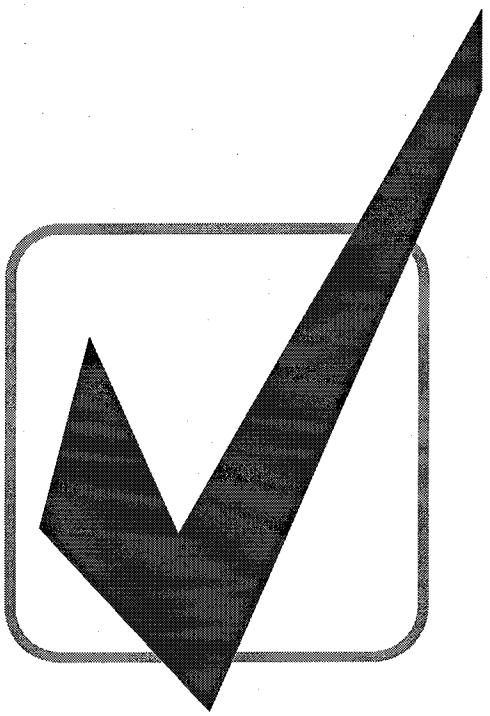
Capacity Checklist for Public Water Systems



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Introduction

The Tribal Border Infrastructure Grant program requires that all water and wastewater infrastructure systems requesting project funding have adequate provisions for long-term operation and maintenance. Region IX has developed the following checklist to help evaluate the existing operations and maintenance status of each system for which funding is requested. This tool will allow both EPA and the appropriate Tribal organizations to specify areas that require special trainings or provisions to better address long term operation and maintenance needs.

Following are the definitions of Capacity. Capacity will be used as a measure of Operations and Maintenance Capability.

- ***Technical capacity-*** refers to: the physical infrastructure of the water system (the capability of the system components to provide water that meets the requirements of the SDWA), and the technical knowledge of the system personnel and their ability to use that knowledge to adequately operate the system.

- ***Managerial capacity*** - Managerial capacity includes such things as ownership accountability; the ability of management to adequately staff the system with qualified personnel; an understanding of the regulatory requirements involved in operating a water system; and the ability to interact well with customers and regulators.

- ***Financial capacity*** - Financial capacity includes the ability of the system to maintain sufficient revenues to cover operation costs and the effective management of those resources in operation the system. In effect, is the system financially healthy.

If your water system ***does not*** currently have adequate capacity in any of the three areas listed above, please indicate this by checking the appropriate boxes below. *You will not be required to complete the checklist sections that correspond to the boxes you have marked below. However, your construction grant will contain appropriate conditions to insure that your system achieves adequate capacity in these areas.*

We would like to request training on the technical aspects of running a water system.	
We would like to request training on the management aspects of running a water system.	
We would like to request training on the financial aspects of running a water system.	

Applicant: _____

Prepared by: _____

_____

_____

_____

Date: _____

_____

Glossary of Terms

Contaminant: Any physical, chemical, biological, or radiological substance or matter in water;

Disinfectant: Any oxidant, including chlorine, chlorine dioxide, chloramine, and ozone, that is added to water in any part of the treatment or distribution process and that is intended to kill or inactivate pathogenic microorganisms;

Disinfectant contact time: The time in minutes that it takes for water to move from the point of disinfectant application or the previous point of disinfectant residual measurement to a point before or at the point where residual disinfectant concentration is measured;

Filtration: A process for removing particulate matter from the water by passing the water through porous media;

Ground Water: The supply of fresh water found beneath the surface of the ground, usually in aquifers, which is often used for supplying wells and springs;

Ground Water Under the Direct Influence of Surface Water: Any water beneath the surface of the ground with a significant occurrence of insects, microorganisms, algae, or large-diameter pathogens such a *Giardia lamblia*; or ny water with significant and relatively rapid shifts in water quality characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions;

Peak Day or Maximum Day: The greatest volume of water use in a 24 hour period during the year that must be supplied by the water system to meet customer demand.

Appurtenances: Machinery, equipment, appliances or auxiliary structures attached to a main structure to enable it to function, but not considered an integral part of the main structure.

