# Monthly Progress Report

*April 2017*

# Program Overview

## Summary

The City of Enid, Oklahoma (City) has historically enjoyed an adequate supply of water resources to support consumers in Enid and its wholesale customers. However, the City's annual water demand has begun to exceed the annual yield of the existing groundwater supply, which has resulted in depletion of the aquifer system. To address this supply gap, the City initiated a Water Master Plan (by others) that recommended developing a new surface water supply from Kaw Lake to supplement the existing groundwater supply.

## Key Components

### Intake and Intermediate Booster Pump Stations

The Intake and intermediate booster pump station will provide the means to pump water from Kaw Lake to Enid. This will include an intake structure on Kaw Lake and an intake pumping station. An intermediate pump station will be located about two-thirds of the way to Enid along the pipeline and will provide additional pressure necessary to convey the design flow to the treatment plant site.

### Pipeline

The pipeline will convey the raw water from the proposed Kaw Lake intake structure to the proposed Water Treatment Plant along a 70-mile direct corridor.

### Terminal Storage Reservoirs

Terminal storage is employed to provide a constant supply of raw water to the new water treatment plant, and it can also be utilized to minimize costs associated with conveyance of raw water. As such, the main components of the terminal storage assessed for the current project were emergency storage and equalization storage. For this program, the City desires to separate the volume dedicated for equalization storage from the volume for emergency storage. Therefore, the terminal storage is divided into two components:

- Equalization (TSR EQ) – storage used on a routine basis to meet peak demands
- Emergency (TSR EM) – storage used only when raw water conveyance is not in service

### Water Treatment Plant

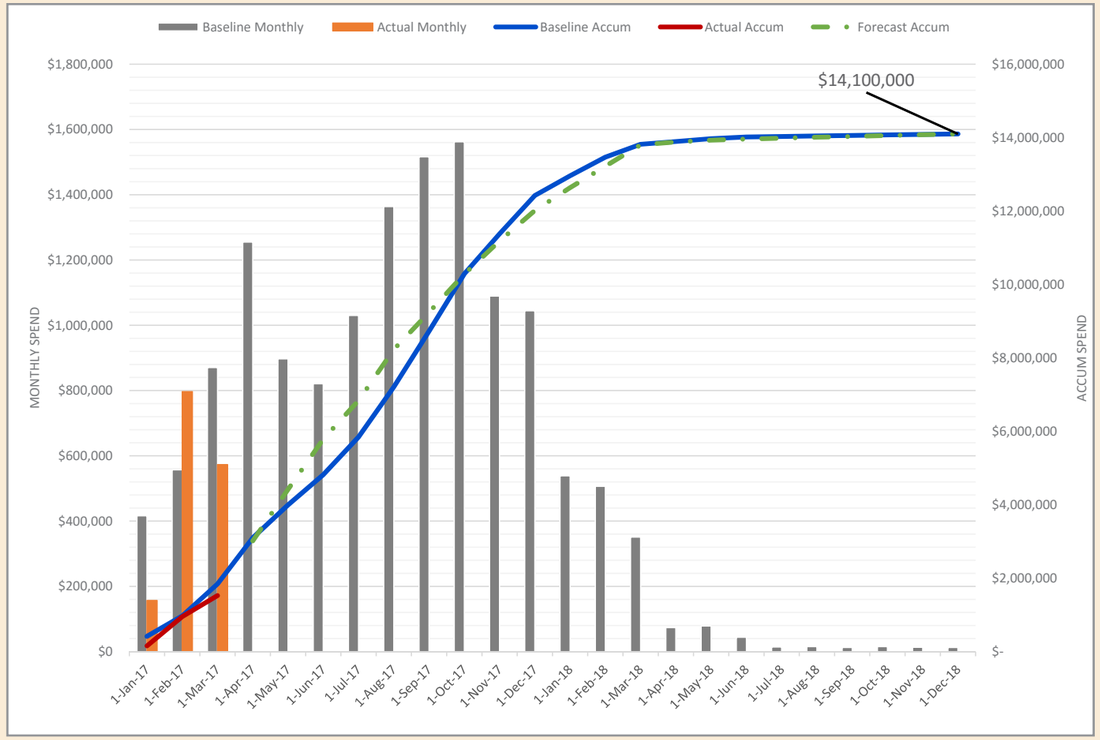
A new surface water treatment plant will be needed to meet the water quality objectives necessary to provide safe drinking water as well as to meet the aesthetic desires such as taste and odor. These objectives can be met by a combination of conventional treatment to produce safe drinking with the addition of polishing to reduce objectionable tastes and odors.

### Distribution

Distribution system improvements are necessary to blend the existing groundwater with the treated surface water and to connect the blended water into the existing City of Enid water distribution network.

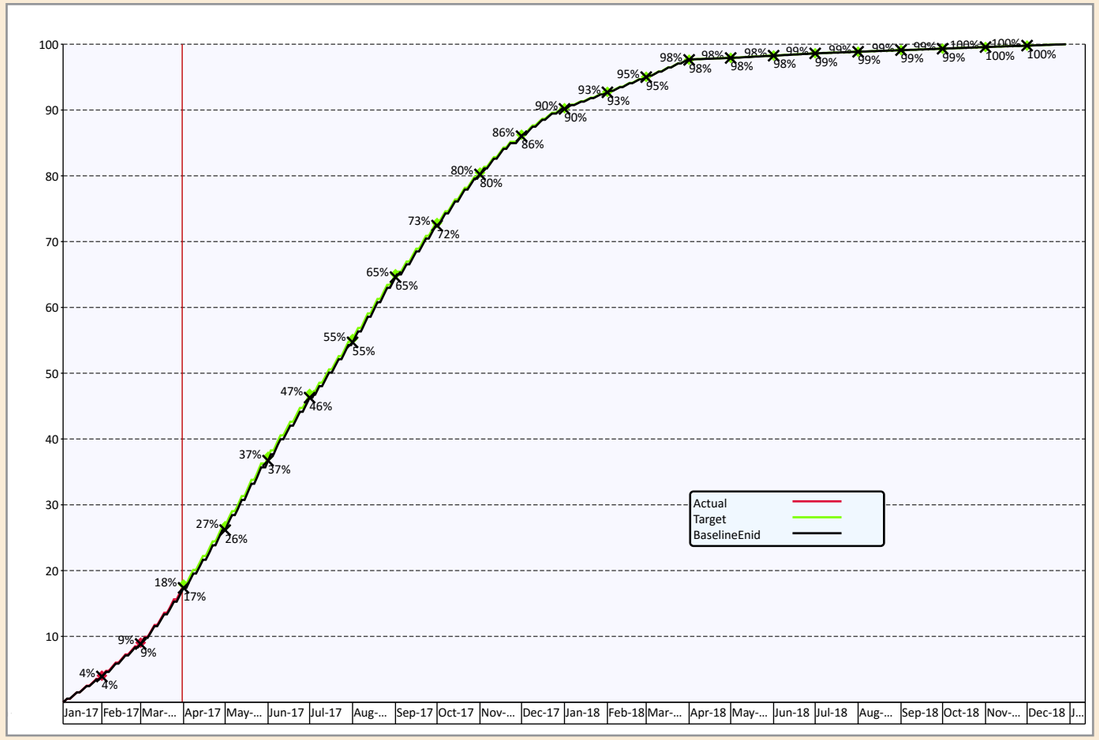
# Program Finance - Phase 2

*Kaw Lake Water Supply Program CashFlow*




# Program Schedule - Phase 2

*Kaw Lake Water Supply Program - March 2017*



# Program Administration

## Scope of Services

Garver is providing project administration controls initiation through Phase 2, including reporting in all aspects of the program management, scheduling and budget status updates, coordination of regulatory and funding agencies, as well as stakeholders and public meetings. Primary deliverables include a Design Consultants Standards Manual and a Program Strategy Manual.

