) and initial screening work began, but was halted once litigation was initiated. Conjunctive management efforts involving the Lower Republican NRD, NBID and the Department will hopefully be reinitiated once litigation matters are resolved. The Department will continue to evaluate the tools and data to determine if updates or additional data are necessary.

Integrated Management Plans (IMPs)

The Department and Republican River Basin NRDs will continue to meet annually to review the IMPs and progress made towards achieving the goals of each plan. These reviews focus on the assessment of two key compliance standards: limitations on groundwater depletions and limitations on groundwater pumping, with the purpose of ensuring long-term groundwater depletions remain stable or decrease. The Department and NRDs will assess the compliance standards and make necessary adjustments as needed. The Department and NRDs will also assess how the new Basin-wide Plan and recent RRCA agreements may necessitate future modifications to the individual NRD IMPs.

Basin-Wide Planning

The Department and the four NRDs in the Republican Basin will continue to develop the basin-wide plan over the next year. It is expected that the stakeholder process will continue through at least the first half of FY2018. This collaborative process will set the

framework for plan development, with the overarching goal of sustaining a balance between water uses and supplies in the Basin.

Republican River Compact

The Department will continue to work to implement the Compact and ensure compliance through integrated management planning activities.

Data Collection

Based on needs across the state, the Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts. These efforts will continue in the area of streamgaging, floodplain mapping, and integrated management. Other details regarding the four-year projection of work are contained in the Statewide section of this report.

Floodplain Management

Currently there are no anticipated projects in the Republican River Basin in the next four years.

VIII. Upper Platte River Basin

SYNOPSIS OF FY2017 ACTIVITIES

Water Planning

Technical Analyses

Two regional modeling efforts are underway in the Upper Platte River Basin: the Cooperative Hydrology Study (COHYST) and the Western Water Use Management (WWUM) model. The models are being developed to help achieve and measure progress towards the goals of the Upper Platte Basin NRDs' IMPs. Similar to other Department modeling efforts, these models integrate watershed, surface water operations, and groundwater modeling components to create tools capable of analyzing varied water management scenarios. Scenarios have included analyses of conjunctive management projects, well pumping, alternative surface water operations, etc.

In 2016, work was performed to update and improve performance of the COHYST model. The update included an extension of land use data from 2006 to 2010. The WWUM model was also updated by the South Platte and North Platte NRDs, incorporating new data through the most recent year. The current work plans anticipate that a tool capable of completing an evaluation of the Upper Platte Basin's overappropriated area IMPs for the first planning increment (2009-2019) will be available in 2017, with the evaluation analyses to follow. The Department's Water Planning staff have expended significant resources in support of the development of the models and model analyses in partnership with the local NRDs and irrigation districts.

To meet the requirements of state statutes, these technical tools are needed to perform studies and modeling analyses. The studies include assessing the impacts of soil and water conservations measures on water supplies, evaluating the difference between current and fully appropriated levels of development, and a robust review of integrated management actions implemented in the Basin.

In 2016, the COHYST and WWUM models were used to perform initial work on assessing the impacts of soil and water conservation measures, and the evaluation of differences between current and fully appropriated levels of development studies. Both studies are currently in phase II of their work plans. The robust review analysis scope of work has been completed and work activities are underway. Completion of the robust review is expected in 2018.

Integrated Management Plans (IMPs)

There are currently six IMPs in place within the Upper Platte River Basin. Five of the IMPs are for the overappropriated area of the Platte River Basin. As needed, modifications are made to the IMPs to ensure progress is made towards the goals of the plan, as well as to accommodate other overarching changes (socio-economic, policies, etc.). In 2016, it was determined that no modifications to the IMPs were necessary.

Basin-wide Planning

There is one Basin-wide Plan in place in the Upper Platte River Basin, which is for the overappropriated area of the Platte River. The plan was developed for the years 2009

through 2019 (first planning increment) in accordance with *Neb. Rev. Stat. §46-715*. The Department and five Upper Platte River Basin NRDs met regularly during FY2017 to discuss progress for implementation of the Basin-wide Plan and of the IMPs for the overappropriated area. In addition, every year an annual meeting is held in June or July that is directed toward dissemination of information to Basin stakeholders and the general public. In July 2017, the Department and five Upper Platte River Basin NRDs held the seventh meeting of the basin-wide stakeholder group as the group continues to develop a second increment Basin-wide Plan (2020-2029), also in accordance with *Neb. Rev. Stat. §46-715*.

