

Assessing Capacity Through Sanitary Surveys



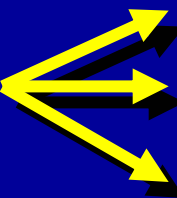
SDWA §1420

Capacity Development

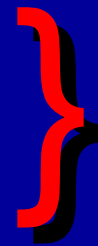
- * To receive their full Drinking Water State Revolving Fund allotment, States must:
 - Ensure all **NEW** CWSs and all **NEW** NTNCWSs have adequate capacity before commencing operation
 - Implement a strategy to assist PWSs in acquiring and maintaining capacity

Capacity is. . .

The ability to



Plan for
Achieve
Maintain



Compliance
with applicable
drinking water
standards

The Three Elements Of Capacity



Technical

Financial

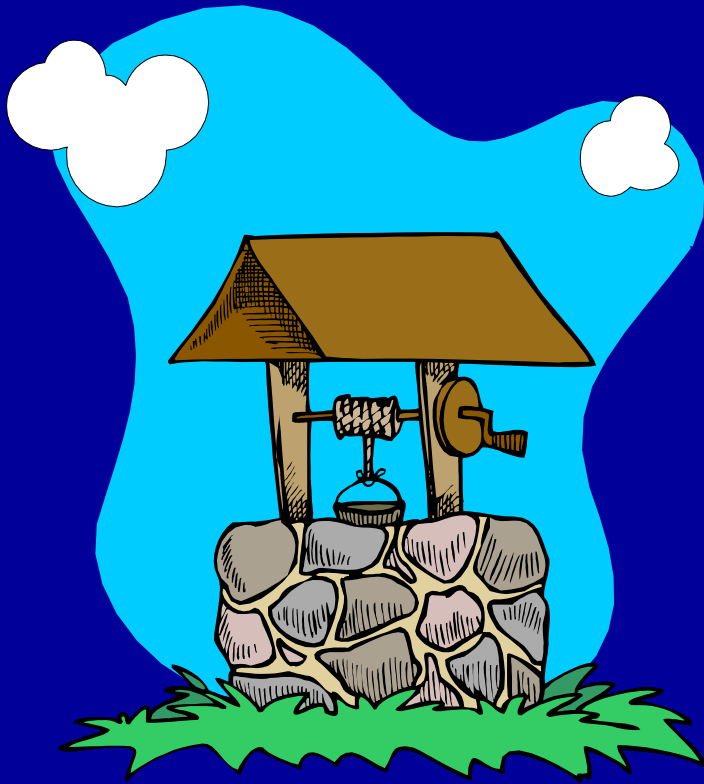
Managerial

Elements of Technical Capacity

- * Source water adequacy
- * Infrastructure adequacy
- * Technical knowledge



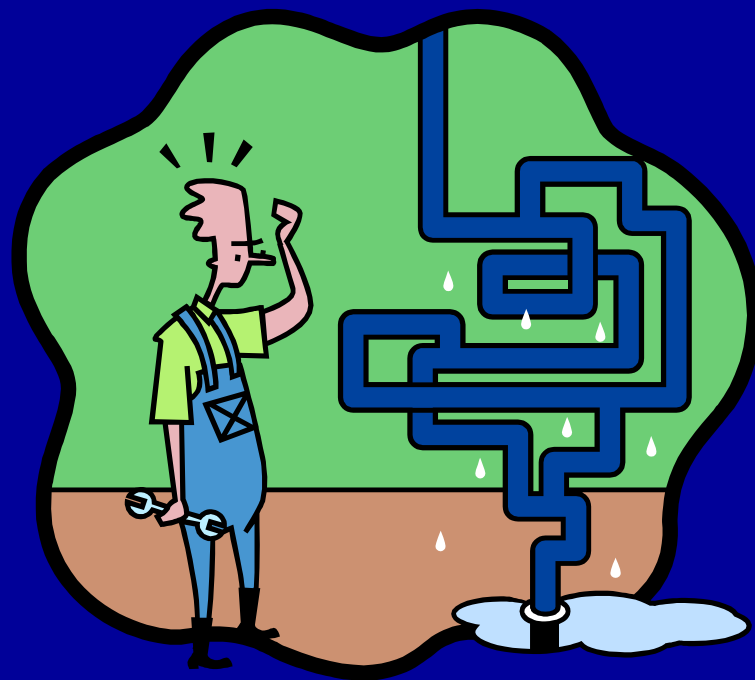
Source Water Adequacy



- * Does the system have a reliable source of drinking water?
- * Is the source adequately protected?
- * Is the system using the “best” practicable source of supply?
- * Is the safe yield sufficient to meet current and future demands?

Infrastructure Adequacy

- * Can the system provide water that meets SDWA standards?
- * What are the condition and life expectancy of infrastructure components?
- * Does the system have a current capital improvement plan?



Technical Knowledge and Implementation



- * Is the operator certified?
- * Does the operator know the drinking water standards and how to implement them?
- * Does the operator understand the system's technical and operational characteristics?
- * Does the system have an effective O & M program?

Elements of Managerial Capacity

- * Ownership accountability
- * Staffing and organization
- * Effective external linkages



Ownership Accountability



- * Are the system owners clearly identified?
- * Can owners be held accountable for the system?

Staffing and Organization

- * Are operators and managers clearly identified?
- * Is the system properly staffed and are staff appropriately trained?
- * Do staff understand the regulatory requirements?



Effective External Linkages



- * Does the system interact well with customers, regulators, and other entities?
- * Is the system aware of available external resources, such as technical and financial assistance?

Elements of Financial Capacity

- * Revenue sufficiency
- * Fiscal management and controls
- * Credit worthiness



Revenue Sufficiency

- * Do revenues cover costs?
- * Does the system charge an appropriate rate for water service?
- * Are procedures in place to collect fees?

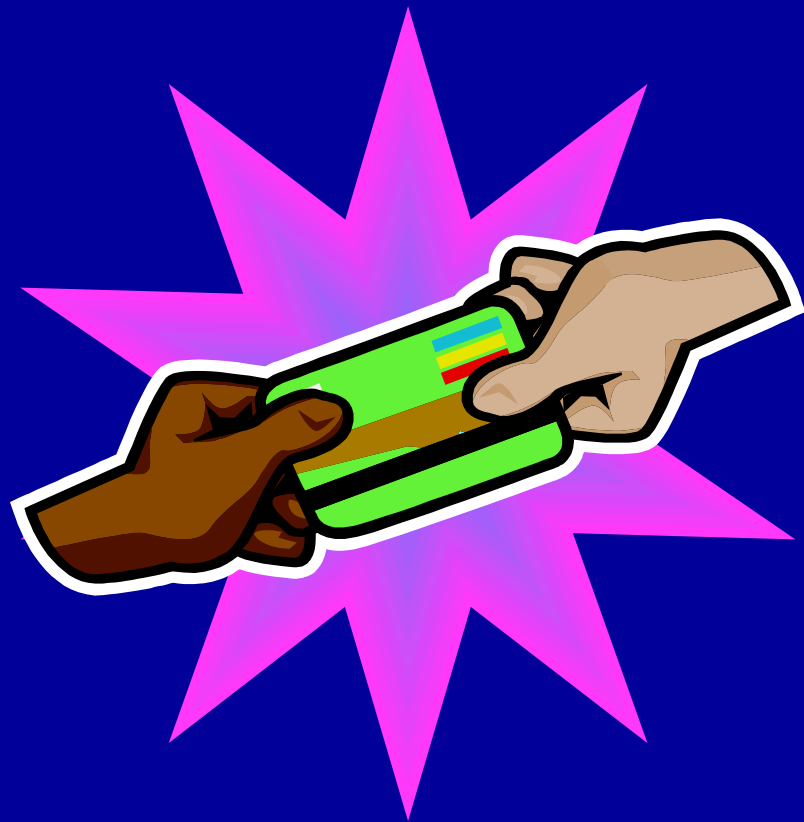


Fiscal Management and Controls

- * Are books and records maintained?
- * Are appropriate budgeting, accounting, and financial planning methods used?
- * Does the system manage its revenues effectively?