## Project Update

The Program Management Team is beginning to develop work on all of the items in the scope of services. Team assignments have been made and reporting, schedule detail activities, and documents and methods are being established for strategic execution of the project administration.

## Completed

- Schedule baseline activities detailed for each area by the project controls team
- Internal team coordination meetings held for coordination between Program Management and team leaders

## Future Activities

- Evaluation of City standards and specification for implementation into the Design Consultants Standards Manual
- Organization and planning activity on the Program Strategy Manual
- Schedule and cost updating of the Master Project Schedule

## Intake and Pump Stations

### Scope of Services

The scope of services includes surveying, geotechnical investigations, preliminary (30% Complete) design, investigation of property acquisition and development of design consultant standards for a new raw water intake and pumping station located on Kaw Lake at Intake Site No. 2 and an intermediate booster pump station as identified in Phase 1 of the project.

The intake is expected to include a shaft and micro tunnel with vertical turbine pumps in a parallel configuration with a design capacity to meet the targets identified during Phase 1 of the Program. The intermediate booster pump station is expected to consist of parallel horizontal split case pumps housed in an at-grade structure. The intermediate booster pump station is also expected to include approximately 5 million gallons of stored raw water within ground storage tanks.

### Project Update

A meeting with the U.S. Army Corps of Engineers was held on February 28, 2017 at the Tulsa District Office to discuss the Program. The Corps of Engineers will require a cultural resources survey at the intake site prior to granting permission to perform any geotechnical investigation borings.

The team continues to work on the draft Preliminary Design Report that establishes the pumping design criteria, design concepts, and operations strategies for the intake and intermediate booster pump station. The draft report also includes a transient hydraulic analysis of the pipeline, process and instrumentation diagrams, and equipment data sheets.

### Completed

- Acceptance from the City on the proposed equipment manufacturers list that will be used for Basis of Design
- All field work for topographic and hydrographic survey of the intake site and access roads
- Survey data processed and delivered to intake team
- First draft of process and instrumentation diagrams for intake pump station, intermediate booster pump station and ground storage tank
- Coordination with local power company (Kay Electric) for preliminary design of power supply to intake pump station
- Set up of transient hydraulic model

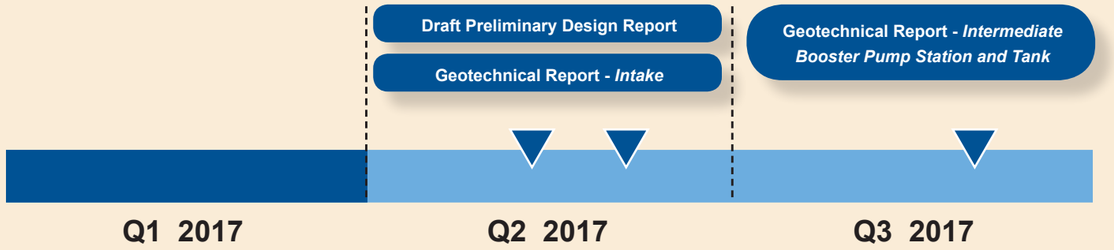
### Future Activities

- Perform environmental cultural survey at intake site
- Coordinate with geotech for land and marine borings at intake site
- Transient hydraulic model analysis
- Preliminary work on 30% design

**Above and Right**: 3D rendering of intake pump station and underwater piping at Kaw Lake

# Intake and Pump Stations

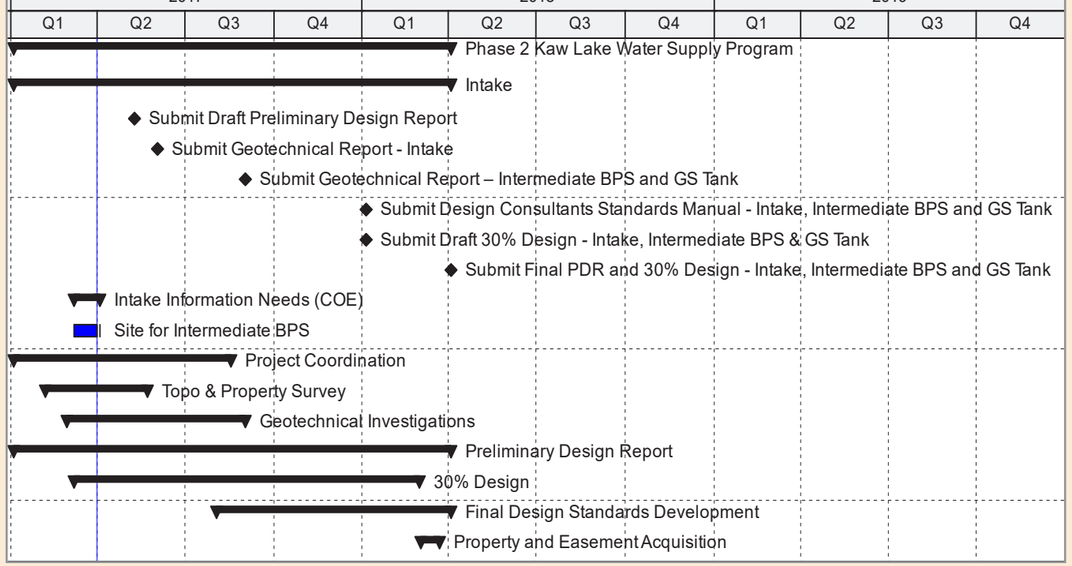
## Project Milestones





## Project Schedule

| Activity ID | Activity Name | Orig Dur (WD) | Finish |
|---|---|---|---|
| **Phase 2 Kaw Lake Water Supply Program** | | 317 | 02-Apr-18 |
| **Intake** | | 317 | 02-Apr-18 |
| MS1030 | Submit Draft Preliminary Design Report | 0 | 09-May-17 |
| MS1010 | Submit Geotechnical Report - Intake | 0 | 02-Jun-17 |
| MS1020 | Submit Geotechnical Report – Intermediate BPS and GS Tank | 0 | 01-Sep-17 |
| MS1040 | Submit Design Consultants Standards Manual - Intake, Intermediate BPS and GS Tank | 0 | 04-Jan-18 |
| MS1035 | Submit Draft 30% Design - Intake, Intermediate BPS & GS Tank | 0 | 04-Jan-18 |
| MS1050 | Submit Final PDR and 30% Design - Intake, Intermediate BPS and GS Tank | 0 | 02-Apr-18* |
| **Intake Information Needs (COE)** | | 21 | 04-Apr-17 |
| PIP.1840 | Site for Intermediate BPS | 21 | 04-Apr-17 |
| **Project Coordination** | | 160 | 17-Aug-17 |
| **Topo & Property Survey** | | 61 | 23-May-17 |
| **Geotechnical Investigations** | | 132 | 01-Sep-17 |
| **Preliminary Design Report** | | 317 | 02-Apr-18 |
| **30% Design** | | 250 | 01-Mar-18 |
| **Final Design Standards Development** | | 169 | 02-Apr-18 |
| **Property and Easement Acquisition** | | 15 | 22-Mar-18 |



# Pipeline

## Scope of Services

The scope of services includes surveying, geotechnical, alignment analysis, preliminary (30% complete) design, investigation of future property acquisition and development of design consultant standards for a new raw water pipeline from Kaw Lake at Intake Site No. 2 to a new Water Treatment Plant as identified in Phase 1 of the project.