Maximum Contaminant Level (MCLs): The maximum permissible level of a contaminant in water delivered to any user of a public water system. MCLs are enforceable standards;

mg/L: milligrams per liter - equivalent to parts per million;

µg/L: micrograms per liter - equivalent to parts per billion;

NTU: nephelometric turbidity unit;

psi: pounds per square inch;

Surface Water: All water that is open to the atmosphere and subject to surface runoff;

Turbidity: A cloudy condition in water due to suspended silt or organic matter.

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The Technical Portion of your System

Section 1

Your Water Supply

Please mark (√) the appropriate box: Y*es* or *No*. *If you have* Comments or additional information, please indicate this in the *comments* box by either writing your comments in the box provided or attaching a separate comments sheet. Further, if you do not know the answer to any of the following questions, please write ***unknown*** in the comments box. Please try to determine the answer to every question. ***If a section or question does not apply to your system, please write NA for not applicable.***

1.1 (a) Water Supply and Existing Demands	Yes	No	Comments
Do you know how much water you require on a peak day? ***Amount***: _____			
Do you know the maximum amount of water you can pump from your sources? ***Amounts per source:*** _____ _____ _____			
Does the system have functioning service meters? ***If yes, how often are the meters read?***			
1.1 (b) Water Demand	**Yes**	**No**	**Comments**
Do you know whether your system demands will be growing, declining, or remain stable over the next ten years? ***Please circle: growing, declining, or stable.***			
If you have large commercial, industrial, or irrigation users, do you know their long-term plans and understand their needs?			
1.1 (c) Purchased Water	**Yes**	**No**	**Comments**
Do you have a contract to purchase water? ***If yes, with who?*** _____			
Are you currently staying within your contract?			
Does the system have operational "master" meters that accurately measure the amount of water the system purchased? ***If yes, how often are the meters read?***			
1.1 (d) Water Source – Ground Water Systems	**Yes**	**No**	**Comments**
Do you keep records showing hours per day pumps are run? **Average amount**: _____			
Does the system have operational "master" meters that accurately measure the amount of water each source produced? 1) ***If yes, how often are the meters read?*** _____ 2) ***If yes, do you keep records showing the amount of water supplied by each water source?*** _____			
Do you have well logs and test yield data for each of your wells?			
Do you have As-Built information on the construction features of each well static water level, drawdown and depth?			

1.2 Ground Water Under the Influence of Surface Water	Yes	No	Unknown
Is your water free from variations in turbidity and temperature after storm events?			

Disinfection

Do you disinfect?	**Yes**	**no**	***(if you checked "no", skip to the Infrastructure - Pumping section)***

1.3 Disinfection	Yes	No	Comments
Do you regularly inspect and maintain your disinfection/chlorination equipment? ***Type of Equipment:*** _____ ***How often?*** _____ ***Disinfectant used:*** _____ ***Type of regular maintenance:*** _____ _____ _____			
Do you keep records of chlorine usage?			
Do you keep records of chlorine residuals within the system?			
Do you have back-up equipment? ***Type:*** _____			
Do you have adequate contact time following disinfection and before the first user in the distribution system (30 minutes for ground water systems)? ***Contact time:*** _____			
Can you detect a chlorine residual (at least 0.2 mg/l) at taps at the ends of the distribution system? ***Free Chlorine Residual:*** _____			

Infrastructure - Pumping

1.4 Pumping Equipment	Yes	No	Comments
Do you have well house records that identify, pump type, size and manufacturer and model?			
Do you routinely inspect for signs of pump or pump motor problems? ***How often and using what method?*** _____			
Once diagnosed, are problems corrected in a timely manner to avoid crisis financing, costly repairs, and unscheduled downtime?			
Do you hire a qualified pump contractor to perform an inspection of all pumping equipment, identify potential problems, and perform maintenance, on an annual basis? ***If not, who inspects this equipment?*** _____			