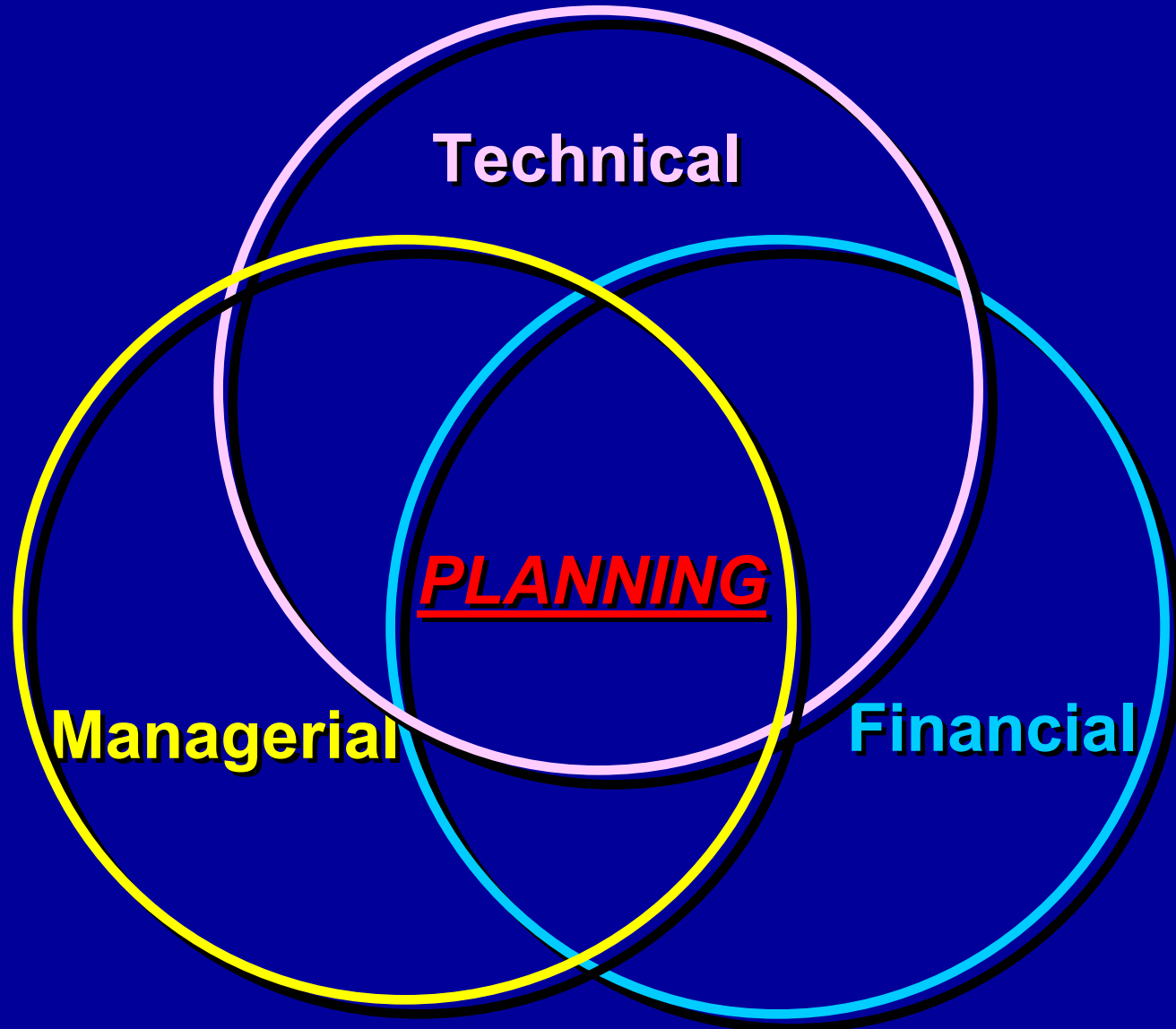


Credit Worthiness



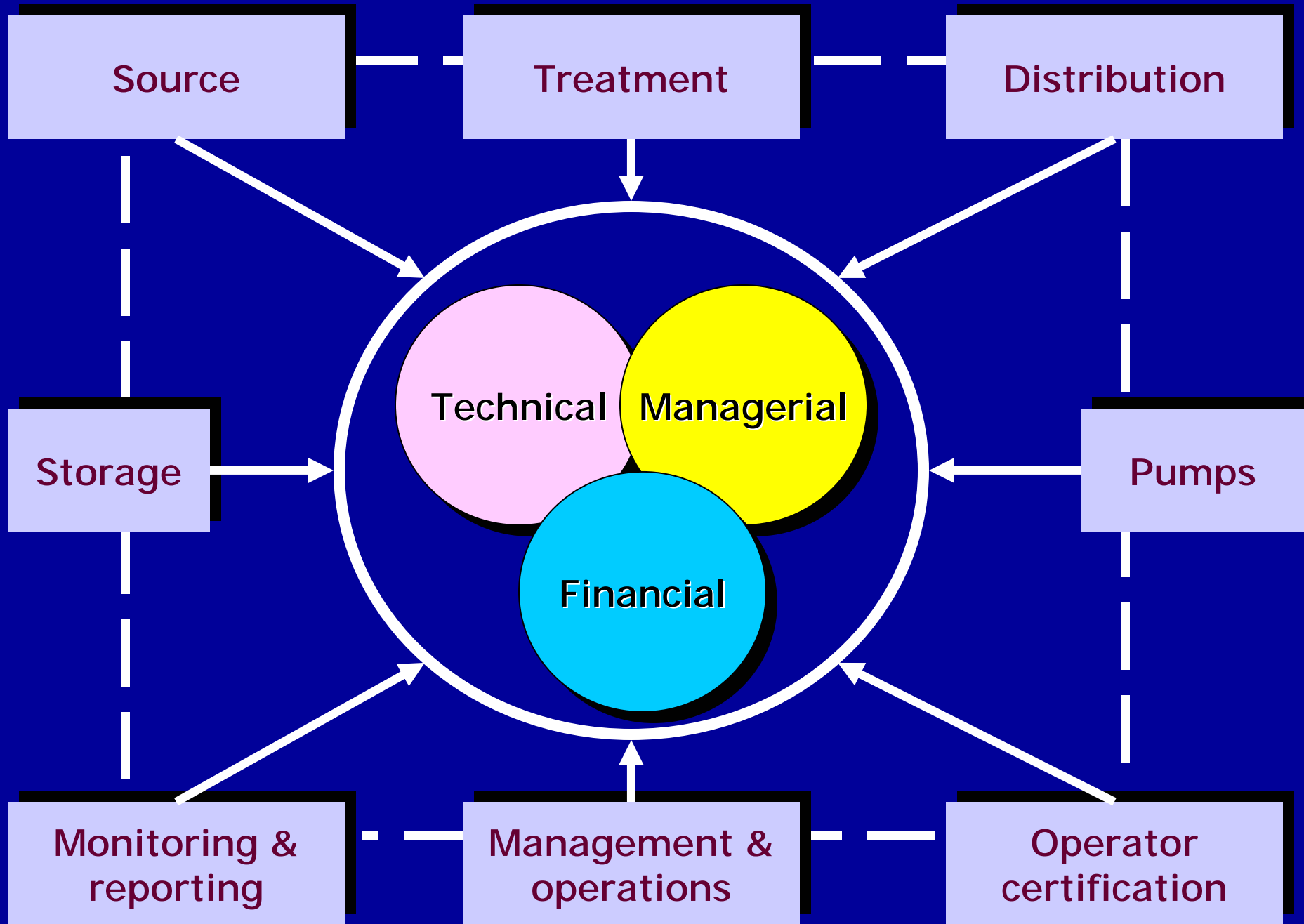
- * Is the system financially healthy?
- * Does the system have have a credit record?
- * Does the system have access to capital?