The pipeline will consist of approximately 70 miles of pipe along the direct corridor with a design capacity to meet the targets identified during Phase 1 of the Program. This task generally consists of providing final pipeline alignment selection within the Direct Corridor and preparation of aerial background plans.

## Project Update

Developed preliminary pipeline route alternatives analysis criteria and presented it to the City for review and consideration. The team is waiting on property owner permission to begin field reviews. Coordinating construction site visits of similar type pipeline projects for the City to tour, but this is a low priority as the City is focusing efforts on other components of the program. Began developing pipeline design criteria for the preliminary design report.

## Completed

- Desktop review of preliminary alignment alternatives
- Initial contact with major utility owners along proposed route
- Hydraulic analysis of pressure classes associated with pipe materials and comparison of cost impacts
- Site visit of pipe manufacturer plant

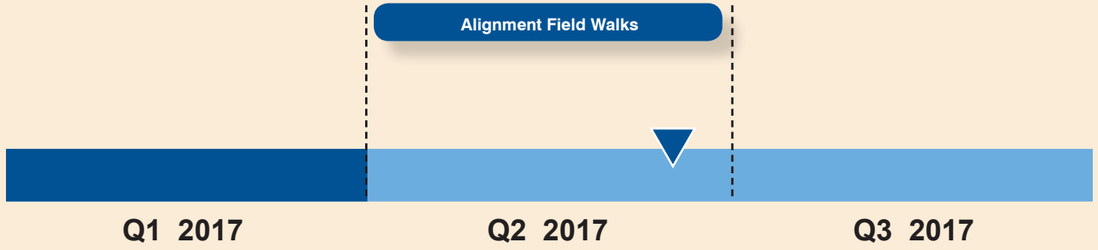
## Future Activities

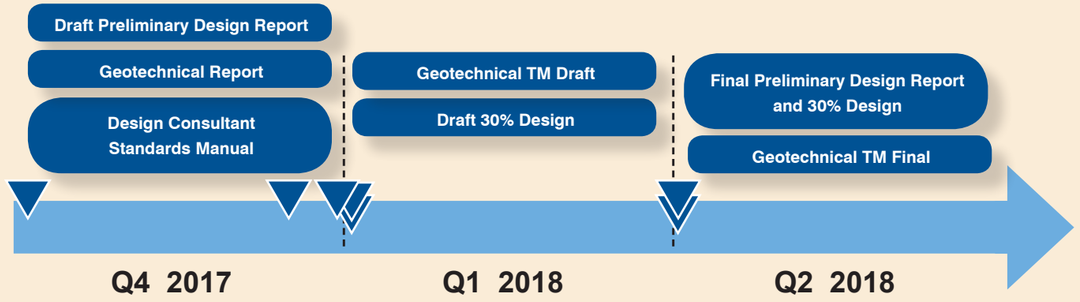
- Evaluation of route alternatives based on analysis criteria
- Coordination of geotechnical investigation needs along route
- Continued evaluation of pipe material types
- Further coordination of crossings with utility companies, city, county and state agencies
- Field reviews along proposed alignment


**Above**: Installing 60-inch casing

**Right**: Installing 48-inch pipe by bore and jack

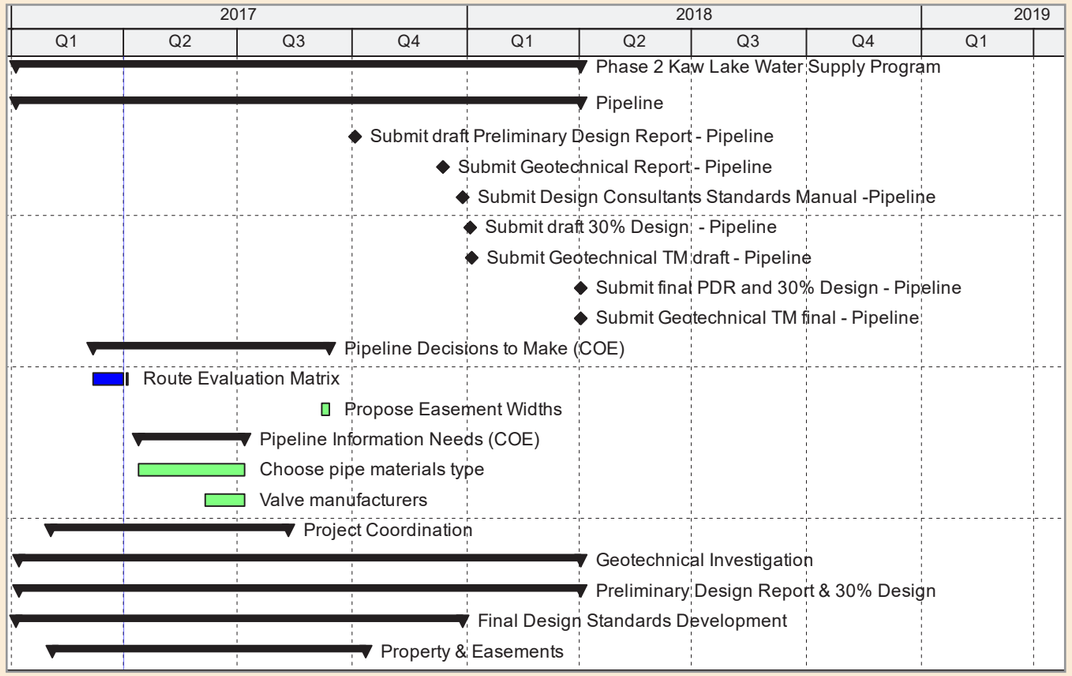
# Project Milestones




# Project Schedule

| Activity ID | Activity Name | Orig Dur (WD) | Finish |
|---|---|---|---|
| **Phase 2 Kaw Lake Water Supply Program** | | 317 | 02-Apr-18 |
| **Pipeline** | | 317 | 02-Apr-18 |
| MS1070 | Submit draft Preliminary Design Report - Pipeline | 0 | 03-Oct-17 |
| MS1060 | Submit Geotechnical Report - Pipeline | 0 | 13-Dec-17 |
| MS1085 | Submit Design Consultants Standards Manual -Pipeline | 0 | 28-Dec-17 |
| MS1080 | Submit draft 30% Design - Pipeline | 0 | 04-Jan-18 |
| MS1075 | Submit Geotechnical TM draft - Pipeline | 0 | 04-Jan-18 |
| MS1090 | Submit final PDR and 30% Design - Pipeline | 0 | 02-Apr-18 |
| MS1095 | Submit Geotechnical TM final - Pipeline | 0 | 02-Apr-18 |
| **Pipeline Decisions to Make (COE)** | | 133 | 12-Sep-17 |
| PIP.1870 | Route Evaluation Matrix | 10 | 03-Apr-17 |
| PIP.1850 | Propose Easement Widths | 5 | 12-Sep-17 |
| **Pipeline Information Needs (COE)** | | 60 | 06-Jul-17 |
| PIP.1280 | Choose pipe materials type | 60 | 06-Jul-17 |
| PIP.1300 | Valve manufacturers | 23 | 06-Jul-17 |
| **Project Coordination** | | 135 | 10-Aug-17 |
| **Geotechnical Investigation** | | 315 | 02-Apr-18 |
| **Preliminary Design Report & 30% Design** | | 315 | 02-Apr-18 |
| **Final Design Standards Development** | | 251 | 28-Dec-17 |
| **Property & Easements** | | 177 | 11-Oct-17 |



# Terminal Storage

## Scope of Services

The scope of services includes surveying, geotechnical, preliminary (30% complete) design, investigation of property acquisition and development of design consultant standards for a new raw water terminal storage in two separate locations: one for emergency storage and one for equalization storage as identified in Phase 1 of the project.

