

Regional Facility Plan Guidance

401 KAR 5:006

Kentucky Division of Water's Guidance for preparing a regional facility plan, as required by 401 KAR 5:006

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General Guidance

Regional facility planning is the process whereby current and future wastewater needs are evaluated, wastewater alternatives are developed to meet the needs, and a final plan is recommended through careful comparison and evaluation of the alternatives. The Cabinet reviews each regional facility plan to ensure that the recommended plan will comply with regulations. Elected officials, planning organizations, county health departments, and planning area residents should be included in regional facility planning as early as possible and, to the extent possible, should be apprised of the regional facility plan development.

Pre-planning Meeting Requirement

A regional planning agency must schedule a pre-planning meeting with the Cabinet to discuss the scope of the work before submitting the regional facility plan. The purpose of a pre-planning meeting is to provide the opportunity for Cabinet representatives and the regional planning agency to discuss an appropriate planning effort according to the purpose and need for the plan, elements of the plan, alternatives, scope and timing of projects, funding, applicable regulatory requirements, critical issues considered in reviewing the plan, and any constraints that may have a bearing on the decisions of the Cabinet.

Guidance Purpose and Use

This guidance is intended to provide recommendations to regional planning agencies to help meet the requirements of 401 KAR 5:006. To facilitate effective and timely review of the regional facility plan, read 401 KAR 5:006, follow this guidance document, and use the completeness checklist found in Section 12. This guidance is organized so that users can identify the requirements of each section and then access the specific recommendations regarding content for each section.

Submittal Requirements

Two (2) hard copies, one (1) shall be certified by a professional engineer licensed in Kentucky and one (1) non-certified digital copy of the regional facility plan and the planning area shapefile shall be submitted to the Cabinet. For consistent and expedient reviews, the Cabinet requests organizing the different sections of the facility plan in the order shown in the table of contents of this guidance document. Identify the different sources you used to prepare the facility plan. These may include but are not limited to books, research journals, websites and individuals who were consulted.

Section 1: Regional Facility Plan Summary

Requirements: This section shall provide a brief summary of the information provided in the regional facility plan, including the following:

1. Purpose of the plan and major problems evaluated in the plan.
2. Identify the recommended alternative chosen to remediate or correct the problems and/or serve the area of need identified in the plan. Also, include any institutional arrangements necessary to implement the recommended alternative.
3. Present the estimated cost of implementing the proposed plan (including user fees) and the proposed funding method.
4. Identify the planning agency commitments necessary to implement the plan like inter-municipal agreements, establishment of sanitation districts, or the need for any specific rules or ordinances.
5. Provide a schedule of implementation for projects that identify the major milestones with dates or timeframes necessary to accomplish the projects. Include dates for the future initiation of projects for planning periods in excess of five (5) years.

Section 2: Statement of Purpose and Need

Requirements: This section shall contain a brief description of the purpose and need of the regional facility plan. A regional facility plan will be triggered by 1 or 2 below.

1. The regional facility plan is required pursuant to 401 KAR 5:006 Section 2:
 - a. A new regional planning agency is formed;
 - b. A new wastewater treatment plant is proposed for construction within an existing planning area;
 - c. An existing regional planning agency proposes to expand the average daily design capacity of an existing wastewater treatment facility by more than thirty (30) percent;
 - d. The equivalent population served by an existing wastewater collection system or a system with a Kentucky Inter-System Operating Permit is proposed for expansion by more than thirty (30) percent of the population served in the previously approved regional facility plan.
2. The regional facility plan is necessary to address water quality or public health concerns, inadequate system or system components related to wastewater, or to comply with increased treatment levels that improve effluent quality.

Recommendations: If the regional facility plan is submitted to address inadequate system or system components related to wastewater that may impact water quality or public health concerns, the analysis should describe specific system needs and the severity and nature of the problems. These may include, but are not limited to problems caused by straight pipes, failing on-site systems that may be attributed to age, soil and geologic conditions, or topographic conditions, and problems within the existing wastewater collection and treatment system as discussed in Section 6 of this guidance document.

Section 3: Physical Characteristics of the Planning Area

Requirements: This section shall delineate the planning area boundaries and describe key topographic, geographic, and natural or man-made features of the area. Digital or electronic submission of the planning area boundary shapefile in a standard GIS format shall also be included. This section shall include the following maps:

1. One (1) current map, suitable for photocopying, indicating the planning area boundary, service area boundary, watershed boundaries, county lines, populated places, cities and/or towns, and project areas or proposed planning period phases.
2. One (1) current map, suitable for photocopying, including locations of wastewater treatment facilities (including package treatment plants), collection lines (gravity, force main, interceptors), pump stations, public drinking water intake points, and groundwater supply areas [Source Water Area Protection Plans (SWAPP) and/or Wellhead Protection Areas (WHPA)].
3. One (1) seven and one-half (7 ½) minute USGS topographic map.
4. One (1) current map delineating the 100-year floodplain.
5. A local planning and zoning land use map, if available.