Dimensions Of Capacity Are Distinct But Interrelated



Using Sanitary Surveys to Assess Capacity





Technical Capacity

Technical Capacity Components

Source protection and adequacy

Infrastructure

Technical knowledge

Sanitary Survey Elements

Source

Treatment

Distribution

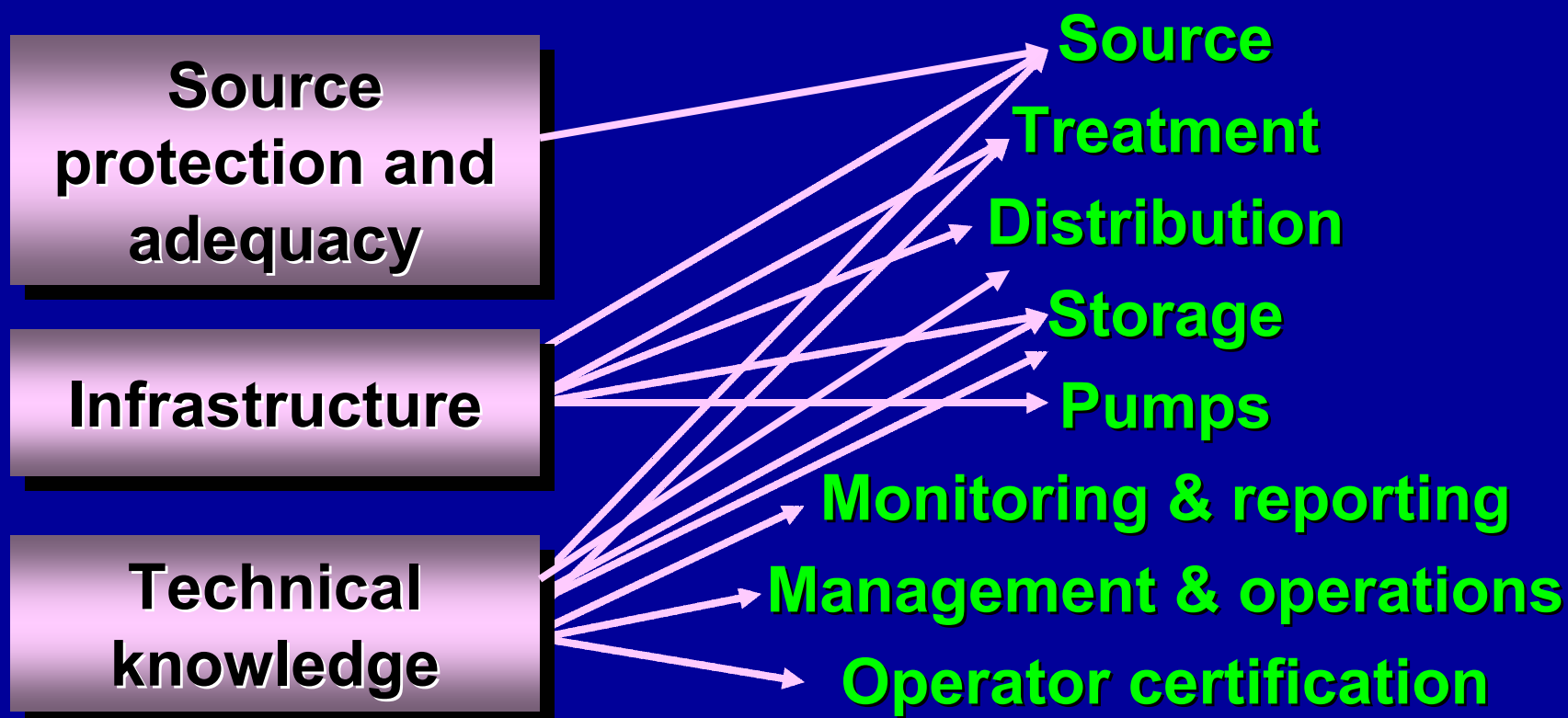
Storage

Pumps

Monitoring & reporting

Management & operations

Operator certification



Technical Capacity

Technical Capacity Components

Source protection and adequacy

Sanitary Survey Elements

Source

Treatment

Distribution

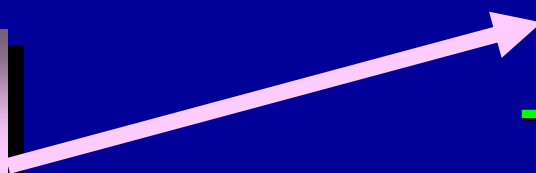
Storage

Pumps

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Management & operations

Operator certification



Source Water Adequacy

- Provide information on water use.
- Does raw water quality monitoring indicate a sanitary risk?
- Is the system using the best practicable source?

Sanitary Survey
Questions



Help to assess source water adequacy by examining the reliability of the source of supply.

Capacity Element

Source Water Adequacy

- Do conditions exist that cause fluctuations in water quality?
- Is the system susceptible to agricultural runoff?
- Does the system have a wellhead protection program?

Sanitary Survey Questions

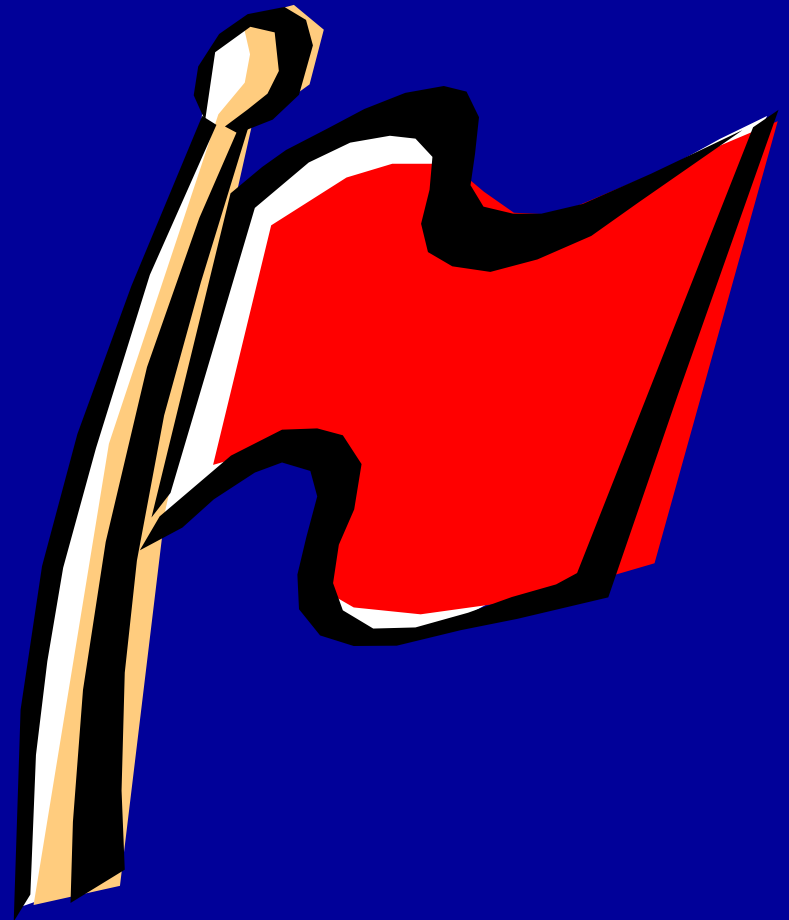
Help to assess source water adequacy by examining the quality and source water protection measures.

