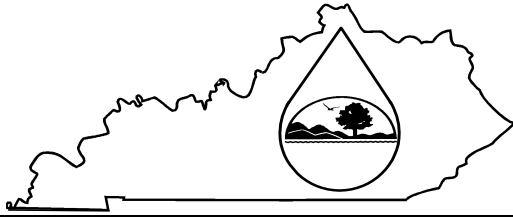


ASSET INVENTORY REPORT FORM



Kentucky Division of Water's Asset Inventory Report, as required by 401 KAR 5:006

In accordance with 401 KAR 5:006, regional planning agencies are required to submit an asset inventory report to the Cabinet, if: (a) It has been ten (10) years since the regional planning agency submitted a regional facility plan or asset inventory report; and (b) the regional planning agency does not meet the requirements established in Section 2(2) of the regulation. The asset inventory report requires regional planning agencies to take inventory of the physical assets of their wastewater system(s), assess their condition, prioritize capital needs, and develop a plan for funding those needs. By incorporating this planning tool into their daily operations, the Cabinet expects regional planning agencies to achieve the following benefits:

- a. Reduce overall cost of system operation and maintenance;
- b. Target capital investments toward critical assets;
- c. Improve compliance record and remediate or correct illegal overflows or bypasses;
- d. Acquire a better understanding of treatment and/or collection system components;
- e. Reduce borrowing costs. Funding agencies prefer lending to municipalities which properly manage and operate their assets;
- f. Potentially improve bond credit ratings;
- g. Make a sound case for rate increases to local governing boards and rate payers;
- h. Prolong the useful life of their assets. Knowing the condition of assets allows regional planning agencies to make timely repairs; and
- i. Reduce duplication of efforts and improve the allocation of staff time and other resources.

A complete report consists of this form and copies of supporting documentation. All regional planning agencies that wish to use this report to demonstrate compliance with the requirements of 401 KAR 5:006, Section 4 must complete all seven sections of the report and provide copies of the supporting documentation required under section VI. This report form consists of seven (7) sections:

- I. REGIONAL PLANNING AGENCY DATA
- II. REVENUES AND EXPENSES
- III. ASSET INVENTORY
- IV. PROJECT PRIORITIZATION
- V. FUNDING PLAN
- VI. COPIES OF SUPPORTING DOCUMENTATION
- VII. CERTIFICATION

Most of the information required in the form is self-explanatory. The instructions in some of the sections are given to highlight some of the information that may require interpretation or additional clarification. You may add extra pages for entering additional asset inventory information especially if you are a regional planning agency with multiple treatment plants. If you need to include additional information, attach the extra pages and put the question number next to your answers and/or copy and paste the asset inventory tables on the additional pages. It's quite likely that all of the details of the asset inventory presented in this report will not apply to every wastewater system. If the parameter does not apply then indicate by entering N/A in the blank or modify the worksheets so they conform to the particular needs of your system. For additional information or assistance, contact the Kentucky Division of Water, Wastewater Planning Section (502) 564-3410.

I. REGIONAL PLANNING AGENCY DATA. These subsections provide the basic information necessary to identify and characterize the system. The point of contact information must include an organization and an individual. The address can be a mailing address (e.g., P.O. Box). The physical location of the facility is required for treatment plants only. The address should be the physical location of the facility, and not a P.O. Box. Descriptive addresses are acceptable if no physical address exists.

1. Regional Planning Agency Information. Basic system information.

2. Discharge Information. Facilities may have multiple discharge types (e.g., discharge to another facility, subsurface discharge, outfall to surface waters, reuse). Additionally, one or more facilities may discharge to the facility. Please review and enter discharge information carefully. If multiple discharges apply, enter percentages which must add to up 100%.