Recommendations: In a planning area assessment, appropriate attention should be given to include the entire area where cost savings, regionalization, other management advantages, or environmental gains may result from interconnection of individual wastewater facilities or collective management of the systems. The regional facility plan should be carefully coordinated with applicable state, local, and regional land-use management regulations and plans. Projected land-use patterns and densities should be used as a basis for determining the optimum capacity, type, and location of facilities. Where land use plans have not been prepared for all or part of the planning area, an estimate of future land use patterns and densities should be prepared in consultation with existing planning agencies, zoning commissions, and elected officials. The input of elected officials is critical to the determination of future land use and development and will play a central role in defining the need for wastewater facilities.

Section 4: Socioeconomic Characteristics of the Planning Area

Requirements: The following characteristics of the planning area shall be discussed:

1. Historical, current, and projected population in the planning area.
2. Current and projected population in the existing service area and unsewered sections of the planning area (If proposed or appropriate, those sections of the planning area not currently sewered should be divided into time frames for service). Population projections shall be based on the 10 to 20 year proposed planning period and the basis for the projected population change shall be identified.
3. Current and projected industrial and commercial users of the system.
4. Economic or social impact on the affected community- discuss any positive or negative impact on the economy of the affected community including direct and/or indirect benefits that could occur as a result of the plan.

Recommendations: The projections of economic and population growth discussed in this section should be used for estimating future waste loads and flows. Projections should be based on an analysis of historical and current growth trends and an estimate of future residential, commercial, and industrial growth. The Kentucky State Data Center, regional planning agencies, federal and state census authorities should be used as sources of demographic information for communities within the planning area. If your projections are not consistent with those sources, you need to provide appropriate justification.

Section 5: Existing Environment in the Planning Area

Requirements: Describe existing physical, biological, cultural, and other resource features within the planning area with an emphasis on those that may be impacted by the proposed plan or projects, including the following:

1. **Physical:** Describe resource features such as surface water and groundwater quality, water sources and supply, wetlands, lakes, streams, air pollution, floodplains, soils, geology, and topography. Indicate whether waterbodies within the planning area are on the 303(d) or 305(b) list of waters reports in the Integrated Reports to Congress on Water Quality in Kentucky (<http://water.ky.gov/waterquality/Pages/IntegratedReport.aspx>). For 303(d) listed waterbodies, indicate the name, river mile segment(s) and/or impoundment acreage, the type of impairment(s) and the cause(s) and source(s) likely causing or contributing to the impairment(s). Also indicate whether a Total Maximum Daily Load (TMDL) has been approved or is under development that will allow the stream to meet water quality standards.
2. **Biological:** Identify plant and animal communities in the planning area with an emphasis upon those species likely to be impacted. Threatened or endangered status should be discussed if applicable.
3. **Cultural:** Describe archaeological and historical resources that may be affected by the proposed project.
4. **Other Resource Features:** Identify national and state parks, recreational areas, USDA Designated Important Farmland (includes prime farmland, unique farmland and farmland designated by the state or local jurisdiction), and any other applicable environmentally sensitive areas including drinking water supplies, shellfish beds, and outstanding natural resource waters.

Recommendations: The following websites are resources for environmental information:

Ground-Water Resources in Kentucky: <http://www.uky.edu/KGS/water/library/webintro.htm>

Kentucky Geography Network: <http://kygeonet.ky.gov/>

Integrated Report: <http://water.ky.gov/waterquality/Pages/IntegratedReport.aspx>

Kentucky Department of Fish and Wildlife Species Information:

<http://fw.ky.gov/kfwis/speciesInfo/speciesInfo.asp>

Kentucky Infrastructure Authority- Water Resources Information System:

<http://kia.ky.gov/wris/ims.htm>; <http://kia.ky.gov/wris/data.htm>

The Commonwealth Map: <http://kygisserver.ky.gov/tcmbase/>

Web Soil Survey: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Section 6: Existing Wastewater System

***This section shall be prepared by a professional engineer licensed in Kentucky.**

Requirements: A description of the existing facilities serving the planning area shall include the following:

1. **On-site Disposal:** Describe septic tank problems or straight pipe discharges in the planning area, including an approximate number of households using septic tanks or straight pipes. This data is generally attainable from local health departments that issue on-site subsurface disposal permits. List the areas that utilize on-site disposal for treatment of wastewater by general location on a map.
2. **Treatment Plant(s):** Describe the type, age, design capacity, process units, peak and average wastewater flows, present effluent limits, including schematic layout of treatment plant. Provide a narrative description of the capacity of the treatment plant to meet reliability and redundancy requirements in 401 KAR 5:005, Section 13.
3. **Collection and Conveyance System:** Describe the size, material type, age, and condition of sewer collection lines, force mains, and interceptors. Describe the type, horsepower, pumping capacity, dynamic head, age, and condition of pump stations.
4. **Biosolids Disposal:** Describe the method of residuals disposal, including management of septage, biosolids/sludge, scum, grit, and screenings. Volumes of wasted sludge and specific locations of disposal areas shall be discussed.
5. **Operation, Maintenance and Compliance:** Describe any major operation and maintenance problems. If applicable, identify the location, frequency and cause of bypasses, overflows, unpermitted discharges, and KPDES permit violations. Also provide brief description of state and/or federal agreed orders against the regional planning agency.

Section 7: Forecasts of Flows and Waste Loads in the Planning Area

***This section shall be prepared by a professional engineer licensed in Kentucky.**

Requirements: Estimate the projected volumes of wastewater generated in the planning area over the proposed planning period and the basis of those estimates. This section shall include:

1. Current and projected residential flows for the proposed planning period.
2. Current and projected commercial and industrial flows for the proposed planning period.
3. The wastewater treatment plant proposed design capacity to properly treat the flows anticipated over the proposed planning period.
4. A copy of the waste load allocation (WLA) issued by the Division of Water.

Recommendations: Factors such as current flow volumes and pollutant loadings, preliminary determination of discharge limits, preliminary waste load allocation, available sites for construction of wastewater treatment plant, and available funding should be taken into consideration to discuss the merits of the design phase.

- **Demographic and Economic Projections:** Projections of economic and population growth, in conjunction with the land use planning, should be used for estimating future waste loads and flows. Projections should be based on an analysis of current growth trends and an estimate of future residential, commercial, and industrial growth. The Kentucky State Data Center, regional planning agencies, federal and state census authority studies, or planning documents should be used as sources of demographic information for communities within the planning area. Reasons for any inconsistencies should be documented.
- **Land Use:** The regional facility plan should be carefully coordinated with state, local, and regional land-use management regulations, and plans. Projected land-use patterns and densities should be used as a basis for determining the optimum capacity, type, and location of facilities. Where land use plans have not been prepared for all or part of the planning area, an estimate of future land use patterns and densities should be prepared in consultation with existing planning agencies, zoning commissions, and elected officials.
- **Planning Period:** The planning period is the time-span over which wastewater management needs are forecasted, facilities are planned to meet such needs, and costs are amortized. The facility planning period should extend beyond the date when the planned facilities are scheduled to begin operation. Since phased construction of facilities will often be a cost-

effective approach to meet changing conditions over the planning period, consideration should be given to defining initial flows and incremental flows projected for only a part of the planning period.

- **Forecasts of Waste Loads and Flows:** It is extremely important to accurately define wastewater flows since this information is critical in developing and assessing wastewater alternatives. The development of these flows shall also consider inflow and infiltration and combined sewer overflows. It is preferable to use available water supply or wastewater flow records when projecting future flows. In lieu of existing water usage records or recorded flows, then resources such as *Wastewater Engineering Treatment and Reuse* (Metcalf and Eddy; 1972 or future editions) and *Recommended Standards for Wastewater Facilities* (commonly referred to as 2004 Ten State Standards) should be consulted for developing potential future flows. All non-residential land usage with the potential for commercial or industrial development must be taken into account.

A breakdown of flows that identifies domestic, industrial, institutional, commercial, I/I, and septage flows for existing, initial year (initial flows projected at startup of recommended facilities), and design years should be presented. A flow table should be shown. In many instances, it is also advisable to further breakdown flows geographically in the planning area, since decentralized alternatives may be appropriate when estimating wastewater flows and loads. The following factors should be considered:

- Projections of economic and population growth- Estimates must be made for future residential, commercial, institutional, and industrial flows. To the extent possible, estimates should be based on existing records of wastewater flows or on reliable water supply records adjusted for consumption and other losses. This analysis should result in estimates of per capita flow for residential contributions and legitimate flow estimates for commercial, institutional, and industrial flows. If no wastewater or water use records exist, the rationale for estimation of future flows should be documented.
- An estimate of non-excessive infiltration/inflow- For an existing system an infiltration allowance of less than 275 gallons per capita per day of sewage flow based on the maximum flow received during a twenty-four (24) hour period exclusive of industrial flow; or less than 120 gallons per capita per day of sewage flow based on the annual average of daily flows exclusive of industrial flow should be used for estimating initial I/I flows from sewer lines.