Capacity Element



Red Flag Case Studies

- * Looking for red flags when conducting a sanitary survey will also help indicate capacity problems
- * Examples are taken from actual sanitary surveys to illustrate **RED FLAGS**

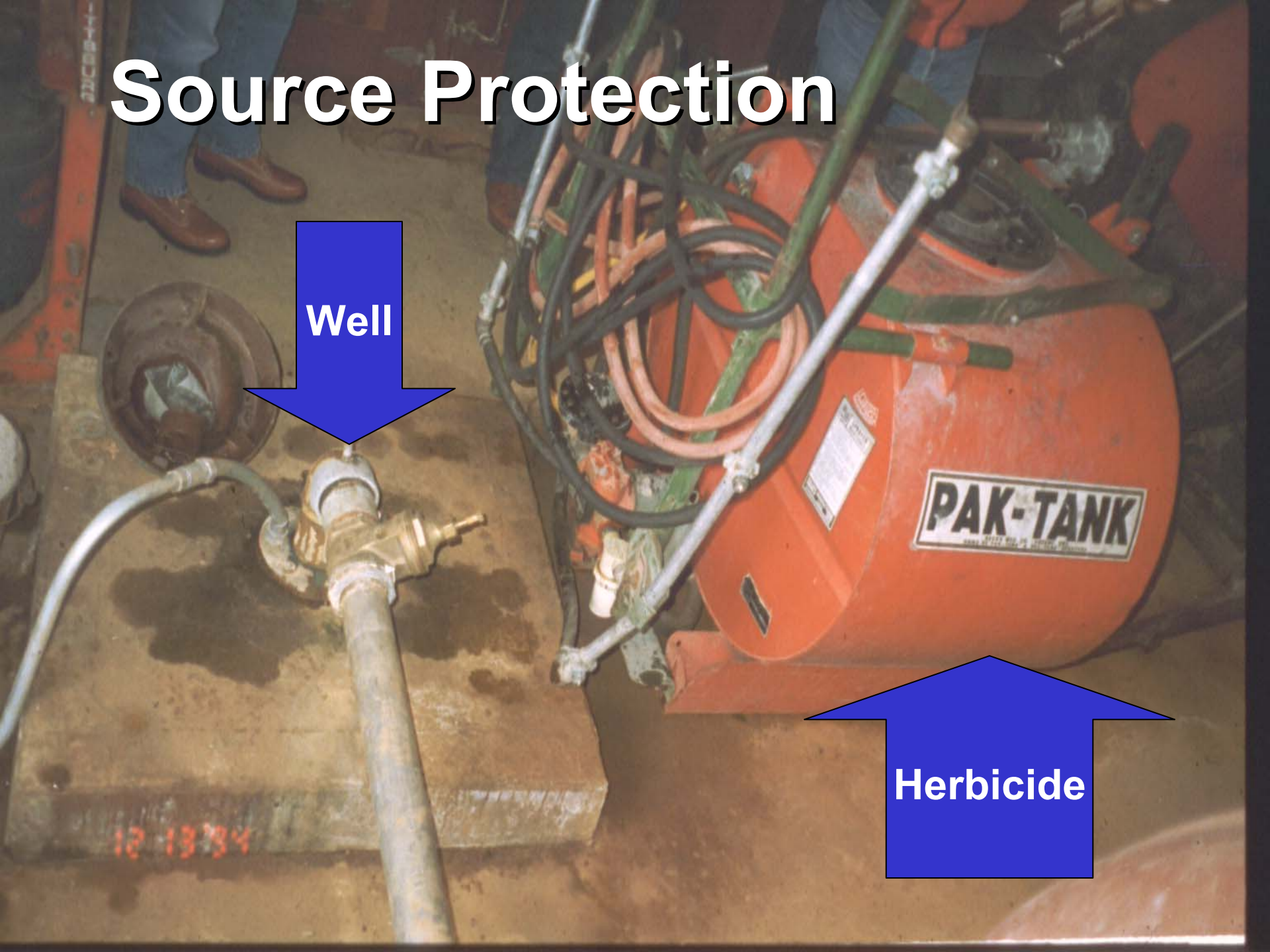


Source Protection

Well

Herbicide

PAK-TANK



Source Protection

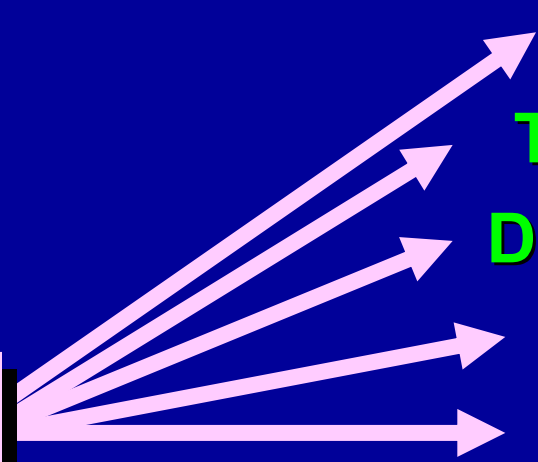


Technical Capacity

**Technical Capacity
Components**

**Sanitary Survey
Elements**

Infrastructure



Source

Treatment

Distribution

Storage

Pumps

Monitoring & reporting


Management & operations

Operator certification

Infrastructure Adequacy – Source

- What is the condition of the pump and motor equipment?
- Are all pumps operable?
- Is the top of the well casing properly sealed (sanitary seal)?

Sanitary Survey Questions



Help to assess source water infrastructure by determining if system facilities can provide water that meets the SDWA standards.

Capacity Element

Infrastructure Adequacy – Source

- What is the structural condition of the pump facility?
- How old are the intakes and how often are they inspected?

Sanitary Survey Questions



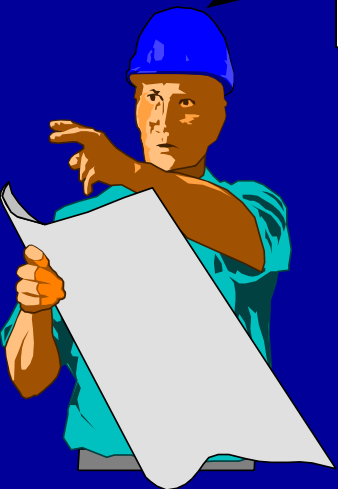
Help to assess source water infrastructure by determining if system facilities can provide water that meets the SDWA standards.

Capacity Element

Infrastructure Adequacy-- Treatment

- What are the age and condition of the treatment plant?
- Is the plant capable of producing high quality water?
- Are there current violations for the system?

Sanitary Survey Questions



Help to assess the adequacy of treatment infrastructure by examining its condition.

Capacity Element

Infrastructure Adequacy – Treatment

- Does the treatment process appear to be working correctly?
- Is there back-up or stand-by power?
- Are instrumentation and controls for the process adequate, operational, and utilized?

Sanitary Survey Questions

Help to assess the adequacy of treatment infrastructure by examining its condition and life expectancy.

Capacity Element



Infrastructure Adequacy – Storage

- Is the tank inspected every five years by a structural engineer for structural integrity?
- Is the tank protected against icing and corrosion?
- Is the tank inspected at least quarterly and generally in good condition with no rust or structural defects?

Sanitary Survey Questions

Help to assess the adequacy of storage infrastructure by examining its condition and life expectancy.

Capacity Element



Infrastructure Adequacy – Distribution

- What is the condition of the mains?
- Are the mains looped throughout the distribution system?
- Are there adequate valves and are they functional?

Sanitary Survey Questions



Help to assess the adequacy of the distribution system by examining its condition and life expectancy.

Capacity Element

Infrastructure Adequacy – Distribution

- Are pump records maintained (amp, drawdown, discharge, pressure, maintenance schedule, manuals, etc.)?
- Are pressures maintained >20 psi at all points in the distribution system even during fire flows?

Sanitary Survey Questions



Help to assess the adequacy of the distribution system by examining its condition and life expectancy.

Capacity Element

Infrastructure Adequacy – Improvements

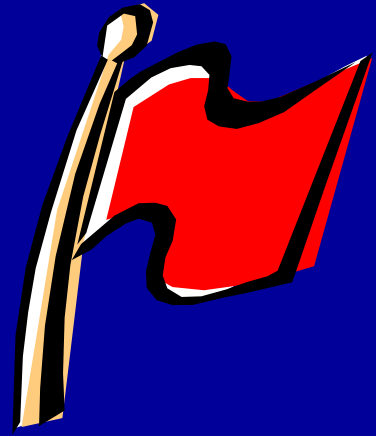
- What is the intended capital improvement plan for the next three years?
- What are the planned capital improvements?
- Are adequate repair materials on hand?