Infrastructure - Storage

1.5 (a) Storage Capacity	Yes	No	Comments
Does the system have sufficient gravity-flow (non-pumped) or emergency generator-supported pumping capability to ensure adequate distribution storage to provide safe and adequate service for up to 24 hours without power? ***If no, how long:*** _____			
Is there reserve storage capacity for fire protection? ***Amount:*** _____			
1.5 (b) Security Measures	**Yes**	**No**	**Comments**
Are any openings such as vent pipes, screened to protect against the entrance of small animals, mosquitoes, flies and other small insects?			
Is there an entry hatch to allow access for cleaning and painting of the interior of the tank? Is your storage tank covered?			
Is the access ladder to the roof secured to prevent unauthorized access?			
Is the hatch kept locked?			
Is the tank and the immediate surrounding area fenced?			
1.5 (c) Control Systems	**Yes**	**No**	**Comments**
Do use automatic controls to fill the tank (i.e. turn pumps on and off)? ***If yes. what type?***			
Is there a drain valve or hydrant to allow for draining of the tank?			
1.5 (d) Tank Maintenance	**Yes**	**No**	**Comments**
Do you have "As-built" drawings of your water tanks?			
Do you keep records on water levels and pressures in storage/pressure tanks?			
Is the tank inspected at least every three years by a qualified tank contractor for evidence of corrosion or pitting, leakage, and structural weakness?			

Infrastructure - Distribution

1.6 (a) System Maintenance	Yes	No	Comments
Do you maintain "As-Built" drawings of the water system that include distribution system plans showing locations and sizes of all mains, service connections, valves and shut-offs?			
Does the operator routinely flush, test, and maintain the hydrants in the system? ***How often?*** _____			
Does the system keep a log of distribution system breaks to identify weak areas in the system?			
Are histories, locations, size, and type of mains and service lines detailed on records in a secure area?			
Are all valves exercised and if required lubricated periodically?			
Is the system free of severe "water hammer" problems?			
Are meter pits, pressure regulating valves, altitude valves, blow-offs, and other appurtenances maintained on a regular basis? ***If yes, how often*** _____			

1.6 (b) Unaccounted-for Water (Leaks/unauthorized use)	Yes	No	Comments
Is unaccounted-for water (i.e. water lossed due to leaks, unauthorized water use, etc.) in the water system monitored and investigated each month?			
Is the unaccounted-for water less than 15 percent of the total water delivered to the mains? ***List percentage of unaccounted-for water:*** _____%			
Are the normal operating pressures in the distribution system between 35 psi and 125 psi? ***Normal operating pressure:*** _____psi			
Do you have a routine leak detection and repair program?			
1.6 (c) Water Quality in Distribution System	**Yes**	**No**	**Comments**
Is an annual inspection for cross-connections performed?			
Is there a program for installing and testing backflow prevention devices where potential contamination is present?			
Is there a program to eliminate "dead-ends" in the mains, where feasible?			
1.6 (d) Distribution System Problems	**Yes**	**No**	**Comments**
Do you receive complaints regarding water taste and odor ? ***List number of complaints in the past year:*** _____			
Can you maintain adequate pressure in the distribution system under all conditions of flow?			

Section 4

The Management Portion of your System

Please mark (√) the appropriate box: Y*es* or *No*. *If you have* Comments or additional information, please indicate this in the *comments* box by either writing your comments in the box provided or attaching a separate comments sheet. Further, if you do not know the answer to any of the following questions, please write ***unknown*** in the comments box. Please try to determine the answer to every question. ***If a section or question does not apply to your system, please write NA for not applicable.***

2.1 Legal Authority	Yes	No	Comments
Does the water system have on file…			
By-Laws?			
Operating authority?			
Ordinances or Acts?			
Have water system board members reviewed these documents, and do they understand their powers, authorities, duties and responsibility as they relate to the water system?			
2.2 Water Utility Organization	**Yes**	**No**	**Comments**
Is there a written plan of organization and control among the people responsible for management and operation of the system? ***If yes, please attach a tribal organizational chart with written relationship between positions.***			
Is someone responsible for scheduling work?			
Is there any written information to help orient and/or train new board members and operators on rules and responsibilities of their positions?			
Does the water system board/council hold regularly-scheduled, publicly announced meetings? ***If yes, answer the following bulleted questions:***			
• Is there a written agenda prepared for each meeting?			
• Are accurate minutes and records of all board meetings and actions prepared and maintained?			
• Are members of the public given time for comments at board meetings?			
Are vacancies on the board promptly and legally filled?			
Are meetings frequently cancelled because of lack of quorum?			
2.3 Operating Rules and Regulations	**Yes**	**No**	**Comments**
Do you have written rules and regulations governing the water system operations and modifications?			
If no, skip to the next section – Regulatory Compliance If yes, do you have?			
• Written Policies or rules describing customer rights and responsibilities?			
• A written policy describing procedures for handling and resolving customer complaints?			
• A water main extension policy?			
• Standard construction specifications to be followed?			
• Measures to assure cross-connection control and backflow prevention?			
• A method to ensure that rules and regulations governing the water system operations are followed and enforced?			
• A procedure to routinely evaluate the objectives, accomplishments and progress of the water system?			