- An analysis of pollutant loads from residential, commercial, and industrial sources in the existing sewer system.
- A projection of benefits possible from water conservation programs or other selected measures to reduce flow and wastes.

Section 8: Evaluation of Alternatives

***This section shall be prepared by a professional engineer licensed in Kentucky.**

Requirements: This section shall include an evaluation of alternatives in order to determine the appropriate facilities to meet the wastewater needs of the planning area and provide benefits that are cost-effective and environmentally sound. This section shall include the following information:

1. Alternatives :The regional planning agency shall conduct a detailed evaluation of the following alternatives:
 - a. The No-action alternative
 - b. Optimization of existing facilities
 - c. Regionalization, and
 - d. Any other alternative the regional planning agency wants to consider.

The level of detail in your analysis depends upon the size and scope of the project. In the facility plan discuss the reasons for the selection of a preferred alternative and the reasons for the elimination of other alternatives.

2. Detailed cost analysis including twenty (20) year present worth analysis for each alternative shall be conducted.
3. Alternatives shall be evaluated on nonmonetary effectiveness criteria, which is limited to implementability, environmental impact, engineering evaluation, public support, and regionalization.
4. Recommended alternative.

Recommendations:

- **Optimization of Existing Facilities:** The alternative for optimizing performance of existing facilities should be considered first. The level of treatment attainable with optimum performance of the existing facilities should serve as a baseline for planning additions or modifications to the existing wastewater facilities, flow/waste reduction and water conservation. For communities with centralized facilities, this alternative includes optimization of operation and maintenance of the wastewater collection, treatment, and disposal facilities. For communities where on-site systems are used for wastewater treatment and disposal, this alternative includes optimizing septage management plans, and

the continuing maintenance, repair, and upgrade of on-site systems in the planning area. Discuss the potential environmental and socio-economic benefits of this alternative.

- **Regionalization:** The possibility of implementing a regional solution to meet the wastewater needs of the planning area should be explored early in the planning process. Regional solutions may include interconnection of facilities, construction of one or more large facilities to eliminate the need for many small facilities, or joint management of facilities to improve operation and maintenance and reduce costs. Joint facilities may involve interceptors, treatment plants, septage facilities, or sludge and effluent disposal systems. **If a regional solution is selected for dealing with the water pollution problems, then detailed analysis of the other alternatives is not necessary.** Any detailed analysis of regional alternatives should include a map of wastewater collection and treatment system configurations and show the boundaries of political jurisdictions and service areas for each facility. The analysis of regional solutions should address the following special considerations:
 - Effects of interceptor locations on land use within and between urban areas, particularly where land is undeveloped.
 - Possible limitation on future expansion of wastewater facilities due to unavailability of land.
 - Discussion of the operational efficiencies expected from implementing the regionalization alternative.
 - Environmental and economic costs of delays likely to be associated with efforts to achieve a regional solution.
 - Describe the legal agreements necessary for implementing the regional solution.
- **Treatment Alternatives:** A range of treatment alternatives for each planning area should be considered. The plan should consider, where applicable, the following alternatives:
 - No Discharge Treatment Technologies- include slow-rate overland flow, slow-rate subsurface infiltration, and rapid infiltration methods.
 - Conventional Treatment Technologies- include those that employ proven and reliable technologies. Examples are: complete mix, sequencing batch reactor (SBR), contact stabilization, extended aeration, oxidation ditch, moving bed biological reactor (MBBR),

and pond technologies. The engineer should discuss how each proposed technology enables the regional planning agency to meet the waste load allocations issued by the Division of Water and should also demonstrate how the proposed design meets the reliability requirements of 401 KAR 5:005, section 13. The design engineer should to the extent possible build some flexibility into the design so it can be easily and economically refurbished in the future to meet tighter discharge permit limits, including nutrient controls.

- Advanced Treatment Technologies- if the treatment facilities are required to meet stringent water quality limits, then the regional planning agency may need to install advanced treatment technologies in order to meet those stringent limits consistently. Example technologies are: tertiary filtration with sand, cloth, and mixed media filters, chemical precipitation, and enhanced biological reactors systems.
- The use of decentralized facilities for treatment and disposal of wastewater, including the potential for utilizing on-site systems, package plants, cluster systems, or other systems may preclude the need for centralized facilities. Conventional on-site systems as well as recirculating sand filters, peat systems, attached-growth systems, and other innovative, alternative systems have been shown to provide efficient wastewater treatment and disposal when installed in appropriate locations. The site suitability, pollutant removal efficiency, groundwater and surface water impacts, and operation and maintenance requirements of these systems should be evaluated along with the other feasible alternatives.
- Wastewater treatment and disposal of effluent and residuals, including reuse, recycling, land application and contractual services for processing and disposal. Wherever feasible, beneficial reuse of wastewater residuals as achieved in land application alternatives is encouraged.
- Flow and waste reduction, including water conservation- Some types of flow and waste reduction measures include: measures for reducing sewer system infiltration/inflow; water conservation measures; industrial reuse, recycling and pretreatment programs; continuation of the use of on-site (private) facilities, such as conventional septic systems or alternative systems.