Sanitary Survey Questions



Help to assess infrastructure adequacy by asking whether the system has planned for improvement.

Capacity Element



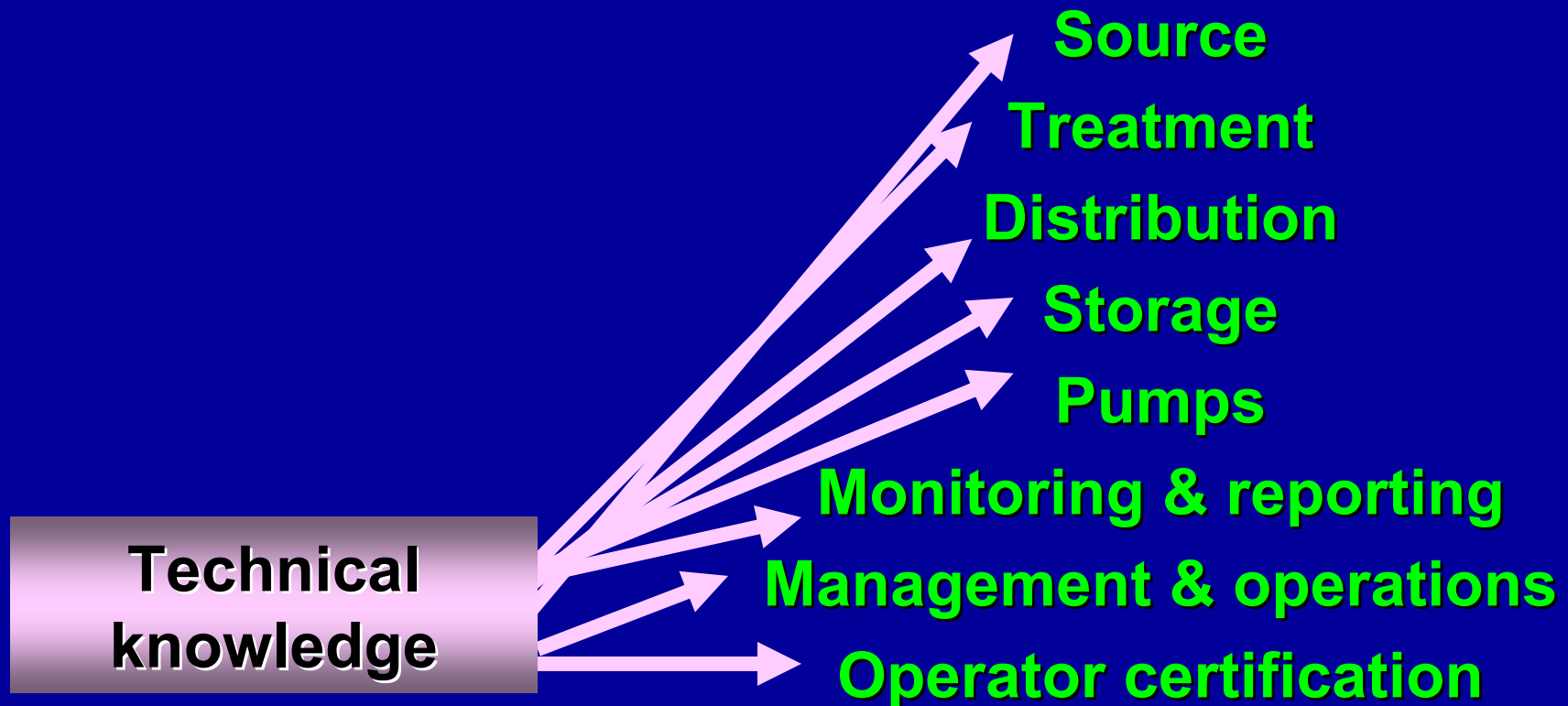
Red Flag!! Infrastructure Adequacy



Technical Capacity

**Technical Capacity
Components**

**Sanitary Survey
Elements**



Technical Knowledge – Treatment

- Provide information on routine monitoring techniques.
- Can the operator answer questions about the disinfection process, including what is done as well as when and why is it done?

Sanitary Survey Questions



Help to assess technical knowledge by examining the operator's understanding of the system's treatment processes.

Capacity Element

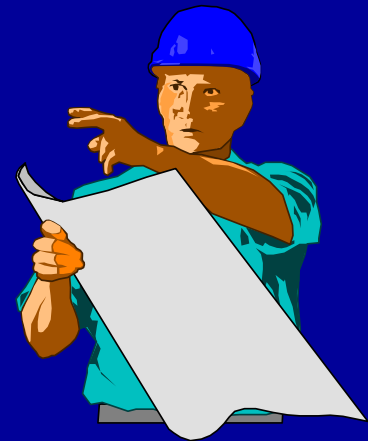
Technical Knowledge – Distribution, Storage, and Pumps

- Provide information on the distribution system.
- What is the frequency of general inspection and cleaning?

Sanitary Survey Questions

Help to assess technical knowledge by examining the operator's understanding of the technical and operational characteristics of the system.

Capacity Element



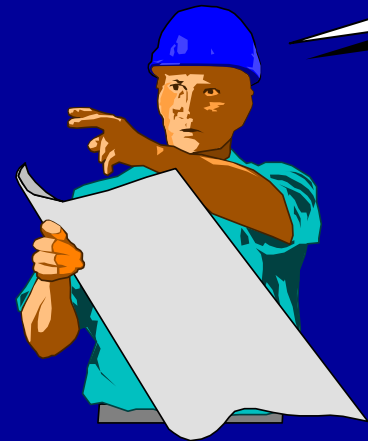
Technical Knowledge – Distribution, Storage, and Pumps

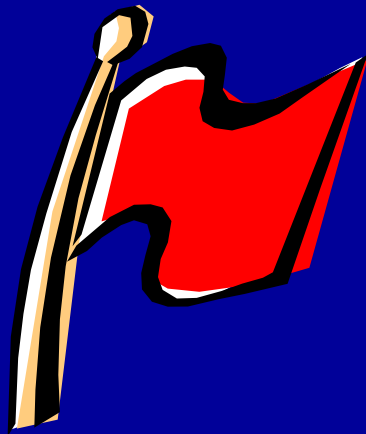
- Are operators properly certified?
- Are sampling results analyzed by a certified laboratory?
- Does the system have an O & M plan?

Sanitary Survey Questions

Help to assess technical knowledge by reviewing the operator's level of certification and determining if the operator is implementing an O & M plan.

Capacity Element

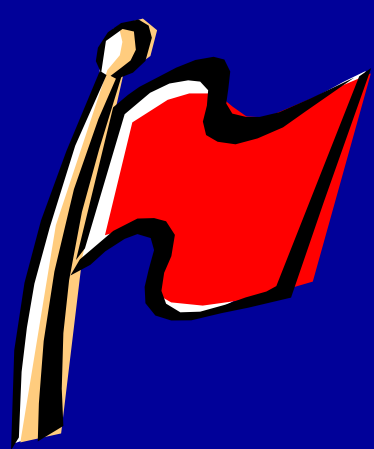




Red Flag!!

Technical Knowledge -- Infrastructure





Red Flag!!

