

**Multi-Agency Funding  
Wastewater Preliminary Engineering Report Guidance & Review Checklist Form**

Name of Project:  
 Applicant Name, Address & Phone Number:  
 Consultant Name, Address & Phone Number:  
 WQCD Project Manager:  
 District Engineer:

<b>Section (Suggested Outline)</b>	<b>Necessary Elements (Guidance)</b>	<b>Addressed on Page (Applicant)</b>	<b>Complete (Reviewer)</b>
<b>(1) Executive Summary</b>	<b>Briefly summarize the system needs, selected alternative, overall costs, and environmental benefits of the proposed project.</b>		
<b>(2) Planning Conditions</b>	<b>This section should contain an overview of the significant regional features defining the context of the report and proposed project. Displaying much of the information in map and tabular formats is highly recommended for ease of review and discussion.</b>		
(2.1) Planning Area	Include map(s) of the current and projected service area for the 20-year planning period; identify environmental features such as streams, lakes, wetlands, and floodplains for the <u>entire</u> planning area. <i>This documentation does not require field surveys and may be obtained from existing data sources such as the National Wetlands Inventory, FEMA and USGS. All or parts of this discussion may be referenced if covered in the Environmental Assessment Report in accordance with the National Environmental Policy Act (NEPA).</i>		
(2.2) 208 Plan Coordination	If the proposed project is within the boundaries of a 208 Agency or regional council of governments (COG), address conformance with the 208 Plan in relation to service area boundaries, population projections, and whether or not the project is identified in the 208 Plan.		
(2.3) Growth Areas and Population Trends	Summarize population projections for the project planning area for a 20-year planning period; compute and compare recent growth rates with projected growth rates; compute estimated increases in equivalent residential units (EQRs); identify growth boundaries and specific areas of concentrated growth; and reference information sources.		
(2.4) Wastewater Flow Forecasts	Briefly summarize current flows and projections (average day, peak day, and peak hour) for the project planning area for a 20-year period; infiltration and inflow impacts; and flow reduction measures such as water conservation practices.		
(2.5) Wasteload Forecasts	Identify wasteload projections for major effluent parameters such as BOD, TSS, ammonia, phosphorus, metals, etc.		

<b>(3) Description of Existing Facilities</b>	<b>This section should provide a description of the existing treatment and collection facilities.</b>		
(3.1) Service Area Features	On the planning area map, identify the locations of municipal and industrial treatment plants, sludge management areas and facilities, pretreatment plants, pumping sites and any significantly developed areas served by onsite or unconventional systems.		
(3.2) Area Discharge Permits	Identify all other discharge permits for facilities discharging to the same stream segment as the existing treatment facilities.		
(3.3) Facilities Layout and Description	Provide a schematic layout and describe existing facilities including design capabilities and condition of existing treatment processes. Highlight dates major system components were constructed and remaining useful life.		
(3.4) Wastewater Flows	Describe the existing wastewater flows/influent characteristics (including toxic pollutants), discharge permits, and overload conditions. Identify any combined sewer systems, locations of bypasses and overflows. Discuss and analyze the average, peak, dry, and wet weather flows. Provide information on current infiltration and inflow as well as flow reduction impacts.		
(3.5) Financial Status and Users	Discuss the financial status of the current wastewater system including O & M costs, existing debt, rate structure and other capital improvement programs. Also include a tabulation of volumes used by types of users (e.g., residential, commercial, industrial) for the most recent typical fiscal year.		
<b>(4) Project Purpose and Need</b>	<b>This section should document the <u>applicable</u> reasons for considering modifications to the existing facilities.</b>		
(4.1) Compliance	Include a discussion of the system's current and future discharge permit compliance status.		
(4.2) Security	Identify any vulnerability assessment concerns..		
(4.3) Operation and Maintenance (O&M)	Identify O&M issues such as operational constraints, water loss and adequate controls..		
(4.4) Growth	Identify growth related needs such as approaching 80% of design capacity and expanding for proposed future growth; considerations for phasing capacity increases and consolidating systems. Provide reasons for projected future growth during the planning period; identify support by additional revenues and local and regional planning.		