A voluntary Basin-wide Plan is in the early development phases for the Lower Platte River Basin. While this plan focuses on the Lower Platte River, upstream entities, particularly NRDs, will be encouraged to stay informed as this plan is developed.

Interstate Agreements

Three interstate agreements involve the Upper Platte River Basin: the North Platte Decree, the Platte River Recovery Implementation Program, and the South Platte Compact. For the Department, implementation of interstate agreements includes the administration of water rights, various reporting elements, and support of various subcommittees and annual meetings. The Department is on schedule with implementation of tasks in support of these interstate agreements.

Water Resources Cash Fund

A significant source of funding for the activities in the over and fully appropriated areas of the Upper Platte River Basin is the Water Resources Cash Fund. A total of \$6.6 million dollars (including funds obtained from an Nebraska Environmental Trust grant) are allocated to this fund annually and a significant portion is utilized to meet the requirements of integrated management plans and interstate decrees, compacts, or agreements in the Upper Platte River Basin. Details on the projects and expenditures of the Water Resources Cash Fund can be found in the annual report to the legislature for that cash fund.

Streamgaging

The Department operates 48 streamgages, 58 canal gages, and cooperates on one additional gage operated by the U.S. Geological Survey in the Upper Platte River Basin.

Floodplain Management

The Department received FEMA funding in FY2017 to complete basic hydrology and hydraulic analyses of the Middle North Platte – Scotts Bluff watershed and to complete a Paper Inventory Reduction project for Scotts Bluff, Cheyenne, and Deuel counties. These projects started in May 2017. This mapping information is utilized by communities to support hazard mitigation and floodplain management planning activities.

FOUR-YEAR WORK PROJECTION

Water Planning

Technical Analyses

The Department plans to use the WWUM and COHYST models and pertinent datasets for future IMP analyses, which will include implementing additional management actions and scenarios to improve understanding of conjunctive management of ground and surface water. The robust review of management actions at the river basin scale will also be conducted using these models. The results of that study, the soil and water conservation measures study, and the evaluation of differences between current and fully appropriated levels of development study will be used to guide planning efforts in the Basin. The Department and others will review the data, tools, and models, and update as needed to fulfill goals and objectives of planning efforts.

Basin-Wide Planning

The five IMPs in the overappropriated area of the Upper Platte River Basin, in accordance with state statute, were written with a first increment to last no more than ten years. The first increment will end in 2019. State statute requires an evaluation of progress in meeting goals and objectives of the IMPs. From this evaluation, plans for a new 10-year increment of integrated management planning are developed.

The new stakeholder and associated planning process for the second increment of the basin-wide plan was initiated in 2015, and is expected to continue through 2019. This process incorporates an evaluation and revision of the Basin-wide Plan by stakeholders representing various interests across the Basin, including irrigation districts, reclamation districts, public power and irrigation districts, mutual irrigation companies, canal companies, fish and wildlife interests, industries, and municipalities. Planning for the second increment of the five individual NRD IMPs will begin in January 2018 and will follow a process similar to the basin-wide planning process.

Most coordination for IMP implementation occurs between the NRDs and the Department. However, for specific projects, additional coordination occurs with irrigation districts, canal companies, and other state agencies such as the Department of Environmental Quality, the Department of Roads, the Department of Health and Human Services, and the Nebraska Game and Parks Commission. As the existing Basin-wide Plan and subsequent IMPs continue to be implemented over the next several years, Department staff will continue to supply technical and administrative support to develop, implement, and maintain planning efforts. Ongoing monitoring of the projects and their impacts on streamflows and groundwater levels make-up a significant section of each IMP. The Department supports monitoring activities by disseminating information, data, and the technical capabilities to analyze and use the existing hydrologic tools. Many of the monitoring activities carried out under the IMPs are utilized by the state to satisfy the reporting requirements under interstate agreements.

Interstate Agreements

Ongoing activities of implementation related to the interstate agreements are expected to continue as scheduled. Regular monitoring for compliance with the agreements will also continue. For the North Platte Decree, regular coordination is carried out with the Bureau of Reclamation, the State of Colorado, and the State of Wyoming. Within Nebraska, the

local irrigation districts and the North Platte NRD are contacted to coordinate on Decree meetings and any issues which impact their interests. As part of the interstate agreements, the Department supplies technical and administrative support for the development of projects according to the agreement schedules. The North Platte Decree Committees will continue an ongoing project to inventory and study irrigation practices and consumptive use along the North Platte River in Wyoming.