Technical Knowledge Treatment

Sequestering



Managerial Capacity

Managerial Capacity Components

Ownership
accountability

Staffing and
organization

External
linkages

Sanitary Survey Elements

Source

Treatment

Distribution

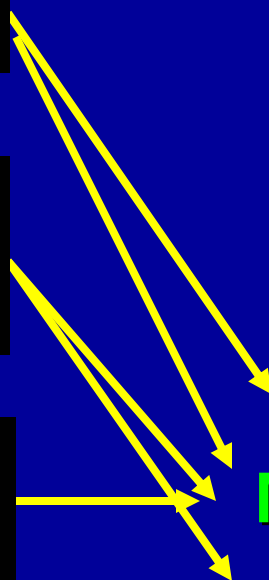
Storage

Pumps

Monitoring & reporting

Management & operations

Operator certification



Managerial Capacity

Managerial Capacity Component

**Ownership
accountability**

Sanitary Survey Elements

Source

Treatment

Distribution

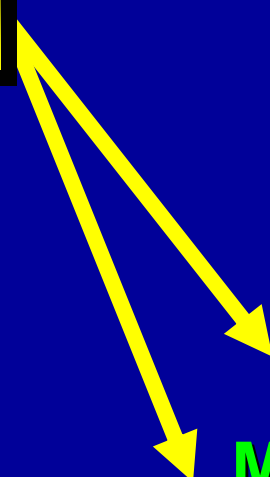
Storage

Pumps

Monitoring & reporting

Management & operations

Operator certification



Ownership Accountability

- Who owns the public water system?
- What is the contact information for the system owner?

Sanitary Survey Questions



Help to assess ownership accountability by clearly identifying the system's owner.

Capacity Element

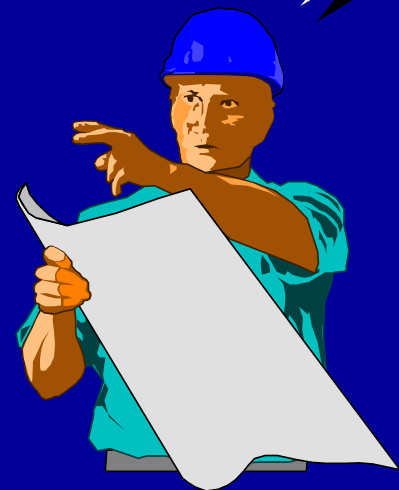
Ownership Accountability

- Provide governing body information.
- Is there a defined organizational structure for decision making?

Sanitary Survey Questions

Help to assess ownership accountability by examining whether the owners can be held accountable.