- Seasonal or controlled discharge options- The potential of retaining generated wastewaters for controlled release under optimal conditions, i.e. during periods when the receiving water has greater assimilative capacity.
- Collection Alternatives: A range of collection alternatives for each planning area should be considered. The plan should consider, where applicable, alternatives for:
 - Configuration of sewers and interceptors for wastewater collection, including considerations for alternative sewer systems such as pressure, small diameter, vacuum and Septic Tank Effluent Pumping (STEP) systems- Alternative arrangements of interceptors and trunk lines should be compared to determine the most cost-effective configuration. Sewers in developing areas should be planned on the basis of anticipated changes in land use and density. Analysis should be made, whenever possible, of the residential, commercial and industrial land use changes that a centralized project will induce. The sizes of interceptors should be based on projected flows and a cost effectiveness analysis of alternative pipe sizes. Preliminary routing should be done on a map that delineates the areas most likely to require sewers over the life of the plan.
- Screening of Alternatives: The realm of alternatives initially evaluated should include a broad range of wastewater alternatives that have the potential to meet the foreseeable wastewater needs for the planning area. Alternatives should be rejected if they fail to meet physical constraints of the planning area, such as climate, soils or topography, or if they are incompatible with water quality plans. A screening process should be employed to determine those alternatives that appear to provide the greatest environmental and cost benefit. This preliminary screening process will be guided by the wastewater needs specific to the planning area and a preliminary assessment of the major environmental, financial, technical, and institutional considerations of each alternative. Alternatives for treatment and discharge should take into account and allow to the extent practicable for the application of technologies at a later date to remove nutrients, including nitrogen and phosphorus. Following initial screening of the wastewater alternatives, a limited number of the most feasible alternatives should be evaluated in detail.
- Comparison and Ranking of Alternatives: Plan selection will involve making choices among alternatives based on a comparison of the significant costs, environmental impacts and benefits of each. While costs of alternatives may be directly compared, the comparison of environmental, institutional, and social impacts of each alternative may not be as straightforward. Sound judgment on the overall impacts of the alternatives will be critical in

selecting the plan with the greatest overall benefit. The impacts should be considered, wherever possible, in quantitative terms, and be based on the supporting analysis elsewhere in the plan. Where quantification is not possible, the comparison should be made by brief narrative description. The alternatives may be ranked after they are presented to aid final selection of a plan. Public meetings should be held at this critical stage of the planning effort so that the alternatives reflect the interests of the community and sufficient support is engendered for the regional facility planning process. The following are recommendation for ranking the alternatives:

- Monetary costs- The costs of each alternative along with a 20-year present worth cost analysis. Sufficient details shall be provided to allow for conducting a thorough cost analysis.
- User rates- Current and projected user rates resulting from implementation of the recommended alternative.
- Environmental impacts- Alternatives should be evaluated and screened for their environmental impacts. All significant impacts should be weighed to derive a value judgment as to the net overall effect of each alternative relative to other plans. Significant adverse impacts could be a basis for rejecting an option and, thus, reduce the number of viable alternatives. Other impacts that may require further study or professional surveys should be identified, to the extent possible, early in the planning process.
- Implementation capability- The ability of the regional planning agency to implement the recommended alternative should be weighed carefully. If there are financial, legal, or administrative barriers that would prevent the complete and timely implementation of the regional facility plan, then those barriers should be addressed in the plan before it is adopted. If implementation of the plan requires the passage of ordinances, or the development of inter-local agreements, these articles should be developed as part of the planning process.
- Other considerations- The contribution to water quality objectives, flexibility and public acceptability should also be evaluated in selecting the alternative that provides the greatest overall benefit.

