

The logo for the Sacramento Area Sewer District features a stylized, light brown swirl or spiral graphic in the background. Overlaid on this graphic is the text "SACRAMENTO AREA SEWER DISTRICT". "SACRAMENTO AREA" is in a brown, sans-serif font, while "SEWER DISTRICT" is in a dark blue, bold, sans-serif font.

**SACRAMENTO AREA
SEWER DISTRICT**

**MINIMUM DESIGN REPORT
REQUIREMENTS**

OCTOBER 11, 2018

Sacramento Area Sewer District
10060 Goethe Road
Sacramento CA 95827

100.1 PURPOSE

This document provides minimum requirements for the Design Report as part of the standards for the Sacramento Area Sewer District (SASD) public sewer collection system.

100.2 Abbreviations

ADWF	Average Dry Weather Flow
ARV	Air Release Valve
CARV	Combined Air and Vacuum Release Valve
ESD	Equivalent Single Family Dwelling
LAFCO	Local Agency Formation Commission
PDWF	Peak Dry Weather Flow
PLC	Programmable Logic Controller
PWWF	Peak Wet Weather Flow
Regional San	Sacramento Regional County Sanitation District
ROW	Right of Way
SASD	Sacramento Area Sewer District
SCADA	Supervisory Control and Data Acquisition

100.1 DESIGN REPORT

Please refer to SASD's *Pump/Lift Station and Force Main Design Report Requirements* for pre-approved devices available on SASD's website at www.sacsewer.com.

100.1.1 INTRODUCTION AND BACKGROUND

Use an exhibit for a project vicinity map and identify whether the proposed facilities will be used on an interim or permanent basis.

100.1.2 PREVIOUS STUDIES

Reference any studies and information that the project is built upon such as SASD's *System Capacity Plan*, specific plans, community plans, and other sewer studies. If appropriate, those documents should be amended if the proposed project will require significant changes to previously approved documents. Address the requirements of the environmental document and geotechnical report. Incorporate reference exhibits and photographs as necessary.

100.1.3 EXISTING SEWER FACILITIES

Identify and briefly discuss whether the project is located within SASD's service area. Discuss the existing facilities available in the area. Incorporate and reference exhibits as necessary.

100.1.4 PLANNED IMPROVEMENTS

Discuss the proposed interim or permanent facilities. Identify outfalls and discuss each proposed alternative and available options. Identify and discuss contributing upstream sewer lines. Identify the location of the lowest upstream manhole or wet well rim elevation with respect to the proposed facility. Incorporate and reference exhibits as necessary.

100.1.5 PROJECTED SEWAGE FLOWS

Discuss all projected flows as identified from previous studies. Evaluate PWWF from the area to be served. Include a table that shows estimated ESDs, ADWF, PDWF and PWWF.

100.1.6 PHASING

Include all appropriate information necessary to describe the phases of proposed development referencing exhibits that depict the lots proposed to be developed at each phase. Discuss the improvements that are necessary at each phase and include a discussion on what triggers the necessity for executing the upgrades. Include the facilities, equipment, and costs. Describe design and construction aspects for each phase. Include a timeline of the proposed facilities at each phase for implementation of triggers, design and construction aspects. If the station is an interim facility, discuss when and how the facility becomes unnecessary.

100.1.7 PUMP STATION LOCATION

The Design Report must describe in detail the location of the proposed facility. The proposed location of the pump station must address any development constraints required by the jurisdictional agency. The Design Report must discuss the location of the proposed facilities with respect to, but not limited to traffic, ingress and egress, schools, businesses, residential areas, and drainage canals (natural and man-made). Incorporate the requirements for conveyance of deeds and easements. Incorporate and reference exhibits as necessary.