2.3 Operating Rules and Regulations (Cont.)	Yes	No	Comments
• A public relations policy that keeps utility users and community members informed about important considerations for the operation of the water system?			
• A written policy outlining procedures for making exceptions to the system rules and regulations?			
2.4 Operations/Maintenance	**Yes**	**No**	**Comments**
Does the water system own a clearly defined work office for the program?			
Are there written schedules prepared for routine, preventive operation and maintenance tasks?			
Are operations and maintenance manuals and manufacturers technical information complete, available on file and used?			
Have training plans been formulated for your operators?			
If yes, have training sources been identified?			
Does the water system own and have on hand sufficient hand tools and electrical meters (i.e., wrenches, shovels, volt, ohm, and amp meters) to take care of basic system maintenance and repair?			
Does the system own (or have access to through rental contracts etc.) sufficient vehicles and maintenance equipment to provide for the operation of the system of the system and to meet the goals established in the plan of operation?			
Does the system own and have on hand sufficient inventory of spare parts to perform routine maintenance?			
Are work requests filled out prior to work?			
If yes, is completed work recorded and filed?			
Is there a functioning work priority, assignment/review system in place?			
2.5 Staff Function and Responsibility	**Yes**	**No**	**Comments**
Has a person been identified (assigned/hired) to carry out day-to-day operations of the water system?			
If "no", skip to the next section - Reporting			
Are there enough staff to operate and manage the system? ***Please List the names and titles of the staff members you currently employ for your water system:*** _____ _____ _____ _____			
Do you have backup operators during the absence of the regular operators?			
Do you employ any certified operators***? If yes, please list the areas for which they are certified, level of certification and certifying agency below:*** _____ _____ _____ _____			
Does the council/board encourage employees to obtain additional, job-related training, and provide time and financial resources for staff training opportunities?			
Does the council/board have a written plan or set of goals for the system operation over the next 3 to 5 years?			

Do all employees and contract personnel have and use written rules and regulations to guide day to day operations?			
2.5 Staff Function and Responsibility (Cont.)	**Yes**	**No**	**Comments**
Do all employees and contract personnel understand their duties, functions, and responsibilities for day-to-day system operations?			
Do all employees and contract personnel have an accurate and complete *written* job description?			
2.6 Operations Record Keeping for Water Supply	**Yes**	**No**	**Comments**
Do you maintain operating and treatment records for your water system? ***If yes, do they include:***			
• Dates and times of scheduled and unscheduled maintenance and repairs, including equipment inspections, lubrications, checks, and materials used for repairs?			
• Records and maps showing all maintenance performed on all fire hydrants, flush hydrants and shut-off valves?			
Do you keep records of all Customer complaint ?			
Do you keep all manufacturer's operations and maintenance manuals for system components including operating instructions, warranty information, suggested maintenance schedules, ordering information for parts and phone numbers of the manufacturers and supplier(s)?			
Do you record the results of all water quality tests run?			
2.7 Reporting	**Yes**	**No**	**Comments**
Are regular, written activity reports prepared by the system operator and supplied to the board or council? ***If yes, how often***?			
If "no", skip to the next section – Emergency Plan			
Do these reports include:			
• Total amount of water produced for the period?			
• Total amount of water sold for the period?			
• Total unaccounted for water(amount of water loss)?			
• The number of new connection (and disconnections) made during the period?			
• The total number of "active" and "inactive" system connection? • (Active connections are customers who are using water; inactive customer are those customers who are connected to the system but do not use water. In other words, they pay only the minimum monthly bill.)			
• A summary of maintenance and repair activities performed during the period?			
• Results of bacteriological tests performed during the period?			
• Status reports on any construction projects underway?			
• Major operational or maintenance problems that have arisen and recommendations for resolving those problems?			
Does the board/council regularly receive these written activity reports from the system operator? ***If yes, how often?***			