3. Facility Effluent Treatment Level. Please indicate the level of treatment available at the treatment plant. Current Treatment Level should be selected if the facility is or will be in operation as of the date of report submittal. Projected Treatment Level should be entered if the facility will be in operation for all or part of the 10-year period after the date of report submittal. Treatment levels include **primary** (45mg/l<BOD; process in which the effluent is treated to remove floating debris and solids by screening and sedimentation); **advanced primary** (process in which chemicals are added to further treat primary effluent and increase the amount of solid matter removed); **secondary** (the effluent must meet the minimum removal standards for Biochemical Oxygen Demand, total suspended solids, and pH); and **advanced** (a level of treatment that is more stringent than secondary treatment or produces a significant reduction in nonconventional or toxic pollutants present in the facility's effluent; the treatment level is considered advanced if the BOD permit limit is less than 20 mg/l or the facility has one or more advanced treatment processes).

4. Facility Type. Enter all the facility types that apply to the system. Facility type includes treatment plant, collection (combined sewers, separate sewers, interceptor sewers, and biosolids handling facility). Indicate whether the facility is currently used by placing a check mark in "Present" column(s) or whether it is planned to be used in the future by placing a check mark in "Projected" column(s).

5. Flow and Population Served. Each year's data must be based on a 12-month time period. Subcategories a through d apply to treatment plants. If applicable, indicate the projected design capacity for treatment plants. The population served information table has two main components; each must be completed for the present condition and the 10-year projected condition.

6. Treatment Plant Discharge Limits. List the discharge limits for each parameter listed in the most current KPDES permits. If the parameter does not apply to the permits, then indicate by entering N/A in the blank.

II. REVENUES AND EXPENSES. Data items in this section are necessary to understand the financial condition of the system. The information provided can be estimated or based upon audit reports.

III. ASSET INVENTORY. This is the most extensive section of the report and will allow the Division of Water to evaluate the types of assets, anticipated failure and replacement or rehabilitation costs. The data items required should be readily available to most operators or managers. Most systems already have some form of inventory established but not centralized. The following asset inventory is designed to collect data and information into a centralized format. The inventory provides a format where information and data will be listed in the categorized asset tables and include corresponding characteristics, assigned assessment and failure mode ratings, and assigned strategies to renew or maintain the assets. Taking an initial inventory of assets can be a labor intensive job. Systems should start by identifying their critical assets to prepare the initial inventory. The collection of assessment data and information can be done through the direct inspection, observation, repairs, operation and maintenance routines, investigation/ monitoring/reporting, and analysis of data. Because systems need to continue to collect new data and information and build upon initial inventories, an ongoing, organized, and systematic collection of data should be established so the process develops. One of the most important outcomes of the assessments is determining the remaining useful life of an asset. A number of factors can affect the useful life of assets, including routine service and proper maintenance, excessive use, and environmental conditions such as topography, soil, or climate.

1. What is the State of My Assets? Assessing the state of assets is one of the core components of developing an asset inventory. It provides the critical information needed to assess condition, performance and reliability of system components. The measure of performance for a wastewater system can be based on four critical areas: customer service level, regulatory compliance, risk to public health and safety, and environmental protection. Conduct assessments on the condition, performance and reliability of current wastewater system assets using the definitions and tables below and assign the ratings to the following tables. Assessments are to be evaluated on a scale of 1 to 5.

- Current Condition- Rates the condition of the asset. The higher the number the better the condition of the asset.
- Current Performance- Rates whether the asset meets capacity requirements now and in the future. The higher the number the better the performance of the asset.
- Current Reliability- Rates the asset based on its frequency of breaking down. The higher the number the better the reliability of the asset.

a. Current Condition Assessment

Rating	Remaining Useful Life	Maintenance Level
5	New or Excellent Condition	Normal Preventive Maintenance
4	Minor Defects Only	Normal Preventive Maintenance, Minor Corrective Maintenance
3	Moderate Deterioration	Normal Preventive Maintenance, Major Corrective Maintenance
2	Signification Deterioration	Major repair, rehabilitate
1	Beyond Useful Life	Unit Must Be Replaced

b. Current Performance Assessment

Rating	Description
5	Exceeds/Meets all Performance Targets
4	Minor Performance Deficiencies
3	Considerable Performance Deficiencies
2	Major Performance Deficiencies
1	Fails to Meet Performance Targets

c. Current Reliability Assessment

Rating	Remaining Life	Frequency of Failure
5	New	Almost Negligible
4	Seldom Breakdown	More than 10 years
3	Occasional Breakdown	Every 5 Years
2	Periodic Breakdown	Every 2 Years
1	Continuous Breakdown	1 Year or Less