As a part of the Platte River Recovery Implementation Program (PRRIP), the Department works with the states of Colorado and Wyoming, the Bureau of Reclamation, the U.S. Fish and Wildlife Service, water users across the Platte River Basin, and environmental groups. The Department also holds regular meetings with the Nebraska Department of Environmental Quality, the Nebraska Department of Roads, the Nebraska Games and Parks Commission, and a downstream water users group composed of the five overappropriated area NRDs, the Central Nebraska Public Power and Irrigation District, and the Nebraska Public Power District.

The Governance Committee of PRRIP has developed plans to extend the current increment of PRRIP for an additional 13-year increment beyond the initial 2019 target date. This extension will require National Environmental Policy Act (NEPA) review and new Congressional authorization. The Department has met with stakeholders to ensure support for the extension and plans to continue engaging stakeholders and providing briefings to support the extension process.

Conjunctive Management Projects

The Department and the NRDs in the overappropriated area of the Upper Platte River Basin have been very active in implementing various management alternatives and projects to meet the goals and objectives of the IMPs. In many cases, the projects being implemented also meet the terms of PRRIP.

Several conjunctive management projects are being developed and implemented in the Upper Platte River Basin. Conjunctive management projects involve the use of both surface water and groundwater resources to maximize water use and minimize negative impacts on streamflows and groundwater levels. In this way, availability and reliability of the regional water supply is increased, and use of the whole water supply is optimized. The NRDs have entered into agreements with canal companies to utilize the existing infrastructure of the canal systems so that streamflows in excess of system demands, as well as other transferred surface water rights, can be used to recharge the groundwater aquifers and increase base flow to the stream over time. As partners in the IMPs, the Department cooperates on these projects by providing technical, administrative, and monetary support. These efforts are expected to continue as the plans are implemented.

Data Collection

The Department continually prioritizes and evaluates its data collection and analysis capabilities to support state and local planning efforts based on needs across the state. These efforts will continue in the area of streamgaging, floodplain mapping, and integrated management. Certain details regarding the four-year projection of work are contained in the Statewide section of this report.

Floodplain Management

The Floodplain Management section will complete the basic hydrology and hydraulics studies for the Middle North Platte – Scotts Bluff watershed. It is anticipated that FEMA will fund the Discovery, or scoping, phase for this watershed as well. In the next four years the Department plans on completing the Paper Inventory Reduction projects in Scotts Bluff, Cheyenne and Deuel counties. The final product of the Paper Inventory Reduction projects are new digital FIRMs that can be used for hazard mitigation and floodplain management planning activities.

IX. Financial Summary Table

Budget & Actual - Program Assistance, Streamgaging, IWM, & Litigation

Prog. 334 - Subprog. 04, 07, 19, & 21

As of 8/24/17

	<u>FY2015 Actual</u>	<u>FY2016 Actual</u>	<u>FY2017 Actual</u>	<u>FY2018 Budget *</u>	<u>FY2019 Plan</u>	<u>FY2020 Plan</u>
Personal Services (Salary & Fringe)	\$1,694,368	\$1,083,761	\$1,805,230	\$1,675,000	\$1,675,000	\$1,675,000
Travel Expenses	\$57,658	\$60,305	\$42,745	\$47,000	\$50,000	\$50,000
Operating Expense – SOS Temporary Personnel	\$89,550	\$139,444	\$195,348	\$200,000	\$200,000	\$200,000
Operating Expense- Mgmt Consultant, Contractual Services and Engineering & Architectural Services	\$1,782,382	\$2,049,539	\$1,261,903	\$1,250,000	\$1,000,000	\$1,000,000
Equipment, Computer and Software	\$152,533	\$71,838	\$53,401	\$66,500	\$65,000	\$65,000
Operating Expense - Other	\$391,082	\$507,457	\$468,213	\$335,000	\$335,000	\$335,000
Capital Outlay/Fixed Assets Except Computer	\$30,664	\$600,696	\$220,032	\$200,000	\$200,000	\$200,000
Interstate Water Litigation	\$649,055	\$467,512	\$801,810	\$360,000	\$250,000	\$250,000
TOTAL	\$4,847,292	\$4,980,552	\$4,848,682	\$4,133,500	\$3,775,000	\$3,775,000

* FY2017 expenditures and the FY2018 budget reflect the effect of appropriation and reappropriation reductions in FY2017 (LB22 and LB327) for Department operations. Plans for FY2019 and FY2020 assume appropriations will continue at the reduced base amount.