- Design Considerations:
 - Location of Facilities- To the extent possible, evaluation of sites for treatment plants, interceptors, transmission lines, outfalls, pumping stations, and other major works should take into account the following factors: (a) minimize odors and locate facilities away from residential areas; (b) minimize aesthetic problems through proper design and landscaping at facility sites; (c) locate treatment plants, outfalls, and other facilities where they will not affect any sensitive use areas; and (d) proximity to 25 and 100 year flood levels and impacts on floodplains and floodways. Where alternative sites are unavailable, special precautions must be taken. Recommended Standards for Wastewater Facilities (also known-Ten States Standards) Section 11.28 c. contains additional site evaluation criteria that may need to be considered.
 - Process unit sizing basis shall be provided- 401 KAR 5:005 establishes minimum requirements for commonly used technologies. Ten States Standards is incorporated by reference to this regulation and should be consulted for design requirements. A process flow diagram shall be included. Complete Unit Process Design Criteria and Design Flows and Concentrations forms included in Section 12.
 - Proposed treatment technologies not included in 401 KAR 5:005 or Ten States Standards will be required to demonstrate reliable and effective treatment (see Ten States Standards Section 53.2) and will be approved by the Cabinet on a case by case basis.
 - Phased Construction- Adding capacity in phases during a planning period may be more cost-effective in some cases than providing sufficient capacity in initial construction for the entire planning period. A present worth cost analysis of phased development should be included in the regional facility plan. Factors to be considered are: (a) relative cost of providing excess capacity initially compared with the cost of providing capacity when needed; (b) uncertainties of projected long-term wastewater flows, and possible technological advances or flow and waste reduction measures that may limit need for excess capacity. Modular development of operable components of wastewater facilities is advisable in areas where high growth rates are projected, or where existing facilities are to be used initially but phased out later; (c) Flexibility- Regional facility planning should assess wastewater alternatives in providing sufficient land to allow for expansion of the wastewater facilities to handle unforeseen increases in wastewater flows, pollutant loads, and/or more stringent treatment requirements.

- Evaluation of Cost: A cost effectiveness analysis should be performed on all alternatives advanced for detailed evaluation. This analysis should be done in accordance with accepted engineering economic principles and include a calculation of the direct monetary costs of each alternative using present worth or equivalent uniform annual cost as a basis. The analysis should include consideration of all project costs over a 20-year period.
 - 20-year Present Worth- A present worth may be thought of as the sum that, if invested now at a given interest rate, would provide exactly the funds required to make all necessary expenditures during the life of the project. The same cost analysis method must be utilized for all wastewater alternatives being considered.
 - 20-year Equivalent Uniform Annual Cost (EUAC) – A EUAC is the expression of non-uniform series of expenditures as a uniform annual amount. This method will allow the regional planning agency to compare annualized costs for each alternative, which in some instances may be preferable for presentation to the stakeholder groups.
- Cost Effectiveness Analysis: The cost effective analysis of each alternative should be developed and should include all costs associated with construction of and operation of wastewater facilities and other appropriate monetary factors including:
 - Capital Costs- Costs of construction of wastewater facilities (including biosolids/ sludge and septage management) and any costs associated with lease, easement, or acquisition of rights-of-way.
 - Operation and Maintenance (O&M) Costs- These costs should include costs for labor, utilities, materials, contractual services, expenses, and replacement of equipment and parts to ensure effective and dependable operation during the planning period. The O & M costs should be adjusted to also reflect any revenues received from the sale or distribution of wastewater facility by-products (methane gas, sludge products, etc.).

Salvage Value- The salvage value of any wastewater facilities at the end of 20-years should also be considered in the cost effectiveness analysis. This value is normally based on straight line depreciation from the initial cost at the time of analysis to the end of the asset useful life. The economic analysis should also reference anticipated staged capital costs and anticipated equipment costs within the 20 year evaluation period.

Section 9: Cross-Cutter Correspondence and Mitigation

Requirements: This section shall include copies of letters sent to the following cross-cutting agencies and their corresponding responses:

1. U.S. Fish and Wildlife Service
2. Kentucky Department of Fish and Wildlife Resources
3. Kentucky Heritage Council
4. US. Army Corps of Engineers
5. Natural Resources and Conservation Service

These letters must contain a detailed description of the proposed project(s) supported by location maps and/or photographs to each applicable cross-cutting agency. The Cabinet cannot approve a regional facility plan prior to receiving letters from the cross-cutting agencies documenting “no-impact” from the proposed project, or stating that their concerns have been adequately addressed. If the cross-cutting agency finds a resource will be adversely impacted as a result of a proposed action, the cross-cutting agency will direct the regional planning agency to implement specific measures to avoid, minimize or compensate for the adverse impact. The regional facility plan must also describe any measures intended to minimize or mitigate adverse impacts that may be affected by the proposed project.

Recommendations: Early pre-development consultations with the cross-cutting agencies will serve to identify potential adverse impacts from the proposed project. These consultations may allow the project to be redesigned to avoid, minimize or compensate for potential adverse effects to social, historical or environmental resources and also avoid unnecessary project delays. Mitigation measures may include, but are not limited to: changes in design, size, or location of facilities; rerouting of facilities to avoid sensitive areas; phased construction of facilities; best management practices; or other measures intended to eliminate or lessen potential adverse impacts.