2. Which Assets are the Most Critical? Critical assets have high failure risks (old, poor condition, etc.) and/or major consequences if they do fail (major expense, system failure, safety concerns, environmental damage, water quality impacts, etc.). Some components of a system should take precedence for investment based on risk due to age, condition, and importance or consequence. Components found to be in poor condition, or with severe defects and high failure modes, should be addressed as soon as possible after they are discovered. Less severe defects can be prioritized for more frequent inspection or cleaning, repair, rehabilitation, or replacement. Conduct critical rating assessments of current wastewater system assets using the definitions and tables below and assign the ratings to the following tables:

- **Consequence of Failure-** Rates the asset based on the consequences of failure. Failure of some assets could be detrimental to the total system or facility components. The lower the number the lower the risk.
- **Probability of Failure-** Rates the asset based on the percentage of effective life consumed- as an asset ages the likelihood of failure increases. The lower the number the lower the probability of failure. **Enter the percentage shown.**
- **Redundancy-** Rates the criticality of the assets based on the availability of backup. Available backup reduces risk.

a. Consequence of Failure

Rating	Description	Percentage (%) Affected	Level
1	Minor Component Failure	0 - 25%	Asset
2	Major Component Failure	25 - 50%	Asset
3	Multiple Asset Failure	25 - 50%	Facility/Sub-system
4	Major Facility Failure	50 - 100%	Facility
5	Minor Sanitary System Failure	20 - 40%	Total System
6	Medium Sanitary System Failure	40 - 60%	Total System
7	Intermediate Sanitary System Failure	60 - 80%	Total System
8	Significant Sanitary System Failure	80 - 90%	Total System
9	Total	90 - 100	Total System

b. Probability of Failure

Rating	Percentage (%) of Effective Life Consumed
1	20%
2	40%
3	60%
4	80%
5	100%

c. Current Redundancy Assessment

Rating	Level of Redundancy	Reduce Probability of Failure by:
1	50% Backup	50%
2	100% Backup	90%
3	200% Secondary Backup	98%

3. Renewal and Maintenance Strategy: This asset inventory report will help regional planning agencies acquire a better understanding of their systems and make more informed decisions about future capital investments. An important part of conducting an inventory is determining a strategy of how to manage assets through renewal and maintenance. At some point, continuing to repair the asset will no longer be cost-effective and it will need to be rehabilitated or replaced. A preventive maintenance program will enable you to maximize the useful lives of your assets and can help you avoid problems and cut down or delay replacement costs. Conduct assessments on strategies to renew or maintain assets using the definitions and tables below and assign the options to the following tables:

- Renewal Strategy- Record decisions on what will be done with each asset.
- Maintenance Strategy- Record decisions on the type of maintenance tactics to perform based on the selected renewal strategy.
- Recommended Renewal Date- Renewal date is equivalent to the end of useful life date of an asset per the manufacturer. You may enter a different date based on your renewal strategy. This can be used in calculating the future value of the renewal strategy.
- Costs of Renewal Option- For this example assume all assets will be replaced. Enter your estimate of what the renewal strategy will cost in today's dollars

a. Renewal Strategies		
Option	Description	Type
1	Do Nothing	Non-Capital
2	Continue with Status Quo	Non-Capital
3	Maintain Differently	Non-Capital
4	Operate Differently	Non-Capital
5	Repair	Capital
6	Refurbish/Rehabilitate	Capital
7	Replace Asset with Similar Asset	Capital
8	Replace with a New or Improved Asset	Capital
9	Reduce Levels of Service or Cause of Failure	Non-Asset
b. Maintenance Strategy		
Option	Maintenance Tactic	
1	PM - Preventive Maintenance	
2	CBM - Condition based maintenance	
3	UBM - Usage based maintenance	
4	RTF - Run to failure	
5	CM - Corrective maintenance	

Asset Inventory Table Instructions

Putting together the inventory requires organization of assets and decisions regarding what level of asset should be included. This format allows for any level of detail desired, and is capable of classifying a great deal of information about the assets. Key points are to (1) organize the asset inventory from large to small units; (2) gather information and insert into the appropriate categories; (3) after basic hierarchy is established, additional information can be added as it is obtained (Refer to the table of Examples of Asset Categories and Category Hierarchy).