<b>(5) Assessment of Alternatives</b>	<b>This section should contain a description of the reasonable alternatives (no action, building new centralized facilities, optimizing the current facilities, interconnecting with other existing facilities, and developing centrally managed small cluster or individual facilities) that were considered in planning a solution to meet the identified needs. Consolidation of treatment facilities should be evaluated in accordance with WQCD Policy on Consolidation of Domestic Wastewater Treatment Works. The alternatives should be consistent with those considered in the environmental review. Mitigation measures necessary to avoid or minimize any adverse environmental effects must be integrated into the project design. <u>Complete assessments should be grouped by alternative and should include information requested in (5.1) through (5.8) below:</u></b>		
(5.1) Description	Describe and compare all feasible wastewater treatment technologies including new technologies that have been thoroughly tested and installed or piloted with successful operating and compliance track records, and the facilities including collection facilities (systems and alignments, including infiltration and inflow aspects) associated with each alternative.		
(5.2) Design Criteria	State the design parameters, including effluent limitations, used for evaluation purposes of each alternative. The parameters must comply with state regulatory requirements and the State of Colorado’s Design Criteria Considered in the Review of Wastewater Treatment Facilities (Ref. WQCD Policy 96-1).		
(5.3) Environmental Impacts	Describe direct and indirect impacts <u>unique</u> to each alternative on floodplains, wetlands, wildlife habitat, historical and archaeological properties, etc., including any projected permits and certifications.		
(5.4) Land Requirements	Identify sites and easements, as well as permits and certifications required for each alternative, and specify if the properties are currently owned, to be acquired, or leased by the applicant.		
(5.5) Construction Problems	Discuss concerns such as subsurface rock, high water table, limited access, or other conditions that may affect cost of construction or operation of a facility for each alternative.		
(5.6) Operational Aspects	Discuss, in general terms, the staffing requirements, certification level requirements, and the expected basic operating configuration and process control complexities for each alternative.		
(5.7) Cost Estimates	Provide cost estimates for each alternative including breakdowns for construction, non-construction, and annual operations and maintenance, as well as a present worth analysis for each alternative. A reasonable discount rate should be used for determining the present worth of the uniform series of O&M values (in today’s dollars) and the salvage value.		
(5.8) Advantages/ Disadvantages	Describe, in a narrative format, how each alternative affects the applicant’s current and future needs with respect to financial, managerial, and operational		

	resources; how each alternative complies with regulatory requirements and existing comprehensive area-wide development plans; and how each alternative satisfies public and environmental concerns. Summarize, in a matrix rating system, the advantage and disadvantages of each alternative for clarity.		
<b>(6) Selected Alternative</b>	<b>This section should contain the description of the chosen alternative. Include basic hydraulic profiles, basin sizes, detention times, etc. The Water Quality Control Division considers this as a 10% design submittal.</b>		
(6.1) Justification of Selected Alternative	Demonstrate the recommended alternative is the most favorable based on monetary and non-monetary considerations covered in section 5 above. Address whether or not the technology is addressed in the state design criteria. Typically, any new technology or technologies not yet used in Colorado require a submission to the Technical Services Unit (TSU) for the New Technologies Committee.		
(6.2) Technical Description	Describe the major features - treatment plant, collection lines, and lift stations; schematic flow diagram; unit processes and sizes; sewer length and sizes; preliminary effluent limits; design criteria – detention times, overflow rates, process loadings, removal efficiencies, initial design flow, reserve capacity, adequate collection system capacity (existing and proposed); pre-treatment needs; flood proofing requirements; final bio-solids disposal options and costs; and cost saving/pollution prevention measures such as energy conservation and sale of biosolids.		
(6.3) Costs	Provide more detailed project related capital costs, operation and maintenance budget – staffing, training, materials, electricity, lab expenses, residual disposal etc.; replacement costs; compare current and proposed user rates; and 20-year cash flow projection spreadsheet.		
(6.4) Project Implementation	Hold a public meeting with 30-day notice period and summarize outcome; financing recommendations; required legal arrangements and/or intergovernmental agreements; a schedule and/or time line required for the general implementation steps outlined below in 6.4a-6.4e. (Some of these time lines will overlap.)		

(6.4a) Preliminary Effluent Limits (PEL) Application and Site Application	Include as part of the implementation plan, the PEL and site applications and associated time schedule with those activities. Typically there should be 4-6 weeks for application and receipt of PEL's. Site approval is typically 6-8 weeks once the Division receives a complete application. PEL's must be a part of a complete site application. Signatures required in the site application typically require the applicant to get on the meeting agendas of the Management Agencies, County Commissioners and Local Boards of Health.		
(6.4b) Process Design	This report should be submitted after site application approval and prior to final design. Include date and time frame (minimum WQCD review time is 30 days). (Ref. WQCD Policy 96-1; Sec. 1.3.0)		
(6.4c) Final Design	Include approximate date and time frame (minimum Division review time is 45 days). (Ref. WQCD Policy 96-1; Sec.1)		
(6.4d) Discharge Permit	Minimum application time is 180 days prior to discharge. (Ref. WQCD Regulation 61).		
(6.4e) Miscellaneous Permits	Indicate the need for storm water permit application and any 401/404, CDoT and railroad permit applications and time schedules.		
(6.4f) Plan of Operation and Operation and Maintenance (O&M) Manual	The Water Pollution Control Revolving Fund requires a Draft Plan of Operation by construction start, a draft O&M Manual by 50% construction and a final O&M by construction completion. Separate guidance on these documents is available upon request.		

Prepared By: _____
Reviewed By: _____ Date: _____