100.1.8 WET WELL AND PUMPING ALTERNATIVE

Discuss various alternatives for wet well and pump head, wet well sizing and force main configuration. Include all appropriate information necessary to analyze the size and depth of the wet well and alternatives for the type, size, and number of pumps. Describe the operational strategies and options available for pumps. A discussion on maintenance requirements of the proposed facilities must be included. Describe the bypass pumping that may be needed during construction.

100.1.9 RECOMMENDED PRESSURIZED PIPELINE DESIGN

Provide a preliminary design and develop a system curve with static head, minor losses, and friction losses for the pressurized pipeline. Include the type of material, pressure class, diameter (nominal and actual inside) of the pipeline, alignment, and length. Particular attention should be given to details for pressurized pipelines in excess of one half mile in length. Details must include, but are not limited to, pumping strategy for each proposed alternative, pipeline alignment, odor control, and CARV details including location, installation, distance from force main, and size of piping. Include a surge analysis. Please refer to Section 204.4 of SASD's Standards & Specifications. Identify each easement that will be necessary. Identify the recommend type of cathodic protection system for ferrous pipeline materials. Incorporate a discussion on implementing the standard requirements for locating the facility after construction. Identify the special cleaning and maintenance issues that may be needed for the facility, including discussion of future need for chemical feed.

100.1.10 PUMP STATION SITE DESIGN

Provide attachments as necessary for the preliminary design of the site, including at a minimum:

- Site size
- Site location
- Building materials
- Fencing
- Gates
- Building or canopy
- Equipment on the site
- Vaults locations and sizes for air and vacuum valves, check valves, and gate valves.

- Valves sizes and materials
- Water service location and size
- Water district that will provide service

Discuss the need for a hoist or a crane. Incorporate and reference exhibits as necessary.

Location

Provide survey information, possible utility conflicts, and required permits.

100.1.11 ELECTRICAL AND CONTROLS

Identify the location of above and underground electrical facilities to serve the site, including the size and location of the transformer per the local electrical utility's standards. Describe all the equipment needed for the site (e.g. lighting, PLC, SCADA, submersible level transducer, pressure transducer, alarm systems). Also, describe the need for emergency power and generator design (if incorporated). Incorporate and reference exhibits as necessary.

100.1.12 EVALUATION OF ODOR CONTROL ALTERNATIVES

Discuss necessity and alternatives for odor control. Include an estimate of when it may be necessary to install these facilities.

100.1.13 COST ESTIMATE

Provide an engineer's estimate of design, construction, and lifecycle costs, including maintenance, operation, and replacement and abandonment costs. The cost estimate is based on a 40-year net present value or otherwise defined by SASD.

100.1.14 PROJECT SCHEDULE

Provide the projected timeline for the project, focused on major start and stop and completion dates. Identify possible schedule impacts.

100.1.15 LIST OF TABLES

Provide a list of the tables used in the Design Report. Include a summary of the projected sewage flows at build out and the design flows at various stages of build out at a minimum.

100.1.16 LIST OF EXHIBITS

Provide a list of the exhibits used in the Design Report. At a minimum, this must include:

- Location map
- Overall sewer study area
- Existing and proposed sewer collection system
- Overall sewer collection system layout proposed
- Preliminary drawings for the pump station design
- Site plan
- Section through the pump station wet well
- Pressurized pipe alignment and any necessary CARVs
- Single line electrical diagram and load calculations. Provide a list of the exhibits used in the Design Report.

100.1.17 ATTACHMENTS

At a minimum, the attachments must include the following items:

- Cost estimate
- Pump manufacturer details and pump curve (including a graph for the pump curve)
- System curve
- Wet well sizing calculations
- Emergency storage calculations
- Calculations for pressurized pipeline head and energy losses
- Calculations for vibration analysis
- Cut sheets from manufacturers of proposed facilities and equipment
- CARV design sizing and project product literature
- Corrosion protection study
- Site-specific geotechnical report

All equipment must meet requirements listed on SASD's *Pump Station Standard Equipment and Requirements List* available on SASD's website at www.sacsewer.com.