Section 10: Evaluation of Recommended Regional Facility Plan

Requirements: This section of the regional facility plan shall summarize the critical components of the recommended plan including environmental impacts, institutional structure, funding plan and implementation schedule.

1. **Environmental Impacts:** The environmental impacts of the recommended plan shall be discussed. This shall include a discussion of impacts on surface and groundwater quality, water supply, air quality, wetlands, floodplains, endangered species, historical and archaeological sites, important prime farmland, and any other applicable environmentally sensitive areas. Any measures intended to mitigate adverse impacts shall also be described.
2. **Institutional Structure:** Any institutional requirements for implementing the recommended plan shall also be presented. Such considerations shall include inter-municipal agreements, establishment of sanitation districts, or the need for any specific rules or ordinances.
3. **Funding Plan:** The funding plan necessary for implementation of the recommended plan shall be presented. This shall include proposed total project(s) cost and a list of the amount, sources and status of all funding sources (e.g., federal, state, or locals funds). Provide the current and projected residential user charge rate based on 4,000 gallons per month of water usage. Projected user rates shall be based on the recommended plan. Also provide a copy of the regional planning agency's current user rate schedule.
4. **Implementation Schedule:** Present a schedule for implementation of the recommended plan, which includes a general schedule for the design and construction of wastewater facilities and any plan to phase construction of facilities.

Section 11: Documentation of Public Participation

Requirements: This section shall include;

1. A copy of the newspaper advertisement
2. Measures taken to solicit public participation
3. A summary report presented to the public during the public meeting
4. Public meeting attendance sheet
5. Public Comments

Recommendations: As indicated throughout this guidance document, the public should participate from the beginning in regional facility planning so that interests and potential conflicts may be identified early and considered. The importance of building a consensus among citizens and stakeholders is extremely critical, as the fate of many planning efforts is decided by the willingness of the public to accept the plan and take action to appropriate the necessary funds for design and construction of facilities. Therefore, it is recommended to hold one public meeting to discuss the draft alternatives and environmental impacts prior to the required public meeting.

The regional planning agency should define issues and analyze information so that the public will clearly understand the costs and benefits of alternatives considered during the planning process. Efforts should be made to ensure that the interests of a broad spectrum of the public are represented in the planning process. Projects that are complex or controversial may require a more substantial public outreach. The public can be informed and their input solicited through a variety of means, including the following: Advisory groups, depositions, information contacts, liaison with citizen groups, mailings, news media, polls, public meetings, speeches, surveys, task forces, correspondence, exhibitions, workshops, interviews, newsletters, seminars.

Section 12: Regional Facility Plan Completeness Checklist and Forms

Requirements: Two (2) hard copies, one certified by a professional engineer licensed in Kentucky and one (1) non-certified digital copy of the regional facility plan and the planning area shapefile on a Compact Disc (CD) shall be submitted to the Cabinet. This completeness checklist should be completed and submitted with each regional facility plan.

Regional Planning Agency Name: _____

Date: _____

		<u>PAGE #</u>
SECTION 1		
REGIONAL FACILITY PLAN SUMMARY- This section shall provide a brief summary of the information provided in the facility plan, including the following:		
1.	Purpose of the plan and major problems evaluated in the plan.	
2.	Recommended alternative chosen to remediate or correct the problems and/or serve the area of need identified in the plan. Also, include any institutional arrangements necessary to implement the recommended alternative(s).	
3.	Estimated cost of implementing the proposed plan (including user fees) and the proposed funding method to be used.	
4.	Planning agency commitments necessary to implement the plan.	
5.	Schedule of implementation for projects.	
SECTION 2		
STATEMENT OF PURPOSE AND NEED- This section shall contain a brief description of the purpose and need for a submitting the facility plan.		
SECTION 3		
PHYSICAL CHARACTERISTICS OF THE PLANNING AREA- This section shall delineate the planning area boundaries and describe key topographic, geographic and pertinent natural or man-made features of the area. Digital or electronic submission of the planning area boundary shapefile in a standard GIS format shall also be included. This section shall also include the following maps:		
1.	One (1) up-to-date map, suitable for photocopying, indicate the planning area boundary, service area boundary, watershed boundaries, county lines, populated places, cities and/or towns and project areas or proposed planning period phases.	
2.	One (1) up-to-date map, suitable for photocopying, include locations of wastewater treatment facilities (including package treatment plants), discharge location(s), collection lines (gravity, force main, interceptors), pump stations, public drinking water intake points and groundwater supply areas [Source Water Area Protection Plans (SWAPP) and/or Wellhead Protection Areas (WHPA)].	
3.	One (1) seven and one-half (7 ½) minute USGS topographic map including the location of wetlands, delineation of the 100-year floodplain, surface water(s), and topography.	