It is understood that the location for the emergency storage has yet to be determined and will require continued input and coordination from City staff. It is assumed that the emergency storage will be located up to 1 mile from the raw water pipeline selected alignment. The equalization storage will be constructed adjacent to the water treatment plant on the same site.

## Project Update

Conceptual layouts of the equalization storage basin continues to evolve as new concepts are explored. While the general area of the emergency storage basin has been established, the final location has not been determined. The survey team has completed property boundary survey for the water treatment site, and initial site layout has commenced. The terminal storage team continues to coordinate with the water treatment plant and distribution staff on the conceptual site design, stormwater drainage, process flow, and drying beds. The terminal storage team is also coordinating with environmental on the location and impact of pre-emergent wetland in the possible footprint of the terminal storage.

## Completed

- Design flows
- Determination of potential permit requirement for mid-level berm construction

## Future Activities

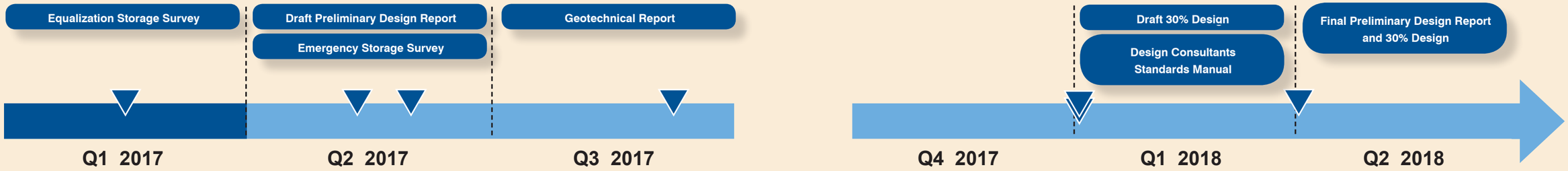
- Determination of final location of terminal storage
- Draft preliminary design report
- Terminal storage lining and erosion control selection
- Stormwater drainage
- Preliminary site layouts with grading
- Site access
- Process and pipeline layout for site

**Above**: Rendering of EQ terminal storage reservoir at water treatment plant

**Right**: Example terminal storage reservoir under construction

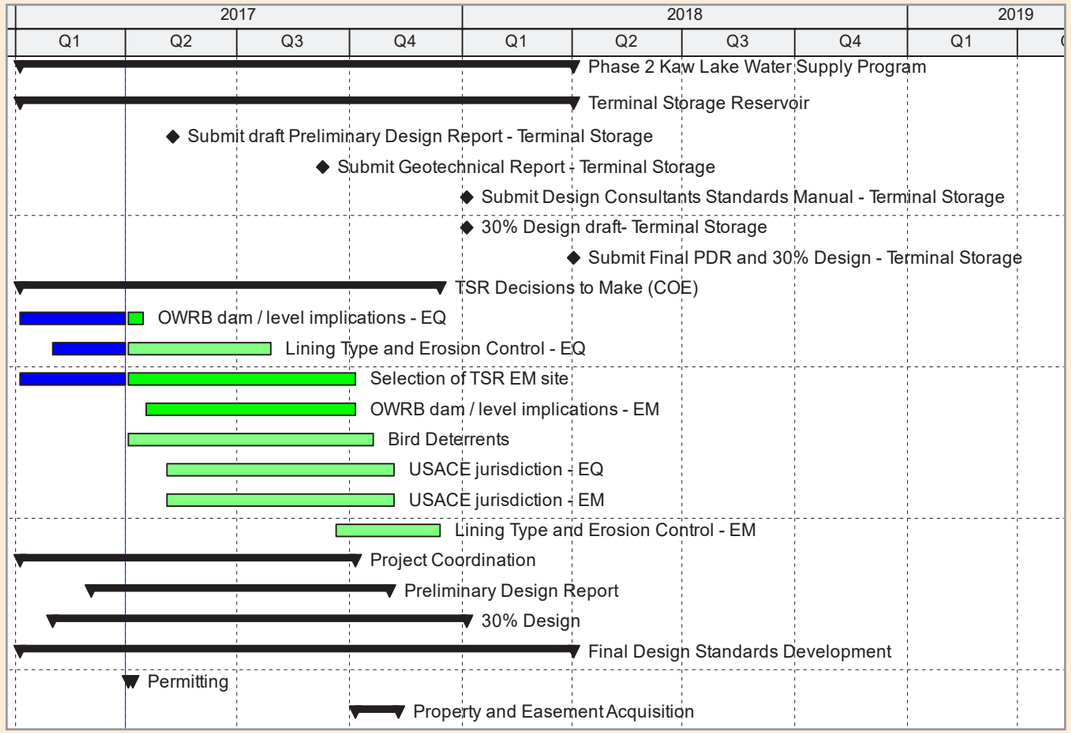
# Terminal Storage

## Project Milestones




## Project Schedule

| Activity ID | Activity Name | Orig Dur (WD) | Finish |
|---|---|---|---|
| **Phase 2 Kaw Lake Water Supply Program** | | 335 | 02-Apr-18 |
| **Terminal Storage Reservoir** | | 335 | 02-Apr-18 |
| MS1100 | Submit draft Preliminary Design Report - Terminal Storage | 0 | 09-May-17 |
| MS1110 | Submit Geotechnical Report - Terminal Storage | 0 | 08-Sep-17 |
| MS1120 | Submit Design Consultants Standards Manual - Terminal Storage | 0 | 04-Jan-18 |
| MS1130 | 30% Design draft- Terminal Storage | 0 | 04-Jan-18 |
| MS1140 | Submit Final PDR and 30% Design - Terminal Storage | 0 | 02-Apr-18 |
| **TSR Decisions to Make (COE)** | | 335 | 14-Dec-17 |
| TSR.2045 | OWRB dam / level implications - EQ | 73 | 14-Apr-17 |
| TSR.2030 | Lining Type and Erosion Control - EQ | 127 | 28-Jul-17 |
| TSR.2020 | Selection of TSR EM site | 194 | 05-Oct-17 |
| TSR.2040 | OWRB dam / level implications - EM | 121 | 05-Oct-17 |
| TSR.2046 | Bird Deterrents | 142 | 20-Oct-17 |
| TSR.2050 | USACE jurisdiction - EQ | 130 | 06-Nov-17 |
| TSR.2055 | USACE jurisdiction - EM | 130 | 06-Nov-17 |
| TSR.2032 | Lining Type and Erosion Control - EM | 60 | 14-Dec-17 |
| **Project Coordination** | | 194 | 05-Oct-17 |
| **Preliminary Design Report** | | 172 | 02-Nov-17 |
| **30% Design** | | 236 | 04-Jan-18 |
| **Final Design Standards Development** | | 317 | 02-Apr-18 |
| **Permitting** | | 4 | 06-Apr-17 |
| **Property and Easement Acquisition** | | 26 | 10-Nov-17 |



# Water Treatment Plant

## Scope of Services

The scope of services includes surveying, geotechnical, preliminary (30% complete) design, investigation of property acquisition, and development of design consultant standards for a new Enid Water Treatment Plant located adjacent to the City's current water treatment plant No. 2.

The planned capital improvements include construction of a new conventional water treatment plant with ozone and granular activated carbon facilities to meet capacity and treatment goals identified during Phase 1 of the Program.