2.8 Emergency Plan	Yes	No	Comments
Do you have an Emergency Response Plan that will allow you to meet system demand during a drought or shortage, such as the loss of the largest source? ***If yes, please attach:***			
Does the water system have a written plan for emergency operation (natural disasters, power outages, pump failures, chemical overfeed, etc.)?			
Does everyone involved in operations know what they are to do in the event of contamination from a toxic hazardous waste spill in your source water or a main break or a tank failure?			
Is there a plan for water rationing and public awareness which considers current storage capacity and the system's needs?			
Are there back up sources available (power source, portable generators, pumps, motors, water trucks, or neighboring resources that could be used, etc.)?			
2.9 Regulatory Compliance	**Yes**	**No**	**Comments**
Do you fully understand monitoring requirements and have a scheduling mechanism to assure compliance?			
Do you have copies or summaries of the most recent Federal Safe Drinking Water Act and regulations on file and available?			
Do you know how to obtain clarification or explanation of requirements?			
Do you know what to do in the event of a violation?			
Do you have an approved sampling site plan for conducting bacteriological tests?			
Has the water system been cited by EPA within the past two years for failing to sample and /or report test results? If yes, list violation(s): _____ _____			
Has EPA or IHS notified the water system board/council of operating deficiencies in the past 2 years as the result of sanitary surveys or other inspections? If yes, were any of the deficiencies in the following areas: water production, water distribution/transmission, water treatment, water storage, operator certification/training, record keeping/reporting?			
Do you maintain adequate records to document the results of bacteriological tests for the past five years?			
Do you keep monitoring results for the past 10 years for other contaminants regulated by the Safe Drinking Water Act?			
Do you keep records of sanitary surveys conducted by EPA?			
Do you keep records of all actions taken to resolve Safe Drinking Water Act violations and deficiencies including, public notices published on SDWA violations?			

2.10 Safety	Yes	No	Comments
Is storage and utilization of hazardous material reported to the appropriate emergency response team? If yes, have employees been trained in the use of this safety equipment?			
Is safety equipment available for employees? ***If yes, have employees been trained in the use of this safety equipment?***			
Does everyone understand the risks and safety measures involved in handling water treatment chemicals?			
Are you fully aware of Occupational Safety and Health Administration (OSHA) confined space (such as trenches/manholes) regulations?			
Do you have a written safety program?			
2.11 Management Capability	**Yes**	**No**	**Comments**
Do you have any service contracts for your water system?			
Are you getting the outside services and technical assistance you need?			

The Financial Portion of your System

Section 5

Please mark (√) the appropriate box: Y*es* or *No*. *If you have* Comments or additional information, please indicate this in the *comments* box by either writing your comments in the box provided or attaching a separate comments sheet. Further, if you do not know the answer to any of the following questions, please write ***unknown*** in the comments box. Please try to determine the answer to every question. ***If a section or question does not apply to your system, please write NA for not applicable.***

3.1 Financial Planning Mechanisms	Yes	No	Comments
Do you have an annual budget?			
If "no" skip to the next section – Financial Reporting			
If "yes" does your annual budget?			
• Consider prior years' costs of operation?			
• Anticipate likely changes in operations during the coming year?			
• Have a separate reserve account for equipment replacement and/or capital improvement?			
• Separate water system revenues and expenses from other utility (e.g., wastewater, solid waste) revenues and expenses?			
• Include all interest and principal repayments due on debts owed by the water system?			
• Include, in detail, all operating and maintenance expenses, such as salaries, chemicals, repairs, supplies, power and telephone line items?			
Does your water system have a plan for what capital improvements and expansions will be made over the next five to ten years?			
Do you have within the annual budget a separate reserve account for equipment replacement and/or capital improvement?			
Do you have a process for scheduling and committing to capital projects?			
Does your financial planning process take account of all the potential capital needs suggested by all of the preceding questions in these worksheets?			
Does your long-term financial planning incorporate analysis of alternative strategies that might offer cost savings to customers, such as consolidation with other nearby systems or sharing of operations and management expenses with other nearby systems?			
3.2 Financial Reporting	**Yes**	**No**	**Unknown**
Does your water system generate financial reports at least quarterly?			
If "no", skip the next section- Financial Procedures:			
If yes, do your water system financial reports			
• Compare total revenues against total expenses?			
• Show net financial gain (or loss)?			
• Compare actual, year-to-date revenues and expenses • with projected revenues and expenses?			