List as many assets within each categorized table as you can and as many characteristics of each asset. Characteristics will vary by asset type. Use the assessment and strategy ratings defined above while taking into account the current condition of each asset, its service history, and your experience based on the characteristics of your system (e.g., weather conditions, operation and maintenance routines). Get the best information you can, but use estimates if you need to. For the collection system tables (Tables 4 through 7), grouping of collection lines is recommended. For example, if collection lines were put into place in the same area during the same period of time and are composed of the same diameter and material, then enter the total linear footage of the same group instead of segmenting them (e.g., downtown, 10,000 feet, 8 inch diameter, Cast Iron, circa 1950).

Examples of Asset Categories and Category Hierarchy

Asset Categories	Asset Category Hierarchy
Headworks	Screening- Bar Screens, Screens Grit Removal- Blower, Auger, Grit Pumps, Pipes/Valves Electrical- Motor Control
Raw Sewage Pumping	Pumps- Pump #1, Pump #2, Pipes/Valves Electrical- Motor Control Center, Generator Instrumentation- Flow Meter, Level Sensors
Pump Stations	
Building and Grounds	
Panels- Alarm/Electrical	
Collection Structure	Manholes- Grinder Pumps
Collection System Pipe	Gravity Force Main- Air-Relief Valves
Collection System Lift Station	Pumps- Pump 1,2,3, etc., Valve and Piping Instrumentation- Flow Meter Electrical- Motor Control, Standby Generator
Treatment Unit Processes	

IV. Project Prioritization and Fund Plan Table Instructions:

Preparing the asset inventory report allows regional planning agencies to prioritize rehabilitation and replacement projects. The estimated cost of rehabilitation and replacement activities associated with your highest priority assets are required for completing the funding plan worksheet. Gather information on all of the costs associated with the rehabilitation or replacement of an asset and provide a citation for the source of the estimate. Costs should only account for funds you will need to replace or rehabilitate your capital assets, and should not include routine operation and maintenance costs. To determine what a rehabilitation or replacement project might cost, you can:

1. Consult with your engineer;
2. Ask local contractors for estimated costs;
3. Contact equipment manufacturers; and
4. Talk to other systems about the cost of their rehabilitations or replacements.

It is important that you update this worksheet every year, and as new information becomes available, because your system's priorities and finances may change. Costs of new assets or rehabilitations may also change. Updating your worksheet annually and setting aside the required reserve amount will help ensure that you have enough money to cover the cost of future rehabilitation and replacement projects.

It may be overwhelming to see how much money you should be saving each year to fund the replacement and rehabilitation of your assets. You can fund capital improvements by saving the total per year cost of replacements in a reserve account. Alternatively, you can use the money you already have more efficiently and put the savings towards replacing and rehabilitating your assets. Here are some strategies that could help you use your current resources more efficiently or raise additional funds:

1. Form partnerships with other wastewater systems to reduce operating costs. This may allow you to simplify management and obtain bulk purchasing agreements.
2. Consider increasing rates to raise revenue.
3. Apply for financial assistance. Banks and government funding agencies can help fund infrastructure projects such as treatment system upgrades and collection line repairs. For large projects, you may want to research funding options such as state and federal clean water grant and loan programs.

Key decision makers (for example, the board of directors, elected officials of the community, or owners of manufactured housing associations) make critical decisions about the finances of wastewater systems. For this reason, they need to understand the financial needs related to the rehabilitation and replacement of the system's equipment and assets. The information compiled in this report should be presented to key decision makers and incorporated into the annual budget. This information should be reviewed annually and modified as necessary. The decision makers can also present this information to the public at board meetings.