## Project Update

Presented detailed technical discussion for ozone and granular activated carbon at the March water treatment plant workshop. Continuing to develop site layout and hydraulic grade concepts. Presented program to the Oklahoma Department of Environmental Quality and solicited initial feedback of concepts related to the proposed water treatment plant design. Beginning to develop the Engineering Report, including the baseline development and existing system assessment. Performing initial work on draft Preliminary Design Report document. Preliminary process and instrumentation diagrams and facility layouts are underway.

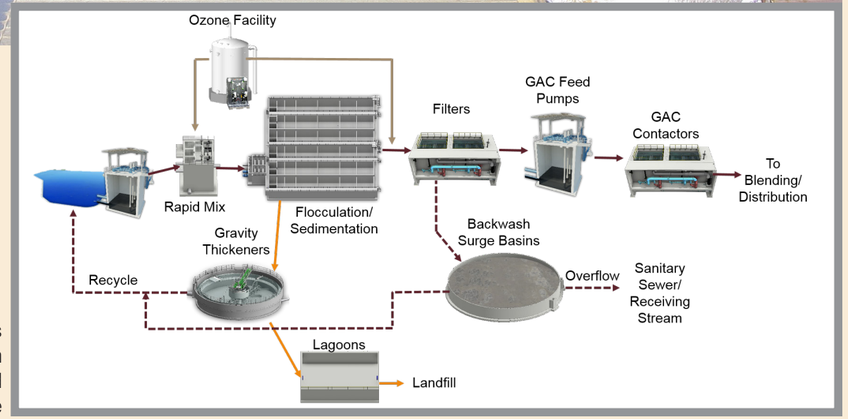
## Completed

- Round one of bench scale treatability testing
- Preliminary process scheme and design criteria
- Preliminary hydraulic profile
- Preliminary process design criteria for Ozone and Granular Activated Carbon
- Preliminary process layouts
- Draft site plan alternatives
- Evaluation of existing city standards and specifications
- Oklahoma Department of Environmental Quality workshop to introduce program

## Future Activities

- Water treatment plant workshop with focus on rapid mix, flocculation, sedimentation, and filtration
- Development of draft Pre-Design Report deliverables for Ozone and Granular Activated Carbon
- Water treatment plant site visit
- Round Two of bench scale treatability testing

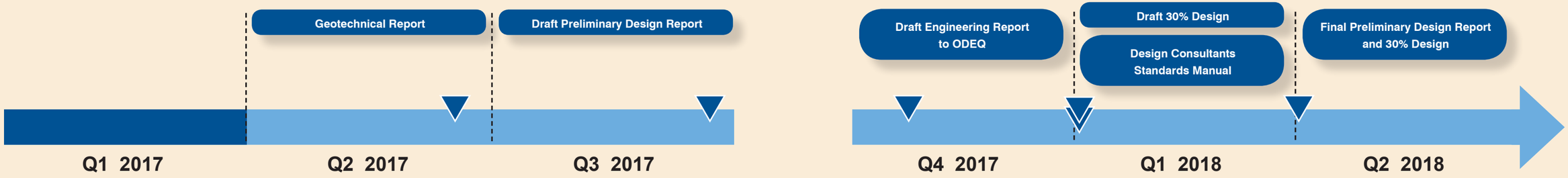
**Above**: Water treatment plant sedimentation basin




**Right**: Process flow diagram for selected alternative

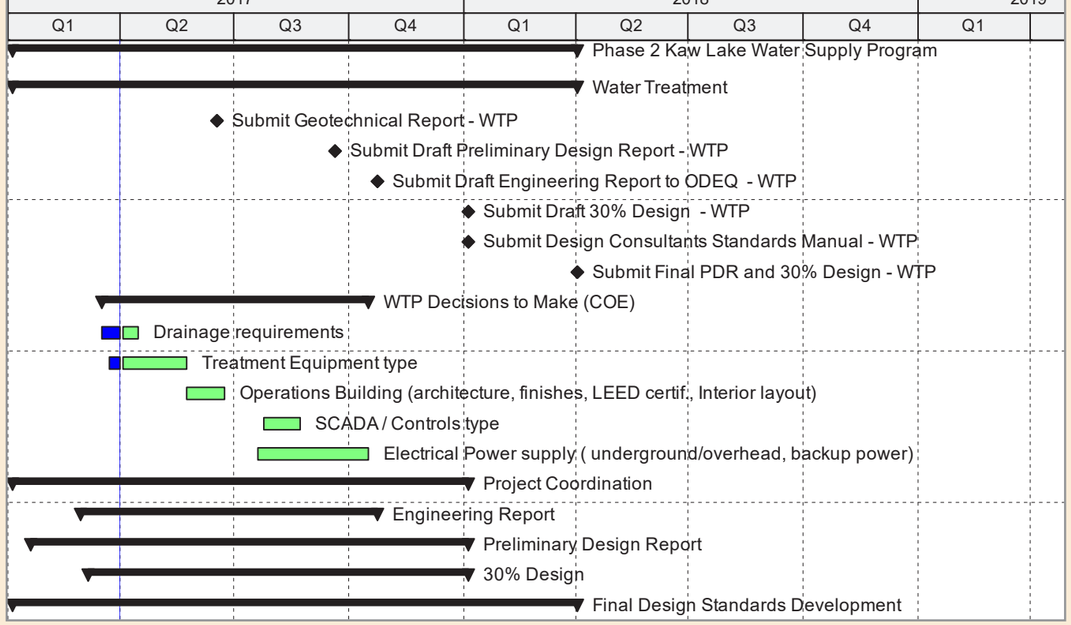
# Water Treatment Plant

## Project Milestones




## Project Schedule

| Activity ID | Activity Name | Orig Dur (WD) | Finish |
|---|---|---|---|
| **Phase 2 Kaw Lake Water Supply Program** | | 317 | 02-Apr-18 |
| **Water Treatment** | | 317 | 02-Apr-18 |
| MS1150 | Submit Geotechnical Report - WTP | 0 | 16-Jun-17 |
| MS1165 | Submit Draft Preliminary Design Report - WTP | 0 | 20-Sep-17 |
| MS1160 | Submit Draft Engineering Report to ODEQ - WTP | 0 | 24-Oct-17 |
| MS1180 | Submit Draft 30% Design - WTP | 0 | 04-Jan-18 |
| MS1190 | Submit Design Consultants Standards Manual - WTP | 0 | 04-Jan-18 |
| MS1200 | Submit Final PDR and 30% Design - WTP | 0 | 02-Apr-18 |
| **WTP Decisions to Make (COE)** | | 150 | 16-Oct-17 |
| WTP.1715 | Drainage requirements | 22 | 14-Apr-17 |
| WTP.1750 | Treatment Equipment type | 44 | 23-May-17 |
| WTP.1720 | Operations Building (architecture, finishes, LEED certif., Interior layout) | 22 | 23-Jun-17 |
| WTP.1740 | SCADA / Controls type | 22 | 23-Aug-17 |
| WTP.1730 | Electrical Power supply ( underground/overhead, backup power) | 62 | 16-Oct-17 |
| **Project Coordination** | | 255 | 04-Jan-18 |
| **Engineering Report** | | 169 | 24-Oct-17 |
| **Preliminary Design Report** | | 245 | 04-Jan-18 |
| **30% Design** | | 212 | 04-Jan-18 |
| **Final Design Standards Development** | | 317 | 02-Apr-18 |



# Distribution

## Scope of Services

Generally, the scope of services includes surveying, geotechnical, preliminary (30% complete) design, investigation of property acquisition and development of design consultant standards for new distribution infrastructure (pumping, storage, and piping) as identified in Phase 1 of the project.