Capacity Element



Managerial Capacity

**Managerial Capacity
Component**

**Sanitary Survey
Elements**

Source

Treatment

Distribution

Storage

Pumps

Monitoring & reporting

Management & operations

Operator certification

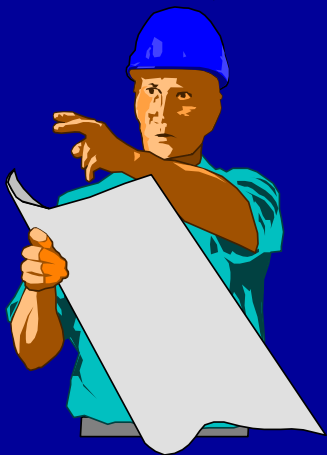
**Staffing and
organization**

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graph TD; A[Staffing and organization] --> B[Monitoring & reporting]; A --> C[Management & operations]; A --> D[Operator certification];
```

Staffing and Organization

- Is there an organization chart?
- List the names and certification levels of operators.
- Are there enough staff to effectively maintain the water system?

Sanitary Survey Questions



Help to assess the staffing and organization of the system by clearly identifying operators and managers and determining if the system is properly staffed.

Capacity Element

Staffing and Organization

- Are personnel adequately trained?
- Are administrators familiar with SDWA requirements and system needs?

Sanitary Survey Questions



Help to assess staffing and organization by examining staff training and determining whether the staff understand the regulatory requirements.

Capacity Element

External Linkages

**Managerial Capacity
Component**

**Sanitary Survey
Elements**

Source

Treatment

Distribution

Storage

Pumps

Monitoring & reporting

Management & operations

Operator certification

**External
linkages**



External Linkages

- Is there a customer complaint system?
- Is there an ongoing public information program?
- What is the level of cooperation between the system and other agencies (drinking water, health, and enforcement agency staff, associated utilities)?

Sanitary Survey Questions



Help to assess the external linkages formed by the system by examining system interactions with customers, regulators, and other entities.

Capacity Element

External Linkages

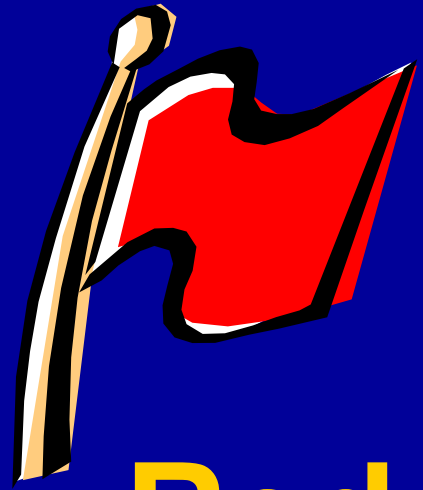
- Has the system received State or Federal funding?
- Is the system eligible for State or Federal funding?
- Is the staff active in industry organizations?

Sanitary Survey Questions

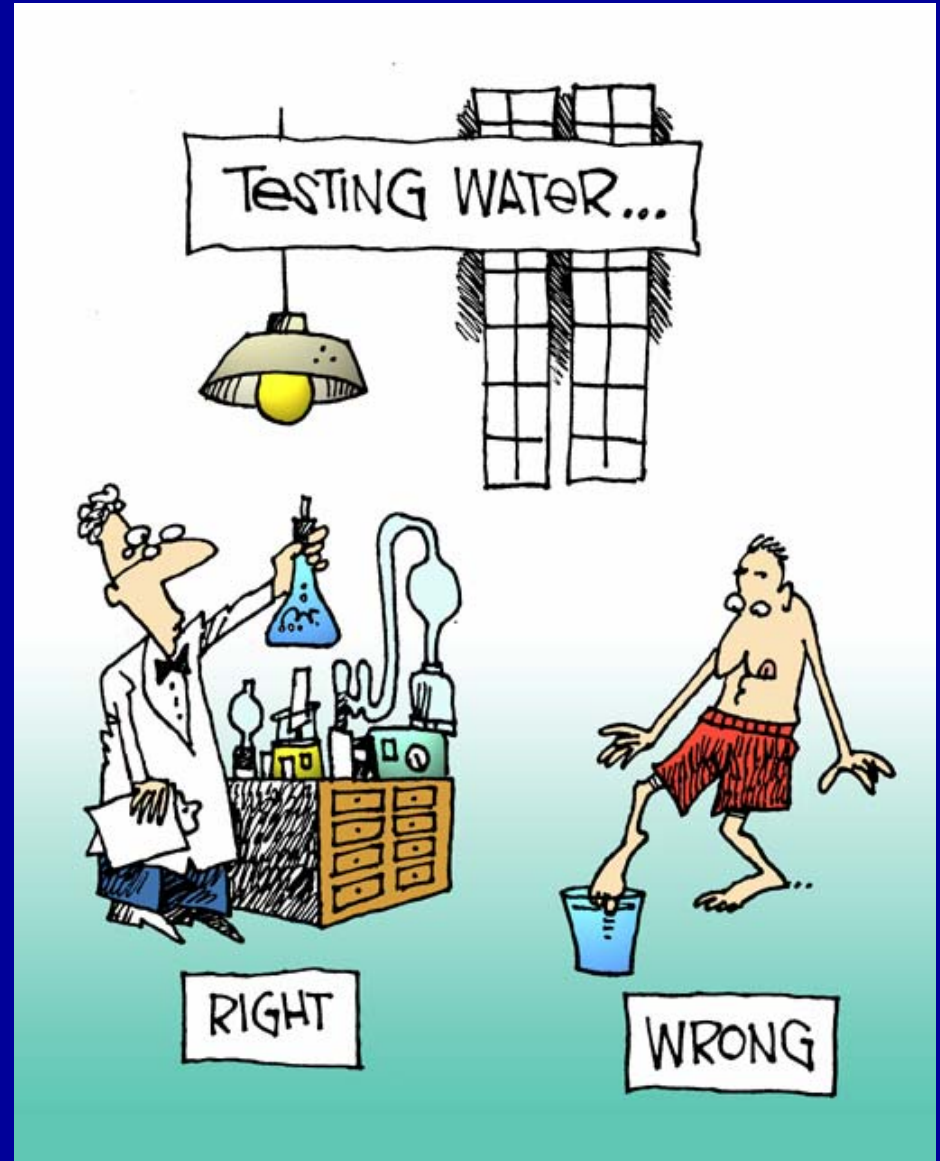


Help to assess the external linkages formed by the system by examining the system awareness of available external resources, such as technical and financial assistance.

Capacity Element



Red Flag!! Managerial Capacity



Financial Capacity

Financial Capacity Components

Revenue
sufficiency

Fiscal controls

Credit
worthiness

Sanitary Survey Elements

Source

Treatment

Distribution

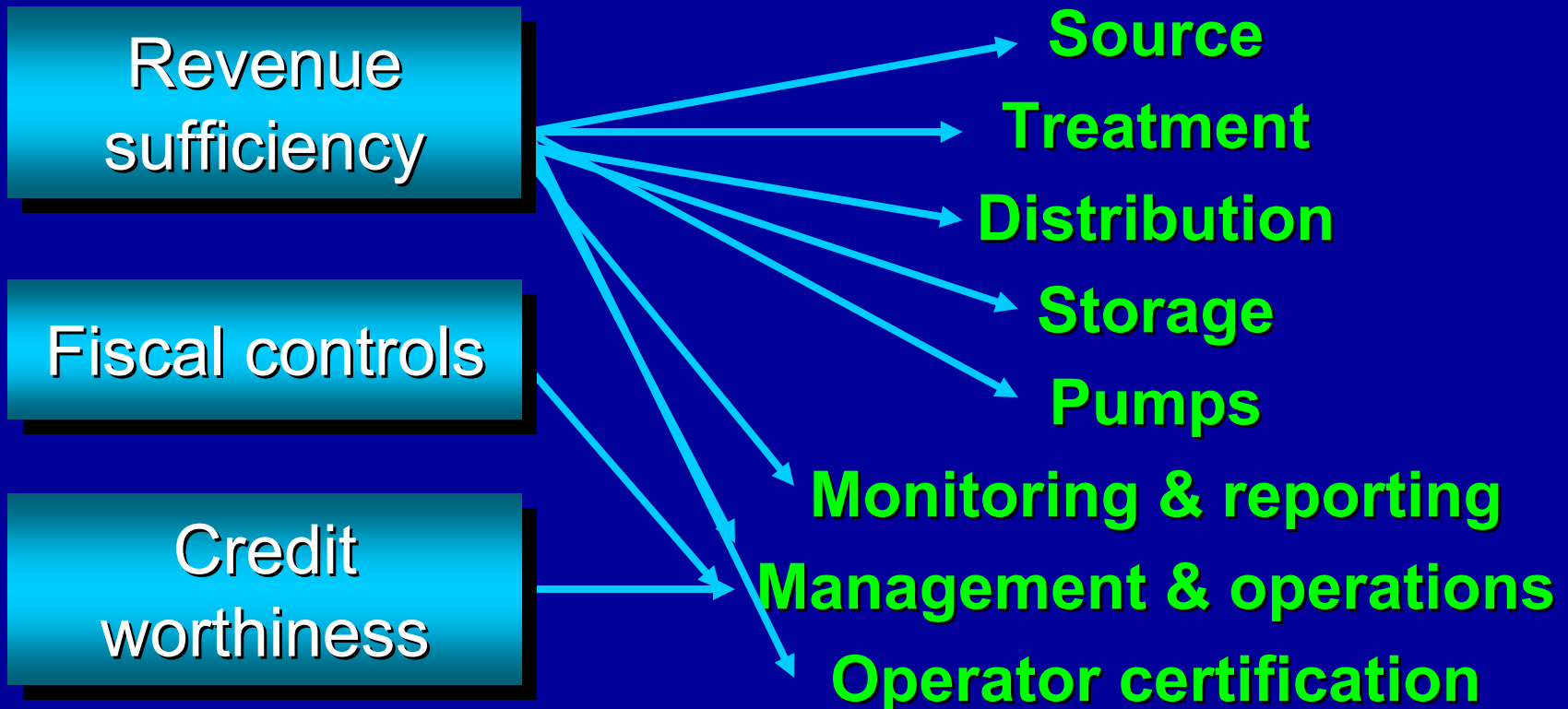
Storage

Pumps

Monitoring & reporting

Management & operations

Operator certification



Financial Capacity

Financial Capacity Components

Revenue
sufficiency

Sanitary Survey Elements

Source

Treatment

Distribution

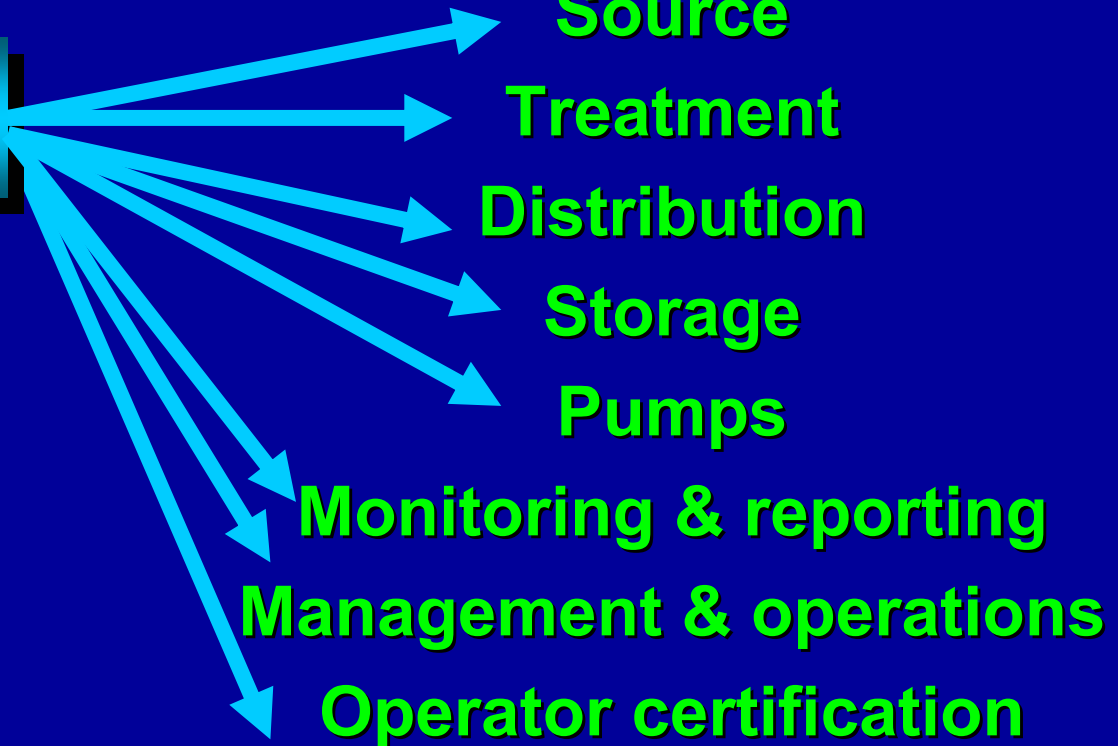
Storage

Pumps

Monitoring & reporting

Management & operations

Operator certification



Revenue Sufficiency

- Does the system have sufficient funds for operation, maintenance, and future repairs and replacements?
- What is the estimated income (including taxes, flat fees, user fees, connection fees)?
- What are the estimated expenses (including personnel, water testing, supplies, contract services, repairs, debt service)?

Sanitary Survey