3.2 Financial Reporting (Cont.)	Yes	No	Unknown
• Show the total number and amount of past due water system customer accounts?			
3.3 Rates/Billings (Are they Adequate?)	**Yes**	**No**	**Unknown**
Are all water customers/connections metered?			
Do you charge user fees for water service? ***If "no" skip to the next section – Financial Planning***			
If "yes"			
• Are water rates based on metered watered use? ***If "yes" List water rates per 1000 gallons:***			
• Is the water rate structure divided among residential, commercial and industrial users?			
• Do users pay the same or higher rate per 1000 gallons as they use more water?			
• Do you have written procedures for Billing and collection?			
• Is your billing collection rate greater than 95%?			
• Do you have a written policy governing past due accounts, collections and conditions for shut-off and restoration of service?			
• Do you have written procedures for reviewing and revising the budget based on actual operating expenses and revenues received during the year?			
• Do you have written procedures for reviewing and revising the water rate structure at least every two years?			
• Do you have a plan in place for periodic increases in rates?			
• Do you have written procedures for restricting the routine transfer or expenditures of funds from reserve accounts?			
3.4 Financial Planning Mechanisms - Are they Adequate?	**Yes**	**No**	**Unknown**
Are the water system's finances audited annually by an independent auditor?			
If the water system's finances are audited annually, are the recommendations made by the independent auditor in the audit report implemented?			
Does the water system's annual revenues equal or exceed the water system's annual expenses?			
Does the water system maintain adequate insurance coverage for general liability, extended fire and property damage?			
Do the water system personnel have adequate workers' compensation insurance?			
Does the water system keep all the water revenues (i.e., water revenue does not support other municipal departments or unrelated activities)?			
Do you employ standardized accounting and tracking systems?			
Do you track budget performance?			
Do you keep records to substantiate depreciation of fixed assets and accounting for reserve funds?			

3.4 Financial Planning Mechanisms - Are they Adequate?	Yes	No	Unknown
Are financial management record-keeping systems organized?			
Are controls exercised over expenditures?			
Are controls exercised to keep from exceeding your budget?			
Are there purchasing procedures?			

Financial Spreadsheet

Please complete the following financial spreadsheet using the guidance presented below.

GUIDELINES:

This cash flow projection form provides a systematic method of estimating cash receipts, disbursements and balances. The entries listed on the form will not necessarily apply to every PWS, and some entries may not be included which would be pertinent to each PWS. It is suggested, therefore, that the form be adapted to each particular PWS, with appropriate changes in the entries as may be required.

Procedure: Most of the entries on the form are self-explanatory; however, the following suggestions are offered to simplify the procedure:

(1) First gather the audited financial statements, internally prepared statements or budgets and other information for the current year and the two prior years. Please include the most recent audit financial statement with your self-assessment report.
(2) Complete the columns for the prior year using actual data from your audited financial statements, if available, or your internally prepared financial statements. Keeping in mind that, for purposes of this analysis, it is important to use **cash** receipts and disbursements. ***Suggestion: Round the amounts at least to the nearest dollar.***
(3) Complete the current year's column using the most recent budget information. Include all expenditures incurred by the utility.
(4) Complete the form keeping in mind the suggestions shown below. Be sure to include any expenditures resulting from planned plant improvement and estimate the impact of inflation on all expenditures.

- Item #1 (Beginning Cash on Hand) plus item #3 (Total Cash Receipts) minus Item #6 (Total Cash Paid Out) should equal Item #7 (Ending Cash Position).
- Item #13 (Total Reserves) plus Item #12 (Operating Cash) should equal Item #7 (Ending Cash Position).
- Item #1 (Beginning Cash on Hand) should equal Item #7 (Ending Cash Position) from the prior financial period.
- Items #8 & #9 are used together to determine the impact of the rate structure on the equivalent residential user. If industrial or business customers contribute a significant portion of the revenues, these amounts should be looked at separately. Consideration should be given to design a rate structure so that each category of user pays its proportional share of the costs of operating and maintaining the PWS.
- Item #10 is used to determine to what extent a PWS's net operating income is able to cover its debt service requirements.
- Item #11 is used to determine to what extent a PWS's rate structure produces revenues sufficient to cover operating expenses.
- Item #12 is the operating cash balance at year end. The operating cash balance at the end of any financial period should be adequate to meet the cash requirements for a minimum of one month. If there is too little cash, additional cash may have to be injected or expenditures may have to be reduced. If there is excessive cash on hand, the money should be invested or otherwise deposited into interest bearing accounts (e.g., set up reserves for replacement or capital improvements, etc.)