The pumping improvements will include the construction of a new high service pump station adjacent to the water treatment plant capable of conveying flow to both pressure planes and the decommissioning of the existing high services pump stations. The storage improvements will consist of adding a new 8 million gallon ground storage tank adjacent to the new high service pump station. The piping improvements will include the piping necessary to blend the groundwater supply with the treated surface water prior to the high services pump station, as well as the piping necessary to convey water to the east pressure plane.

## Project Update

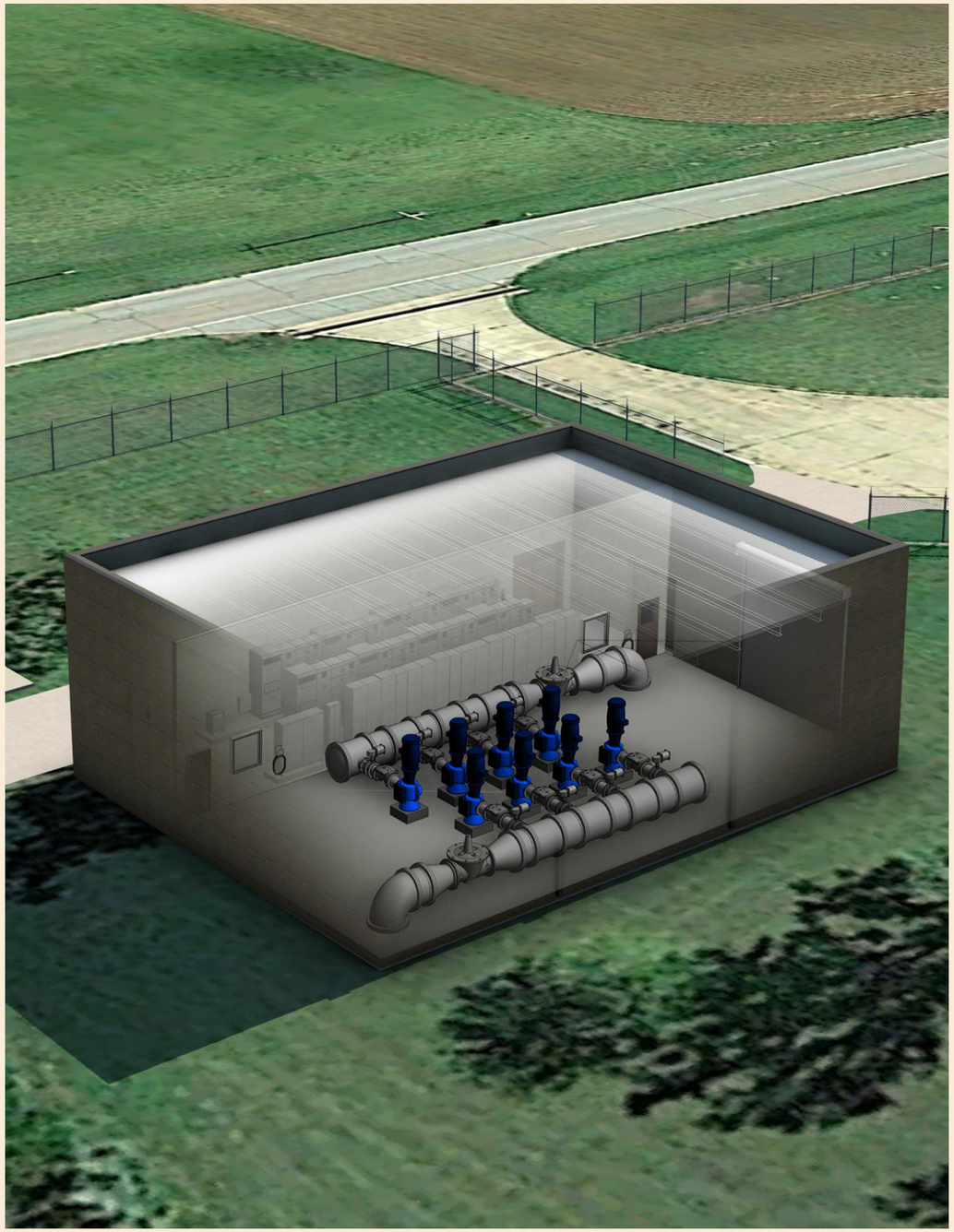
Completed compilation of Chestnut corridor information to prepare for field investigations. Started evaluating historical demand data and SCADA system information to support distribution system optimization. Distribution system GIS data was used to update the distribution system hydraulic model, and the groundwater conveyance GIS data was evaluated to prepare for constructing a groundwater supply hydraulic model. Preliminary 30% design work continues on design criteria, high service pump station and clearwell site layout, process and instrumentation diagrams, facility electrical loads, and collection of equipment manufacturer's data.

## Completed

- Updated pipe network in distribution system hydraulic model
- Compiled information for transmission line field investigation
- Preliminary pump sizing and selection

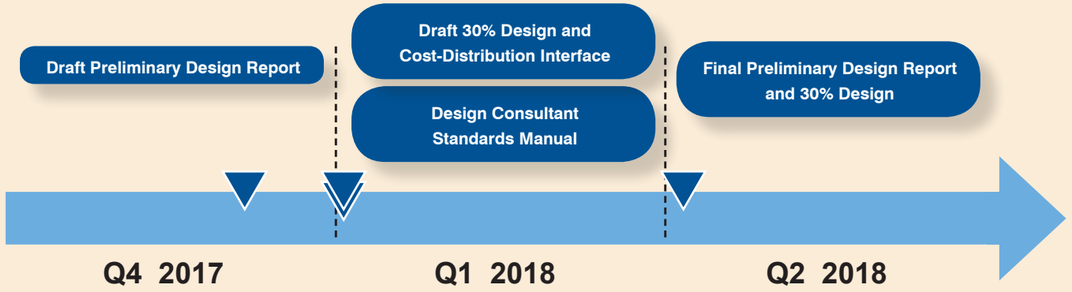
## Future Activities

- Transmission line field investigation
- Transmission line pipe material determination
- Assess demands and future growth
- Evaluation of max day vs. peak hour pumping/storage
- Optimize transmission line diameter
- Continue developing site layout in conjunction with water treatment plant team
- Disinfection/storage/blending isolation and redundancy scheme
- Develop preliminary layout of high service pump station
- Develop process and instrumentation diagrams
- Develop electrical one-line diagram
- Develop operational control scheme
- Continue Preliminary Design Report draft development of design criteria and design concepts
- Develop distribution system assessment / design criteria