Questions



Help to assess revenue sufficiency by examining whether revenues cover costs.

Capacity Element

Revenue Sufficiency

- What are the water rates? (Attach a rate schedule)
- Does the system have a comprehensive facilities plan?
- Are the recommendations of the plan built into the rate structure?

Sanitary Survey Questions

Help to assess revenue sufficiency by determining if the system charges an appropriate rate for water service.

Capacity Element



Revenue Sufficiency

Are there sufficient funds for staff training?

Additional Question:

Are projected revenues consistent with projected growth?

Sanitary Survey Questions

Help to assess revenue sufficiency by examining whether revenues cover costs and determining if the system charges an appropriate rate for water service?

Capacity Element



Financial Capacity

Financial Capacity Components

Fiscal controls



Sanitary Survey Elements

Source

Treatment

Distribution

Storage

Pumps

Monitoring & reporting

Management & operations

Operator certification

Fiscal Controls

- Provide the name and phone number of your financial contact person.
- Does the system have formal systems and written procedures for financial records?
- Are annual reviews, short-term planning, and long-term planning being performed?

Sanitary Survey Questions

Help to assess fiscal controls by determining whether the system manages its revenues effectively and uses appropriate budgeting, accounting and financial planning methods.

Capacity Element



Fiscal Controls

Additional Questions:

- Do you have budget and expenditure control procedures?
- Do you have a reserve account?
- Do you use generally accepted accounting principals (GAAP)?

Sanitary Survey Questions

Help to assess fiscal controls by determining whether the system maintains books and records, manages its revenues effectively, and uses appropriate budgeting, accounting and financial planning methods.

Capacity Element



Financial Capacity

**Financial Capacity
Components**

**Sanitary Survey
Elements**

Source

Treatment

Distribution

Storage

Pumps

Monitoring & reporting

Management & operations

Operator certification

**Credit
worthiness**



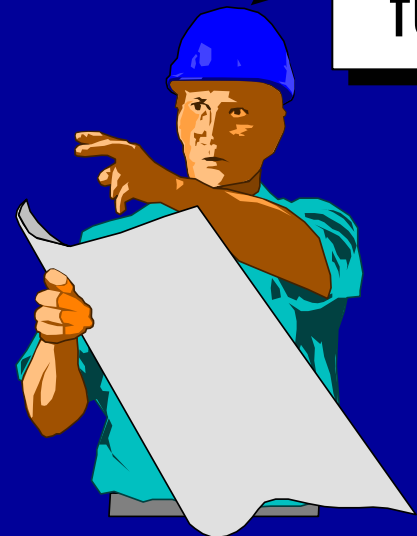
Credit Worthiness

- Provide estimated debt service expenses.
- Are the system's financing and budgeting satisfactory?
- Has the system received State or Federal funding?
- Is the system eligible for State or Federal funding?

Sanitary Survey Questions

Help to assess credit worthiness by determining if the system has access to capital and has established a credit rating.

Capacity Element



Credit Worthiness

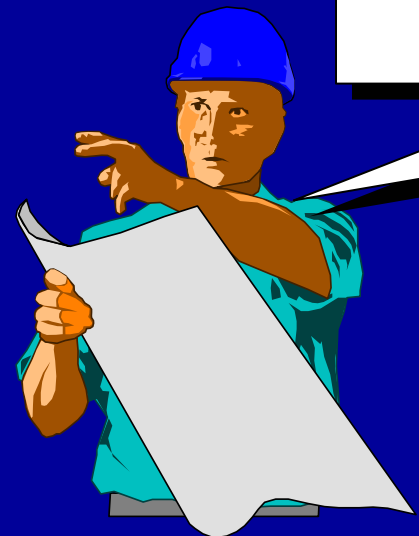
Additional Questions:

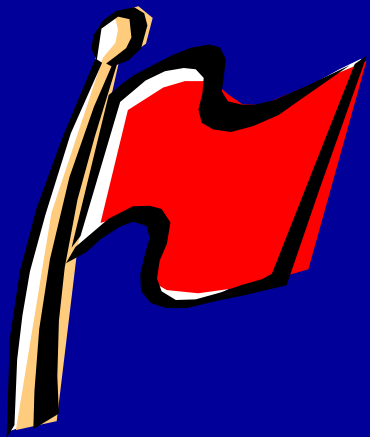
- Does your system have a reserve account dedicated to the maintenance of cash flow in the event of an unexpected funding shortfall?
- Do you know about available financial assistance programs and resources?

Sanitary Survey Questions

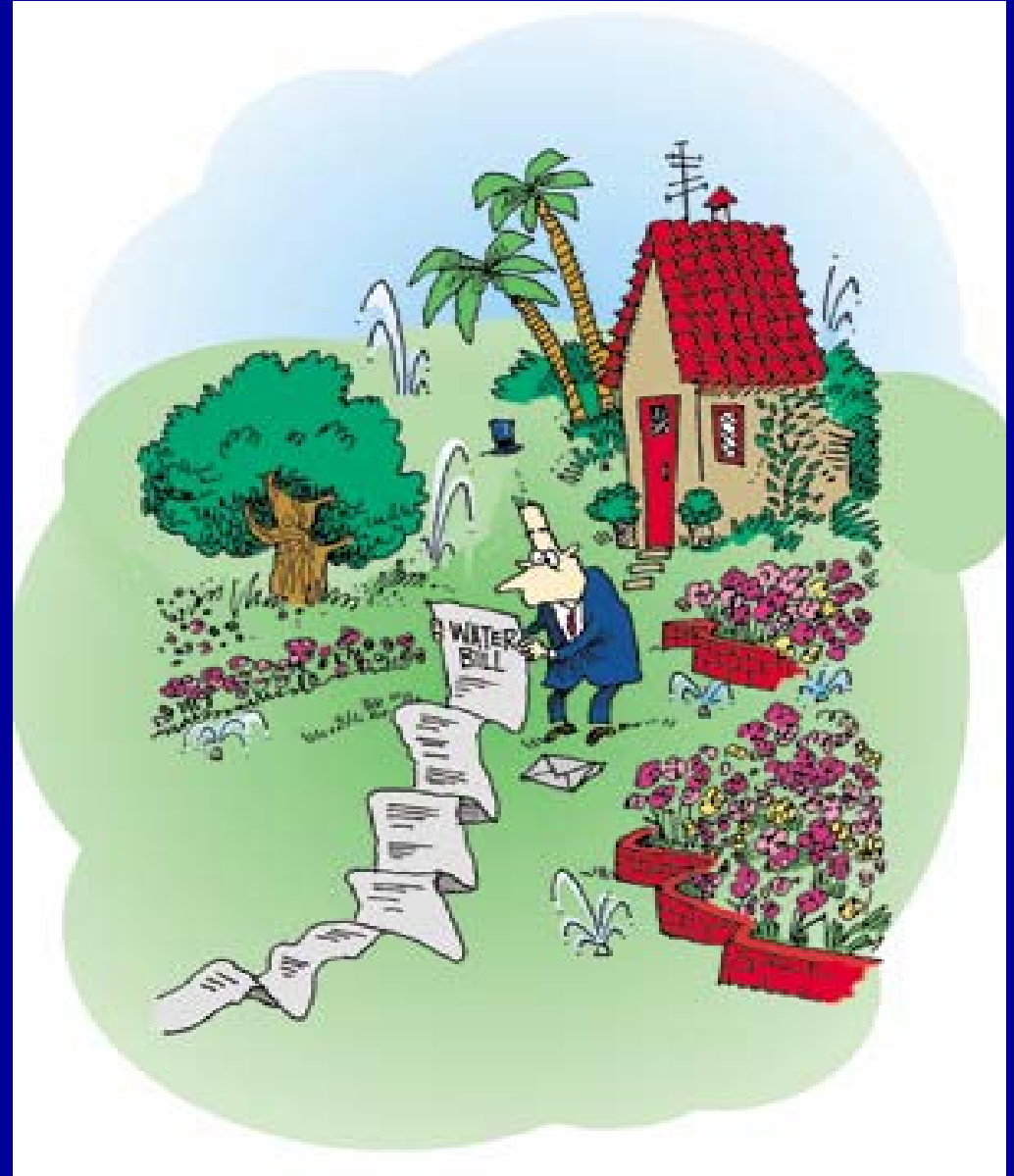
Help to assess credit worthiness by determining if the system has access to capital and has established a credit rating.

Capacity Element





Red Flag!! Financial Capacity



**Sanitary
Survey**

+

**Financial &
Managerial
Questions**

+

**Rethinking
the
Information**

=

**Capacity
Assessment**