4.	If available, a local planning and zoning land use map.	
SECTION 4		
SOCIOECONOMIC CHARACTERISTICS OF THE PLANNING AREA- The following characteristics of the planning area shall be discussed:		
1.	Historical, current, and projected population in the planning area including wastewater contributions from industrial and commercial sources.	
2.	Current and projected population in the existing service area and unsewered parts of the planning area	
3.	Economic or social benefit to the affected community	
SECTION 5		
EXISTING ENVIRONMENT IN THE PLANNING AREA- Describe existing physical, biological, cultural, and other resource features within the planning area with an emphasis on those that may be impacted by the proposed plan or projects, including the following:		
1.	Physical features such as surface and groundwater quality, water sources and supply, wetlands, lakes, streams, air pollution, floodplains, soils, geology, and topography	
2.	Biological: Identify plant and animal communities in the planning area with an emphasis upon endangered and threatened species likely to be impacted	
3.	Cultural: Describe archaeological and historical resources that may be affected by the proposed project	
4.	Other Resource Features such as national and state parks, recreational areas, USDA Designated Important Farmland, and any other applicable environmentally sensitive areas	
SECTION 6		
EXISTING WASTEWATER SYSTEM- This section shall be prepared by a Professional Engineer licensed in Kentucky. A description of the existing facilities within the planning area shall include the following:		
1.	On-site systems in the planning area	
2.	Physical condition of the existing wastewater treatment plant(s) including the type, age, design capacity, process units, peak and average wastewater flows, current discharge permit limits, schematic layout of treatment plant. Include a narrative description of the capacity of the treatment plant to meet reliability and redundancy requirements as outlined in regulation 401 KAR 5:005, Section 13.	
3.	Existing collection and conveyance system and its condition	
4.	Existing biosolids disposal method	
5.	Existing operation, maintenance and compliance issues	
SECTION 7		
FORECASTS OF FLOWS AND WASTE LOADS IN THE PLANNING AREA- This section shall be prepared by a professional engineer licensed in Kentucky and shall include:		
1.	Current and projected commercial, industrial and residential growth for the proposed planning period	
2.	A copy of the waste load allocation (WLA) issued by the DOW for new or expanded treatment plant projects	

SECTION 8	
EVALUATION OF ALTERNATIVES- This section shall be prepared by a professional engineer licensed in Kentucky and include an assessment of alternatives to determine the appropriate facilities that will meet the wastewater needs of the planning area and provide benefits that are cost-effective and environmentally sound. The section shall include:	
1.	No-action alternative
2.	Optimization of existing facilities
3.	Regionalization
4.	Other alternatives
5.	Detailed cost analysis along with 20 year present worth analysis for each alternative
6.	Recommended alternative
SECTION 9	
CROSS-CUTTER CORRESPONDENCE AND MITIGATION- Each facility plan shall include cross-cutter correspondences to and from each agency related to the following four environmental and cultural concerns:	
1.	Threatened and Endangered Species: The U.S. Fish and Wildlife Service- Kentucky Ecological Services Field Station and the Kentucky Department of Fish and Wildlife Resources
2.	Historical Resources: The Kentucky Heritage Council State Historic Preservation Office
3.	Aquatic Resources: The US. Army Corps of Engineers (Louisville, Nashville, or Huntington Districts).
4.	Agricultural Resources: The local office of the Natural Resources Conservation Service (NRCS) or USDA Service Center
SECTION 10	
EVALUATION OF RECOMMENDED REGIONAL FACILITY PLAN- This section of the facility plan shall summarize the critical components of the recommended plan.	
1.	Environmental impacts
2.	Institutional structure
3.	Funding plan
4.	Current and projected residential user charge rate based on 4,000 gallon usage per month
5.	Implementation schedule
SECTION 11	
DOCUMENTATION OF PUBLIC PARTICIPATION- The section shall include a copy of the newspaper advertisement/proof of publication, attendance sheet, and public comments.	

Unit Process Design Criteria Form

Unit Process	Number of Units ¹	Flow per Unit (MGD)	Design Criteria ²
Influent Pumping			
Screening			
Grit Removal			
Primary Clarification			
Biological Process			
Chemical Phosphorus Removal			
Final Clarification			
Disinfection			
RAS/WAS Pumping			
Sludge Treatment			
Sludge Dewatering			

1*The number of units shall be in accordance with the reliability/redundancy checklist

2*The design criteria shall be in accordance with 401 KAR 5:005 including Ten States Standards

Note: This is a suggested format only. The process listed here will not fit every project and will therefore need to be revised accordingly.