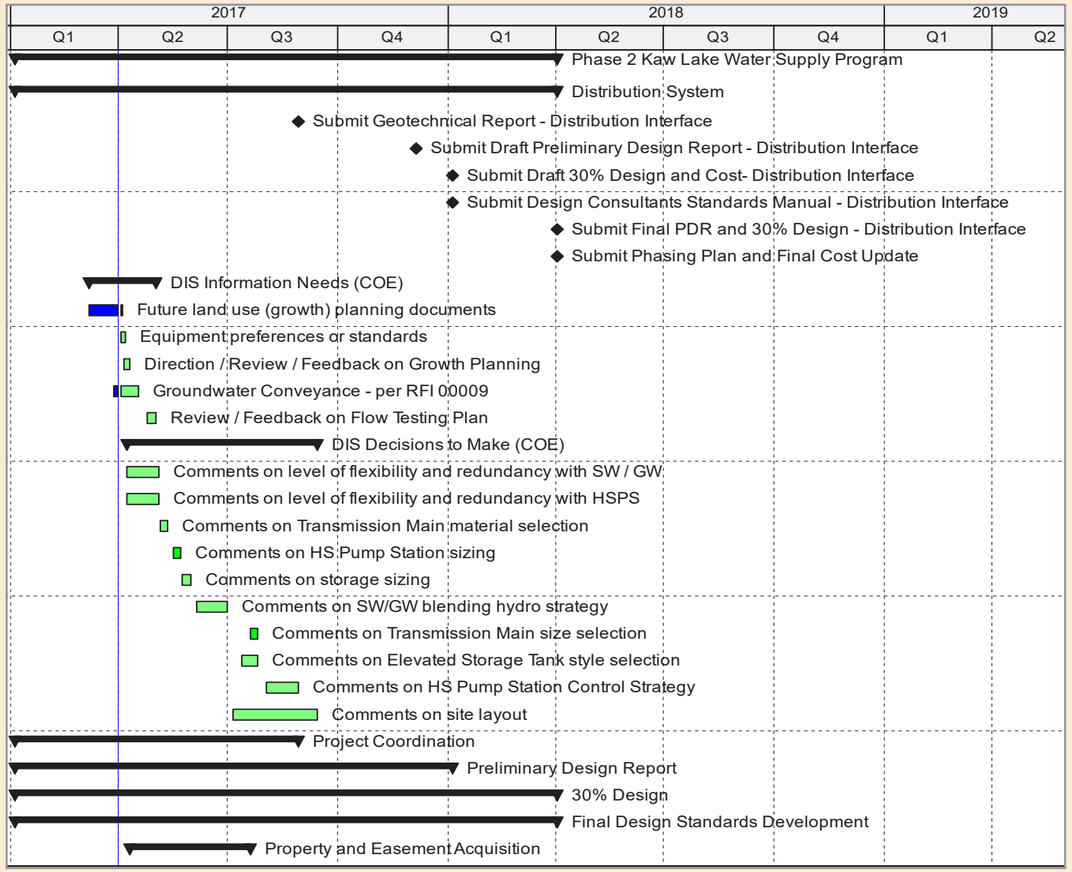
**Above**: Conceptual layout of high-service (distribution) pump station

# Project Milestones


# Project Schedule

| Activity ID | Activity Name | Orig Dur (WD) | Finish |
|---|---|---|---|
| **Phase 2 Kaw Lake Water Supply Program** | | 317 | 02-Apr-18 |
| **Distribution System** | | 317 | 02-Apr-18 |
| MS1210 | Submit Geotechnical Report - Distribution Interface | 0 | 28-Aug-17 |
| MS1220 | Submit Draft Preliminary Design Report - Distribution Interface | 0 | 05-Dec-17 |
| MS1230 | Submit Draft 30% Design and Cost- Distribution Interface | 0 | 04-Jan-18 |
| MS1240 | Submit Design Consultants Standards Manual - Distribution Interface | 0 | 04-Jan-18 |
| MS1250 | Submit Final PDR and 30% Design - Distribution Interface | 0 | 02-Apr-18 |
| MS1255 | Submit Phasing Plan and Final Cost Update | 0 | 02-Apr-18 |
| **DIS Information Needs (COE)** | | 40 | 01-May-17 |
| DIS.2085 | Future land use (growth) planning documents | 10 | 04-Apr-17 |
| DIS.2090 | Equipment preferences or standards | 4 | 06-Apr-17 |
| DIS.2100 | Direction / Review / Feedback on Growth Planning | 4 | 10-Apr-17 |
| DIS.2078 | Groundwater Conveyance - per RFI 00009 | 15 | 17-Apr-17 |
| DIS.2105 | Review / Feedback on Flow Testing Plan | 5 | 01-May-17 |
| **DIS Decisions to Make (COE)** | | 111 | 13-Sep-17 |
| DIS.2150 | Comments on level of flexibility and redundancy with SW / GW | 20 | 04-May-17 |
| DIS.1051 | Comments on level of flexibility and redundancy with HSPS | 20 | 04-May-17 |
| DIS.2156 | Comments on Transmission Main material selection | 5 | 11-May-17 |
| DIS.2130 | Comments on HS Pump Station sizing | 5 | 22-May-17 |
| DIS.2146 | Comments on storage sizing | 5 | 30-May-17 |
| DIS.2154 | Comments on SW/GW blending hydro strategy | 20 | 30-Jun-17 |
| DIS.2144 | Comments on Transmission Main size selection | 5 | 26-Jul-17 |
| DIS.2157 | Comments on Elevated Storage Tank style selection | 10 | 26-Jul-17 |
| DIS.2160 | Comments on HS Pump Station Control Strategy | 20 | 29-Aug-17 |
| DIS.2140 | Comments on site layout | 50 | 13-Sep-17 |
| **Project Coordination** | | 167 | 28-Aug-17 |
| **Preliminary Design Report** | | 255 | 04-Jan-18 |
| **30% Design** | | 317 | 02-Apr-18 |
| **Final Design Standards Development** | | 317 | 02-Apr-18 |
| **Property and Easement Acquisition** | | 72 | 20-Jul-17 |



# Environmental

## Scope of Services

This scope of work includes activities to support document preparation as required of the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.) in accordance with the procedures set forth in Council on Environmental Quality Regulations Implementing the Procedural Provision of NEPA (40 CFR 1500-1508) and in the U.S. Army Corps of Engineers (USACE) Procedures for Implementing NEPA (33 CFR 230). The U.S. Army Corps of Engineers, Tulsa District, will serve as the lead federal agency for the project.

It is anticipated that the NEPA Class of Action for this Program will be an Environmental Assessment and will analyze the impacts of a No Build and one Build Alternative (Proposed Action) for each of the project's infrastructure components [intake, pipeline, terminal storage reservoir (emergency and equalization), treatment plant, and distribution system].

## Project Update

Meeting with the U.S. Army Corps of Engineers resulted in the need for a cultural resources survey at the intake site prior to geotechnical testing. A cultural resources sub kickoff meeting was held March 29, 2017 and the intake site will be first priority. Biological studies at the intake site are complete.

The team received approval for permission letters to property owners and agencies on March 14, 2017. Letters were mailed on March 22, 2017. The team is developing field procedure documentation based on discussions with the U.S. Army Corps of Engineers.

Public meetings have been scheduled for April 11 and 13, 2017. Public meeting presentation, displays, and handout are in development.

Meeting with the Osage Nation scheduled for April 28, 2017. Meeting date with the Ponca Tribe is to be determined. Parcel owner information from the Bureau of Indian Affairs was received March 30, 2017.

## Completed

- Intake biological studies
- Preparation and mailing of property owner notification and agency solicitation letters
- Confirmation of public involvement meetings for April 11 and 13, 2017

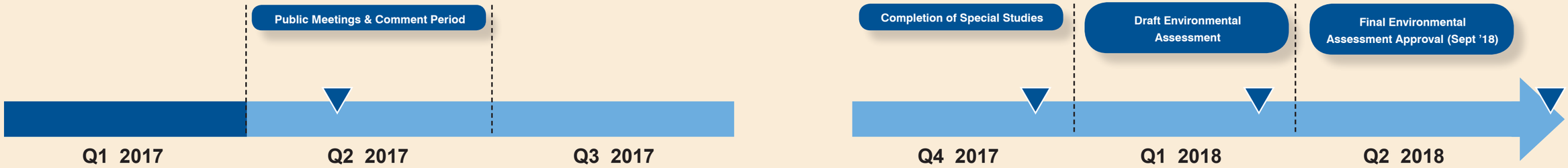
## Future Activities

- Field work for all areas
- Public meetings (April 11 and 13, 2017)
- Tribal meetings with Osage Nation, Ponca Tribe
- Compile list of tribal owners and send letters for permission to access property

**Above**: Kaw Lake shoreline

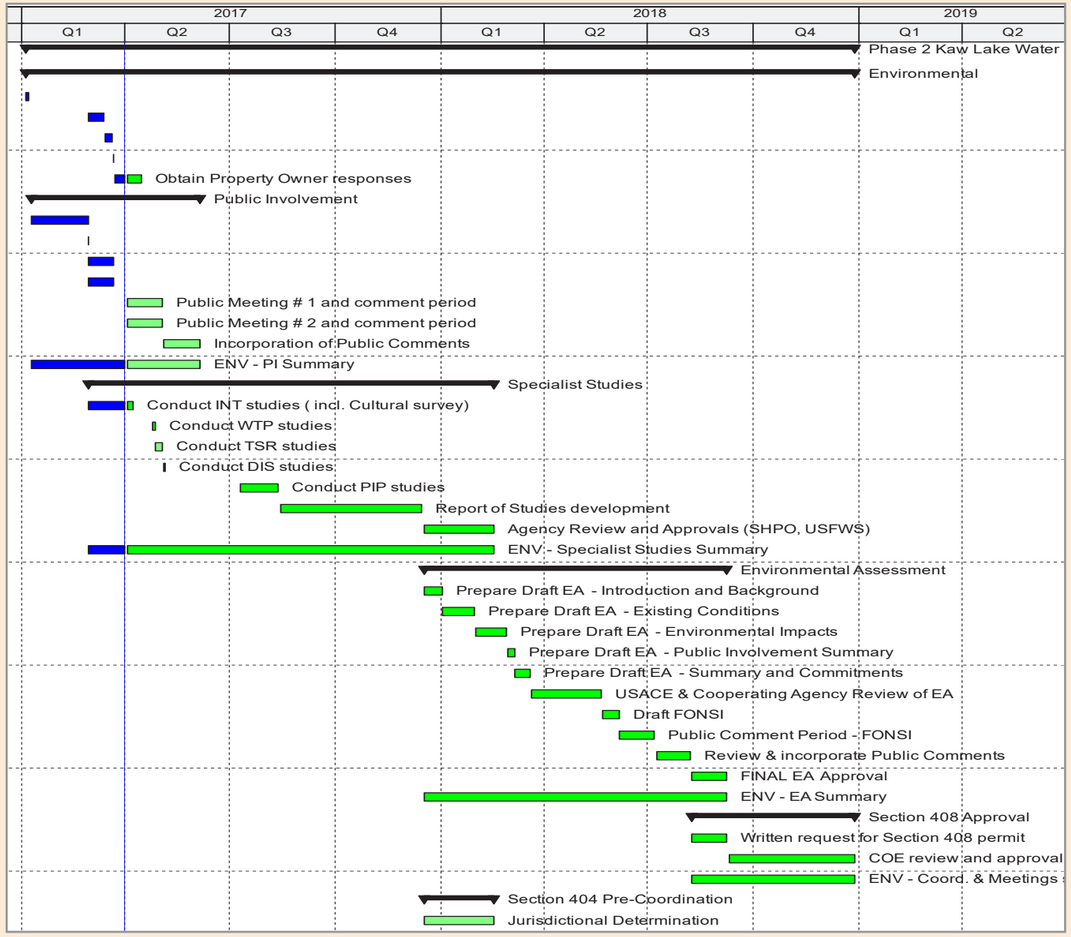
# Environmental

## Project Milestones




## Project Schedule

| Activity ID | Activity Name | Orig Dur (WD) | Finish |
|---|---|---|---|
| **Phase 2 Kaw Lake Water Supply Program** | | 505 | 28-Dec-18 |
| **Environmental** | | 505 | 28-Dec-18 |
| ENV.1010 | NEPA Start | 3 | 06-Jan-17 A |
| ENV.1060 | Develop Property Owner Permissions letters | 10 | 13-Mar-17 A |
| ENV.1061 | APPROVALS from PM- Property Owner permission letter | 5 | 20-Mar-17 A |
| ENV.1062 | Distribute Property Owner permission letters | 10 | 22-Mar-17 A |
| ENV.1063 | Obtain Property Owner responses | 16 | 14-Apr-17 |
| **Public Involvement** | | 105 | 05-Jun-17 |
| ENV.1020 | Preparation for Public Meetings | 36 | 27-Feb-17 A |
| ENV.1025 | Pre-Public meeting with USACE | 0 | 28-Feb-17 A |
| ENV.1030 | Agency Solicitation and Tribal Consultation | 25 | 22-Mar-17 A |
| ENV.1040 | Notification for Public Meetings | 25 | 22-Mar-17 A |
| ENV.1050 | Public Meeting # 1 and comment period | 23 | 03-May-17 |
| ENV.1055 | Public Meeting # 2 and comment period | 23 | 03-May-17 |
| ENV.1070 | Incorporation of Public Comments | 22 | 05-Jun-17 |
| ENV. WBSS3 | ENV - PI Summary | 105 | 05-Jun-17 |
| **Specialist Studies** | | 247 | 16-Feb-18 |
| ENV.1090 | Conduct INT studies ( incl. Cultural survey) | 38 | 07-Apr-17 |
| ENV.1091 | Conduct WTP studies | 3 | 26-Apr-17 |
| ENV.1092 | Conduct TSR studies | 5 | 03-May-17 |
| ENV.1093 | Conduct DIS studies | 2 | 05-May-17 |
| ENV.1094 | Conduct PIP studies | 25 | 11-Aug-17 |
| ENV.1095 | Report of Studies development | 90 | 15-Dec-17 |
| ENV.1100 | Agency Review and Approvals (SHPO, USFWS) | 43 | 16-Feb-18 |
| ENV.WBSS1 | ENV - Specialist Studies Summary | 247 | 16-Feb-18 |
| **Environmental Assessment** | | 185 | 07-Sep-18 |
| ENV.1120 | Prepare Draft EA - Introduction and Background | 10 | 02-Jan-18 |
| ENV.1121 | Prepare Draft EA - Existing Conditions | 20 | 30-Jan-18 |
| ENV.1122 | Prepare Draft EA - Environmental Impacts | 20 | 27-Feb-18 |
| ENV.1123 | Prepare Draft EA - Public Involvement Summary | 5 | 06-Mar-18 |
| ENV.1124 | Prepare Draft EA - Summary and Commitments | 10 | 20-Mar-18 |
| ENV.1110 | USACE & Cooperating Agency Review of EA | 44 | 21-May-18 |
| ENV.1080 | Draft FONSI | 10 | 05-Jun-18 |
| ENV.1130 | Public Comment Period - FONSI | 22 | 06-Jul-18 |
| ENV.1140 | Review & incorporate Public Comments | 22 | 07-Aug-18 |
| ENV.1150 | FINAL EA Approval | 22 | 07-Sep-18 |
| ENV.WBSS2 | ENV - EA Summary | 185 | 07-Sep-18 |
| **Section 408 Approval** | | 99 | 28-Dec-18 |
| ENV.2010 | Written request for Section 408 permit | 22 | 07-Sep-18 |
| ENV.2015 | COE review and approval | 77 | 28-Dec-18 |
| ENV.WBSS3 | ENV - Coord. & Meetings summary | 99 | 28-Dec-18 |
| **Section 404 Pre-Coordination** | | 43 | 16-Feb-18 |
| ENV.2060 | Jurisdictional Determination | 43 | 16-Feb-18 |



## Contact Information

**Program Manager** Michael Graves
**Phone** 405-329-2555
**Email** MJGraves@GarverUSA.com
**Website** GarverUSA.com